CORPORATION OF THE CITY OF COURTENAY
COUNCIL MEETING AGENDA

DATE: **March 7, 2016**
PLACE: **City Hall Council Chambers**
TIME: **4:00 p.m.**

1.00 ADOPTION OF MINUTES

1. Adopt February 15, 2016 Regular Council and February 29, 2016 Committee of the Whole meeting minutes

2.00 INTRODUCTION OF LATE ITEMS

3.00 DELEGATIONS

STAFF REPORTS/PRESENTATIONS

Pg #

(a) CAO and Legislative Services

(b) Community Services

(c) Development Services

1 1. Development Permit – 850 Beckensell Avenue

(d) Financial Services

31 2. Annual Revenue Anticipation Borrowing Bylaw

35 3. C.V. Exhibition Grounds Requisition Bylaw Amendment

(e) Engineering and Operations

5.00 EXTERNAL REPORTS AND CORRESPONDENCE FOR INFORMATION

6.00 INTERNAL REPORTS AND CORRESPONDENCE FOR INFORMATION

51 1. Heritage Advisory Commission Minutes of January 27, 2016

53 2. Staff Memo re: Requirement to Consider Applications

55 3. Staff Memo re: Lewis Park Tree Removal

57 4. Briefing Note re: C.V. Sewer Service-Cost Apportionment Update

81 5. Staff Memo re: Courtenay River Third Crossing Review – Update

83 6. Staff Memo re: Puntledge Park – Rotary Riverside Trail Stairs Closure

REPORTS/UPDATES FROM COUNCIL MEMBERS INCLUDING REPORTS FROM COMMITTEES

8.00 RESOLUTIONS OF COUNCIL

In Camera Meeting:

That notice is hereby given that a Special In-Camera meeting closed to the public will be held March 7, 2016 at the conclusion of the Regular Council Meeting pursuant to the following sub-sections of the *Community Charter*:

- 90 (2)(k) negotiations and related discussions respecting the proposed provision of a municipal service that are at their preliminary stages and that, in the view of the council, could reasonably be expected to harm the interests of the municipality if they were held in public.

9.00 UNFINISHED BUSINESS

1. From a delegation to the February 15, 2016 Regular Council meeting

Request from the Courtenay based Dogwood Initiative requesting Council to adopt an aggressive Tree Bylaw with a 45% canopy target.

10.00 NOTICE OF MOTION

11.00 NEW BUSINESS

87 1. CVRD South Sewer Select Committee Revised Terms of Reference

91 2. Councillor Frisch: Proposed resolution on Courtenay Air Quality

'That in response to citizen concerns about Courtenay Air Quality and specifically Particulate Matter 2.5, Council direct staff to contact the BC Health Authority to investigate the seriousness of the issue and advise on possible actions the City might take."

12.00 BYLAWS

For First, Second and Third Reading

93 1. "Revenue Anticipation Borrowing Bylaw No. 2843, 2016"

95 2. "Council Procedure Amendment Bylaw No. 2846, 2016"

13.00 ADJOURNMENT

THE CORPORATION OF THE CITY OF COURTENAY

STAFF REPORT

To: Council **File No.:** 3060-20-1517

From: Chief Administrative Officer **Date:** March 7th, 2016

Subject: Development Permit for 850 Beckensell Avenue

PURPOSE:

The purpose of this report is for Council to consider the issuance of development permit No. 1517 for the placement of one dome storage shelter and three racking storage structures at 850 Beckensell Avenue.

CAO RECOMMENDATIONS:

That based on the March 7, 2016 staff report "Development Permit for 850 Beckensell Avenue", Council support OPTION 1 and approve the proposed Development Permit No. 1517 as shown in Schedule No. 1.

Respectfully submitted,

David Allen, BES, CLGEM, SCLGM
Chief Administrative Officer

BACKGROUND:

Home Hardware has been operating its business at 850 Beckensell Avenue for decades. Operational activities include a commercial store and multiple storage buildings including the storage of outdoor building supplies. There is currently larger redevelopment plans for the properties including the construction of multiple family residential dwellings for Senior's. In order to facilitate this larger redevelopment plan Home Hardware will be relocating to an alternative site. Until Home Hardware is able to secure a new location for its business the property owners have made an application to place one temporary dome shelter structure and three tree racking structures on the properties to provide additional exterior storage while the properties are redeveloped in phases.

DISCUSSION:

McElhanney Consulting Services has applied to the City for a development permit to allow the placement of one temporary 909.5 m² dome shelter structure and three temporary tree racking storage structures on the properties. The tree racking structures range in size from 37 m² to 102 m² in area with a height of approximately 6.5 m. The dome shelter will have a height of approximately 7.5 m.

While processing this application, staff and the applicant engaged in an analysis of the proposed dome shelter and tree racking structures, the site and the applicability of the various development permit guidelines. Staff referred the application to internal departments and external agencies to determine if

their interests were affected as well as consulted the City's Building Department to determine if there was building code implications related to the development.

During this review it became evident that the applicant was unable to meet the Downtown Development Permit Area guidelines, particularly the form and character guidelines. Due to the type of temporary storage structures being placed on the properties, City Staff do not believe that these guidelines are directly applicable to the development.

From an environmental perspective, however, Staff feels that the Environmental Protection Development Permit guidelines are applicable to the proposed development.

Official Community Plan Review:

Typically any new development on the properties would be subject to both the Environmental Development Permit guidelines as well as the Downtown Development Permit Area guidelines. Because the applicant is proposing to place temporary structures on the lands, not all of the development permit guidelines are applicable to the proposed development.

Regarding the Downtown Development Permit Area guidelines, staff has determined the applicant cannot meet the form and character guidelines because the buildings are industrial in nature. Because the development is occurring adjacent to the Courtenay River, it triggers some of the City's Environmental Protection Development guidelines. In response City Staff have asked for the applicant to obtain a letter of opinion from a Registered Professional Biologist to comment on whether the proposed development will impact the river and the river's adjacent riparian areas. Although the site is disturbed and the temporary structures are being placed on the existing asphalt area of the site, the Biologist was asked to comment on any mitigative measures that should occur during construction.

A letter of opinion was completed by Warren Fleenor, R.P. Bio of Current Environmental. The Biologist established a 15 m setback for development from the Courtenay River and concluded that none of the proposed temporary structures will be located within 15 metres of the high water mark of the river. The Biologist noted that all structures will be located on an existing imperious surface that is void of vegetation. The Biologist noted that potential environmental impacts associated with the proposed work is very low and recommended the following mitigation measures be implemented during construction:

- that soils be stockpiled in locations that will not erode into the river;
- that exposed soils should be covered with mulch or poly sheeting;
- that machinery used should be free of leaks and
- that a spill response plan be created.

The subject properties are located within the flood plain, so City staff requested the applicant consult a geotechnical engineer as per Section 56 of the *Community Charter* to ensure the site is safe for its intended use. On November 20, 2015 Leokowich Engineering completed a report that examined any potential flood hazards related to the four proposed storage structures. The report contained three objectives:

1. to certify the land is geotechnically safe for the use intended;
2. to identify any geotechnical deficiencies that might impact the design and construction of the development and;
3. to provide geotechnical recommendations with regards to flooding.

Leokowich Engineering concluded that the land is considered safe and suitable for the use intended and that the development will not further impede natural river process during flood conditions. It was further

noted that the proposed structures will be located outside of areas with the highest potential for erosion and should pose little risk of damaging neighbouring properties.

Pursuant to Section 56 of the *Community Charter* the applicant is required to enter into a covenant prepared by the City's solicitor and registered on the land title outlining the geotechnical and environmental requirements for the development onsite. The applicant is required to pay the cost of the preparation and execution of the covenant. The covenant will also address the time period the temporary structures are permitted to be located onsite, details about the security the City will be taking for the project and a condition that construction of the larger residential project (i.e. the Tiger Lily Project) begin within 18 months of the four temporary structures being erected.

Staff is requesting security from the applicant in the amount of $20,000 to ensure that the temporary structures will be removed from the property. Security is valued at 125% of the estimated cost of removing the structures and is based on a cost estimate provided by the applicant. It is the intention that the City will draw on this security if the temporary structures are not removed from the property within a six year allotted time period. Staff believes six years is more than adequate for Home Hardware to find an alternative site, obtain development approval and construct their new building.

Attachment No. 2 contains a map of the subject properties; Attachment No. 3 contains written submissions from the applicant including illustrations of the proposed temporary structures. Staff is satisfied that the proposed development generally meets the development permit guidelines relevant to the application including geotechnical and environmental requirements. If Council believes a guideline of relevance has not been met, it would be appropriate to provide the applicant clear direction on the changes required to meet the guideline(s) so they can obtain approval. Attachment No. 1 contains a copy of the development permit with its associated schedules.

Zoning Bylaw Review:

The proposed development complies with the provisions of the Commercial Two Zone with regards to use, building height and parcel coverage.

BC Building Code

City Staff conducted research on the placement of the dome shelter and tree racking structures to determine if there are any implications related to the BC Building Code. As per the building code, it has been determined that the proposed dome has to have appropriate egress; must be designed as open floor space without interior walls, mezzanines or intermediate floors; the ground outside the structure needs to be clear of all flammable material or vegetation in order to reduce the spread of fire; the dome has to conform to the flame resistant fabrics and film requirements of the BC Building Code and all electrical fuses, switches have to be inaccessible to the public and all cables within the dome must be placed in trenches or protected by covers. The dome structure must also be located more than 3 metres (10 ft.) away from other structures onsite. The three tree racking will also be required to meet BC Building Code. The applicant has placed overhead roofs connecting the tree racking structures in order to address spatial separation and limiting distance requirements under the BC Building Code. The City's building department has reviewed the applicant's proposal and have not identified any issues with the applicant's proposal.

FINANCIAL IMPLICATIONS:

The proposed development will not impose new capital cost burdens on the City therefore the applicant will not be required to pay development cost charges. Should Development Permit No. 1517 be approved,

the applicant would be required to apply for a building permit and subsequent inspections. Building permit fees are $7.50 for every $1000.00 of construction value. Additionally, the applicant will be required to pay all legal fees for the City's solicitor to prepare and execute the covenant registered on title; therefore, the City will not bear any legal costs associated with this project.

ADMINISTRATIVE IMPLICATIONS:

Staff has spent approximately 20 hours on the development permit application. A majority of this time has been allocated towards meetings with the applicant, site visits, a review of the geotechnical report and letter of opinion completed by the R.P. Biologist, researching building code implications for tents and air supported structures and requesting additional information from the applicant in order to complete the application .The application fee of $2,000 has covered the cost of the staff time spent on the application.

If approved, there will be approximately one additional hour of staff time required to prepare the notice of permit, have it registered on title and close the file. Additional staff time will be required for review building permit applications and to perform the required building inspections.

STRATEGIC PLAN REFERENCE:

The processing of development applications fall under the statutory requirements of the Development Services Department.

OFFICIAL COMMUNITY PLAN REFERENCE:

The proposal is consistent with the existing commercial OCP land use designation for the properties. The proposal will continue to utilize existing services and designated lands that support the commercial base within municipal boundaries and provide employment opportunities. The proposal is also consistent with OCP policies regarding the protection of environmentally sensitive areas (i.e. the Courtenay River).

REGIONAL GROWTH STRATEGY REFERENCE:

The proposed development is consistent with the RGS goals and objectives to ensure protection of environmental features and retaining business and employment in town centres.

OPTIONS:

OPTION 1: (Recommended) Approve Development Permit No. 1517 and that:

A. That Council waive the requirements for the applicant to meet the Downtown Development Permit form and character guidelines;
B. That Council approve Development Permit No. 1517 with the conditions in the attached Permit No. 1517; and
C. That Council require the applicant to pay all legal costs associated with the City Solicitor's preparation and execution of the covenant(s) associated with Development Permit No. 1517.

OPTION 2: Defer consideration of the proposed amendment of Development Permit No. 1517 pending receipt of additional information.

OPTION 3: Do not approve the proposed amendment of Development Permit No. 1517.

Prepared by:

Dana Leitch, MCIP, RPP
Land Use Planner

Reviewed by:

Ian Buck, MCIP, RPP
Director of Development Services

ATTACHMENT NO. 1

THE CORPORATION OF THE CITY OF COURTENAY

Permit No. DP 1517

DEVELOPMENT PERMIT

March 7, 2016

To issue a Development Permit

To: Name: CBS Land Corporation (Inc. #BC0791607)
Address: 610 Anderton Avenue
Courtenay, BC V9N 2H3

Property to which permit refers:

Legal(s): That Part of Lot 5, Section 61, Comox District, Plan 5666, shown outlined in red on Plan 1550-R
Lot 5, Section 61, Comox District, Plan 5666, shown outlined in red on Plan 1550-R and Except that Part in Plan VIP67592
Lot 4, Section 61, Comox District, Plan 5666

Civic: 850 Beckensell Avenue

Conditions of Permit:

Permit issued to allow the placement of one dome shelter structure and three tree racking structures the above noted properties subject to the following conditions:

a) Development must be in conformance with the plans and elevations contained in ***Schedule No. 1***;

b) The applicant is required to follow all the recommendations contained in the Lewkowich Engineering Associates report dated November 20, 2015 and any updates to it;

c) The applicant is required to follow all the recommendations contained in the letter of opinion provided by Warren Fleenor, R.P. Bio from Current Environmental dated January 5, 2016, and any updates to it;

d) Submission of security in the amount of $20,000 or 125% of the cost estimate provided by Sturdi Construction Ltd, and any updates to it;

e) The applicant is required to remove the temporary dome shelter structure and the three tree racking structures by January, 2022;

f) That construction of Tiger Lily multiple family housing project must commence within 18 months of the issuance of the development permit and if construction does not take place within the allotted time frame of 18 months the temporary structures must be removed from the subject properties.

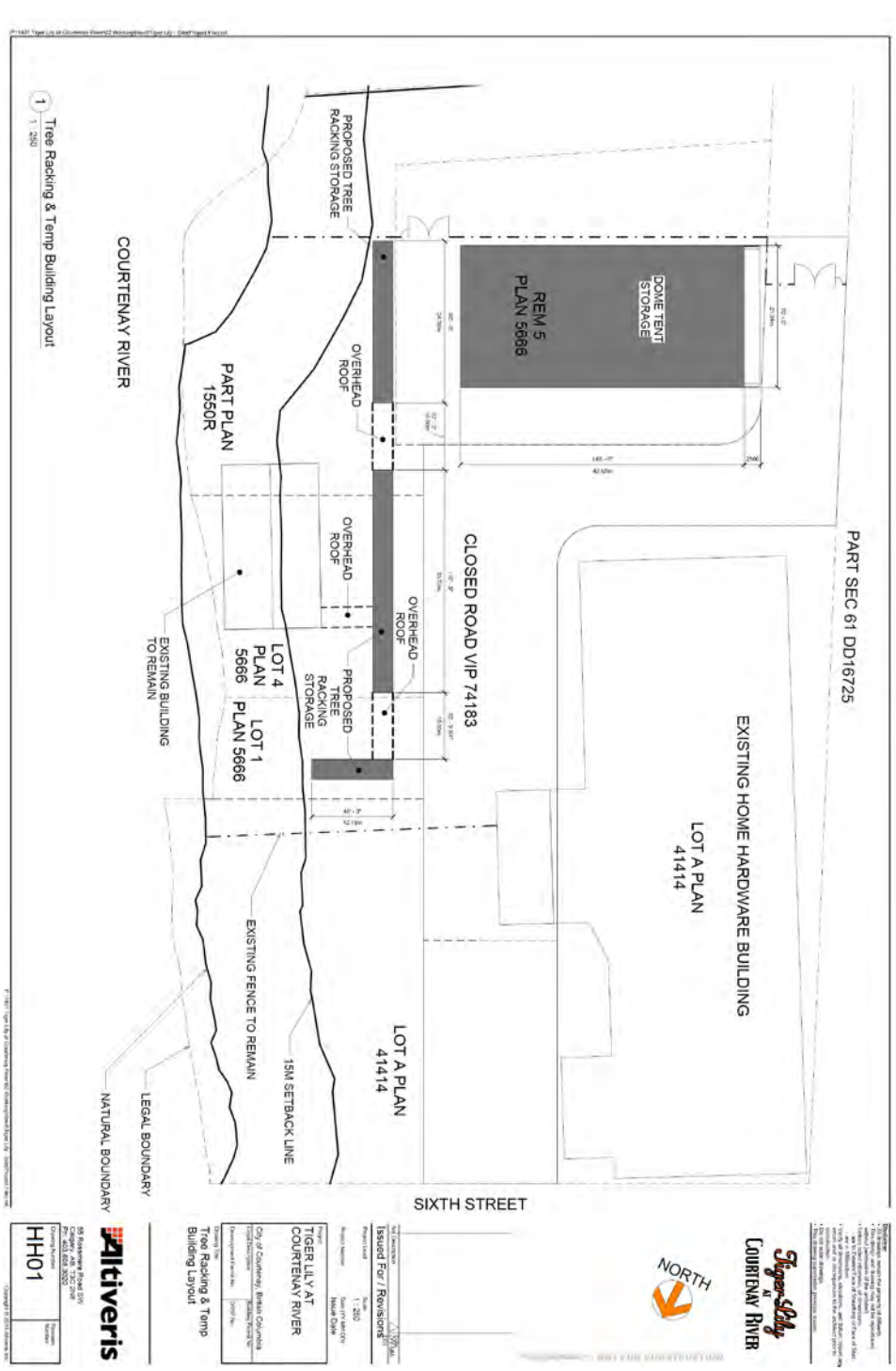
Time Schedule of Development and Lapse of Permit

That if the permit holder has not substantially commenced the construction authorized by this permit within (12) months after the date it was issued, the permit lapses.

Date

Director of Legislative Services


Tree Racking & Temp Building Layout
1 : 250
PART SEC 61 DD16725
EXISTING HOME HARDWARE BUILDING
LOT A PLAN 41414
CLOSED ROAD VIP 74183
DOME TENT STORAGE
REM 5 PLAN 5666
PROPOSED TREE RACKING STORAGE
OVERHEAD ROOF
OVERHEAD ROOF
OVERHEAD ROOF
PROPOSED TREE RACKING STORAGE
PART PLAN 1550R
COURTENAY RIVER
EXISTING BUILDING TO REMAIN
LOT 4 PLAN 5666
LOT 1 PLAN 5666
LOT A PLAN 41414
EXISTING FENCE TO REMAIN
15M SETBACK LINE
LEGAL BOUNDARY
NATURAL BOUNDARY
SIXTH STREET
NORTH
PRELIMINARY - NOT FOR CONSTRUCTION
Issued For / Revisions
TIGER LILY AT COURTENAY RIVER
Tree Racking & Temp Building Layout
HH01
Altiveris


PART SEC 61 DD16725
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EXISTING BUILDING
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TIGER LILY AT
COURTENAY RIVER
Tree Racking & Temp
Building Layout
Altiveris
HH01
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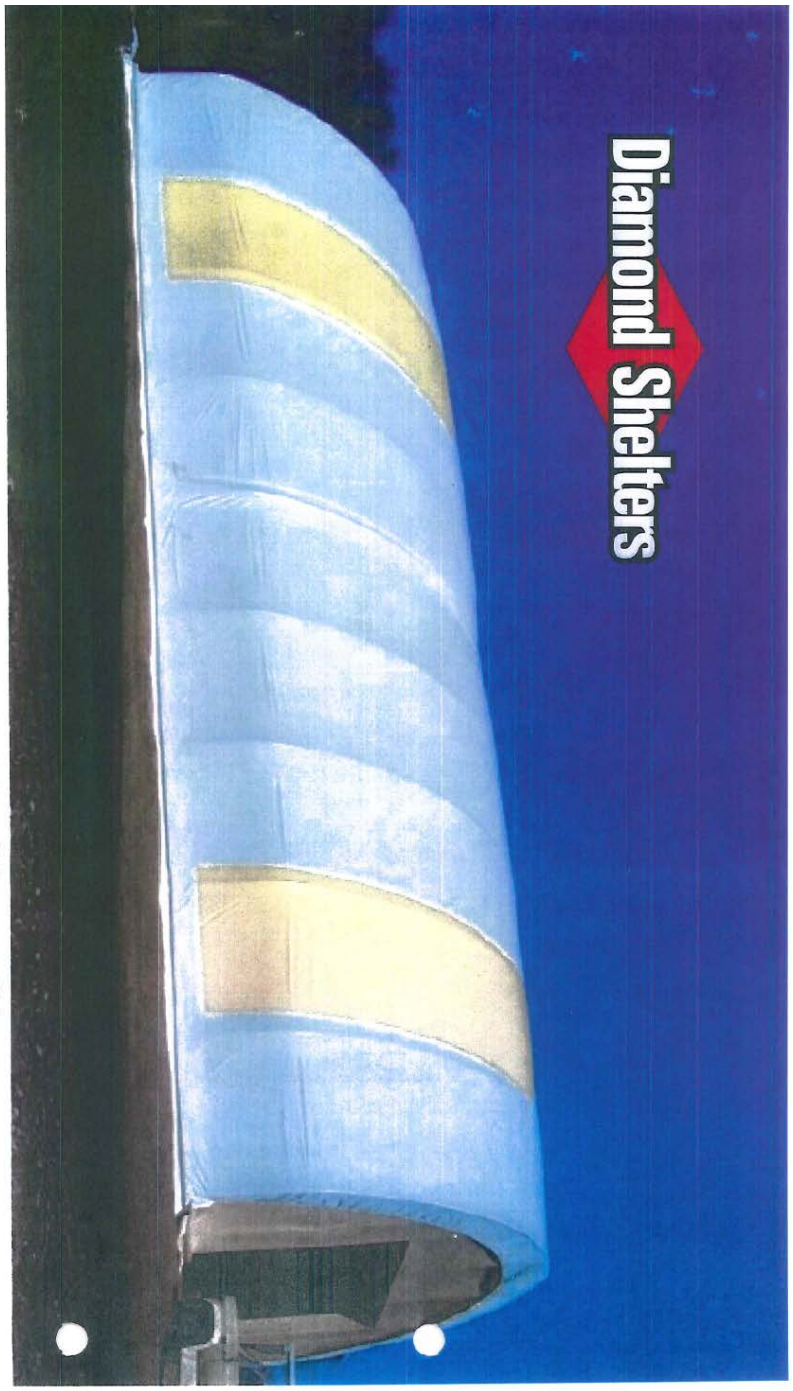
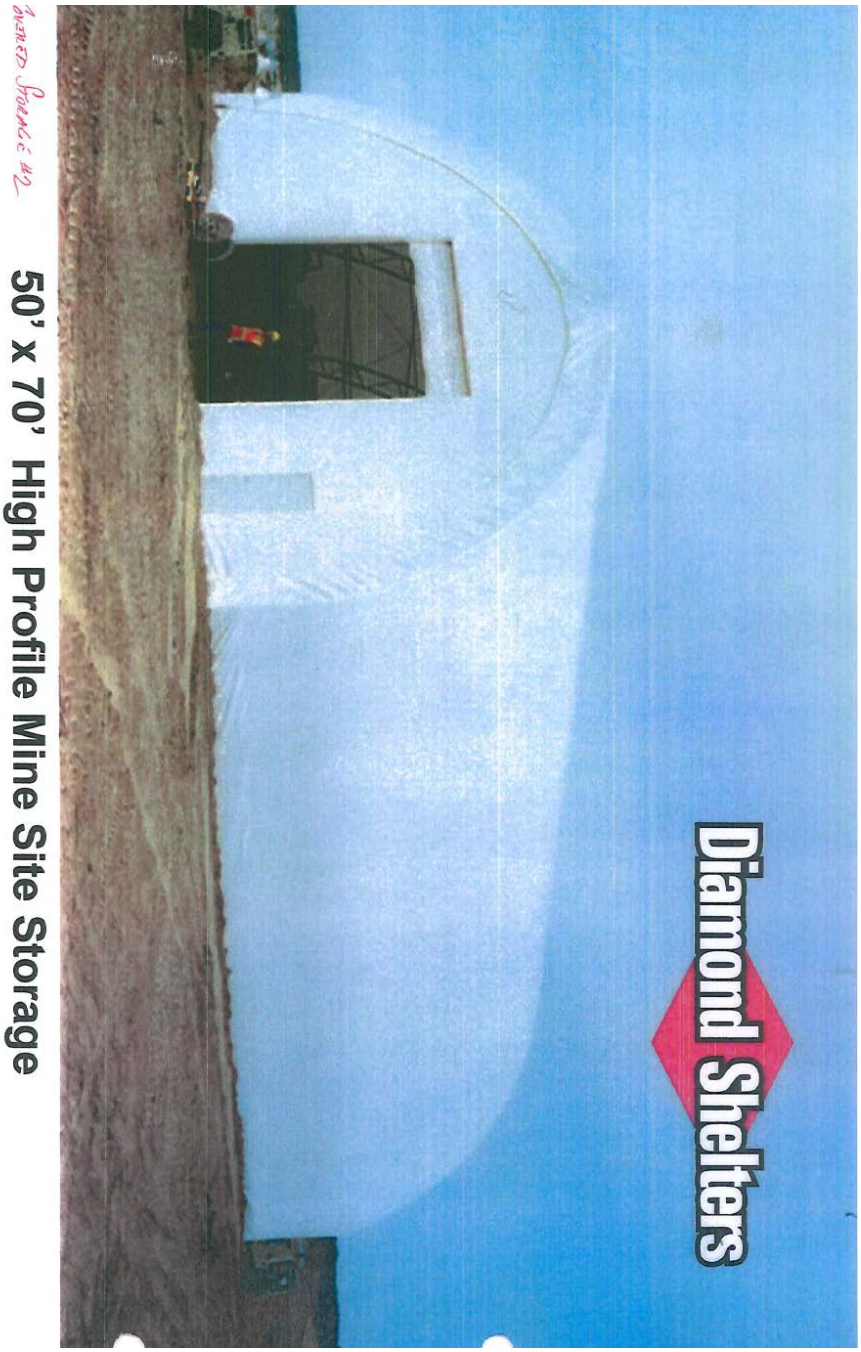
Tree Racking & Temp Building Layout
1 : 250

Schedule 1
Page 3 of 9

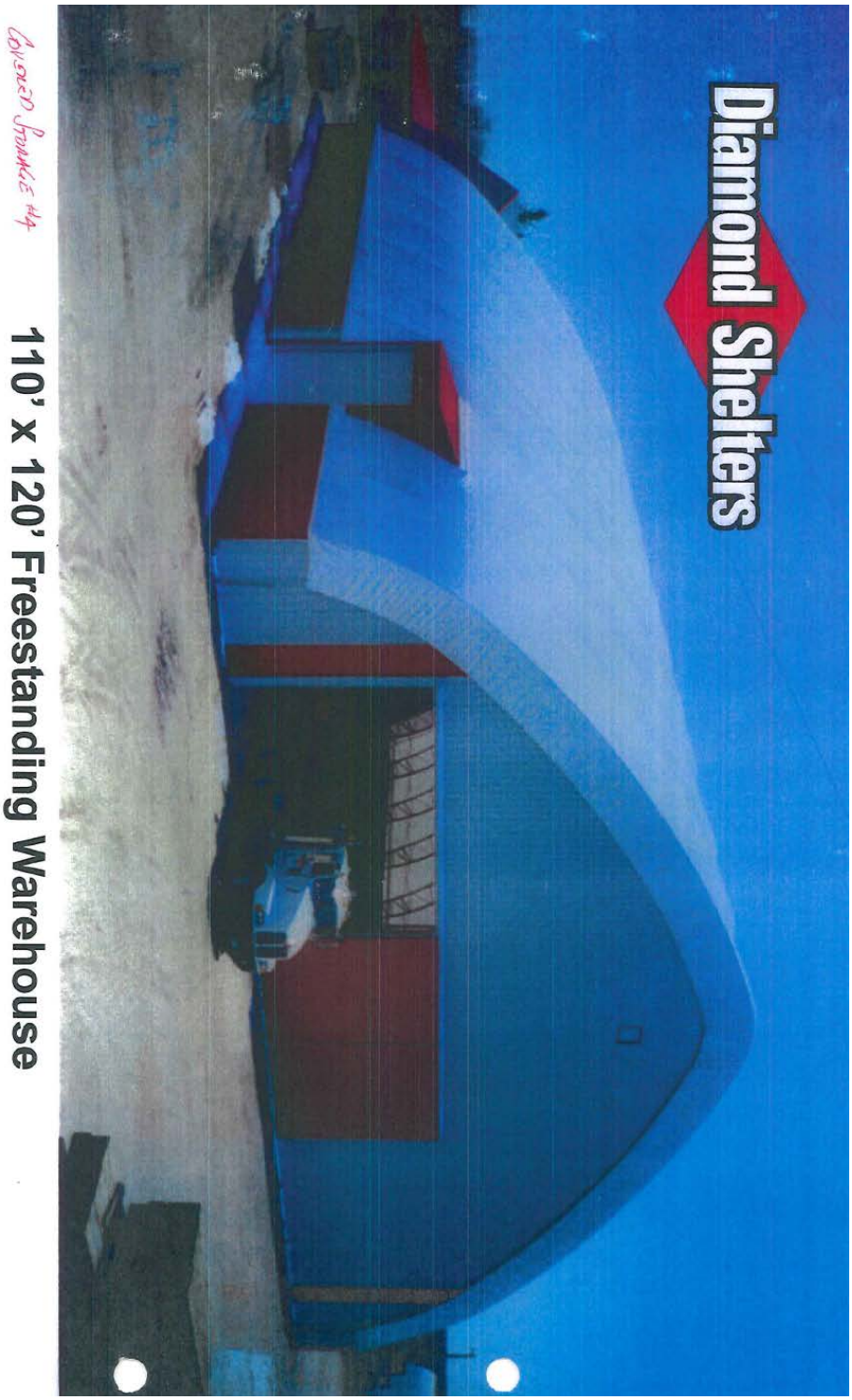
Schedule 1
Page 4 of 9



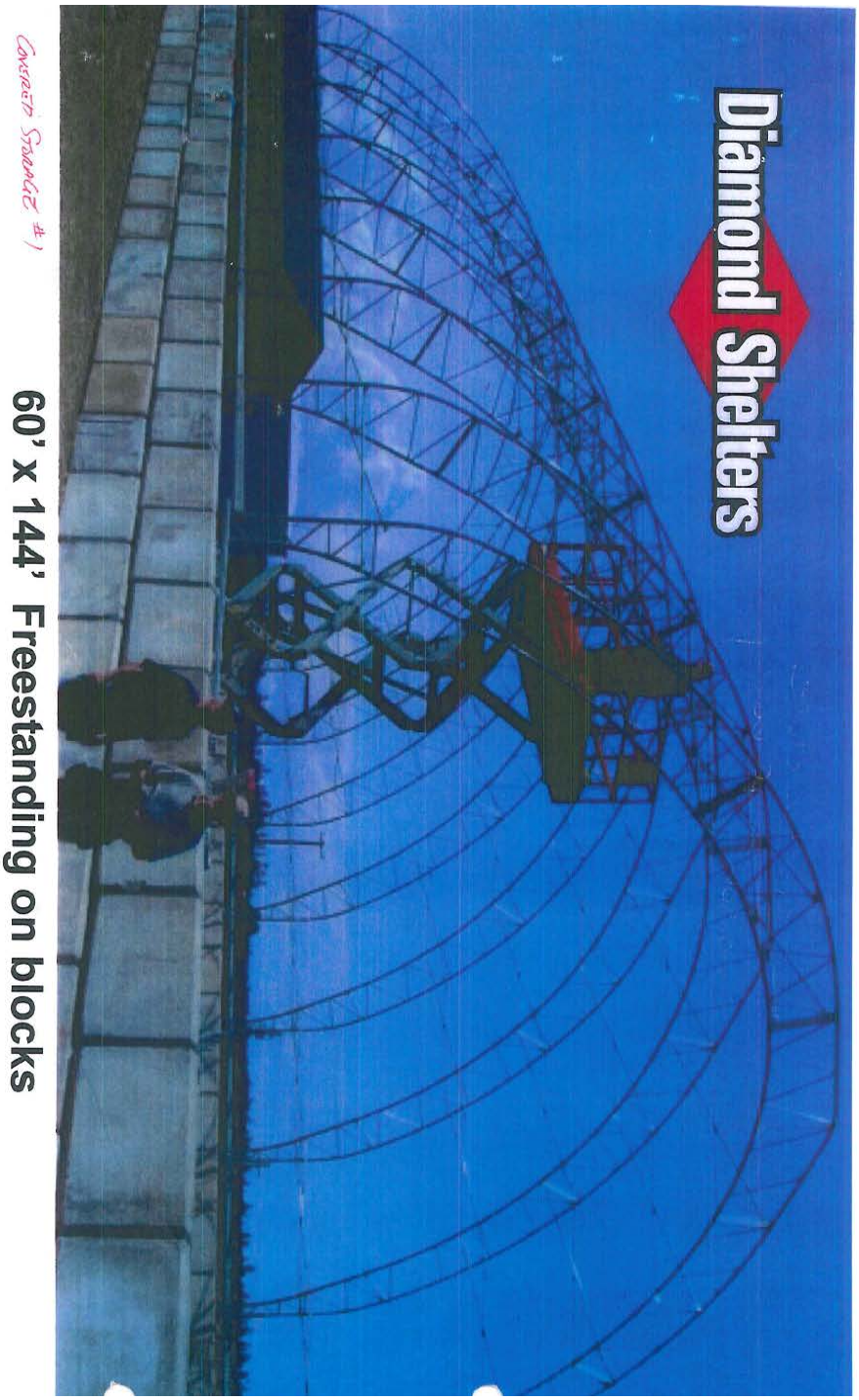
Schedule 1
Page 5 of 9



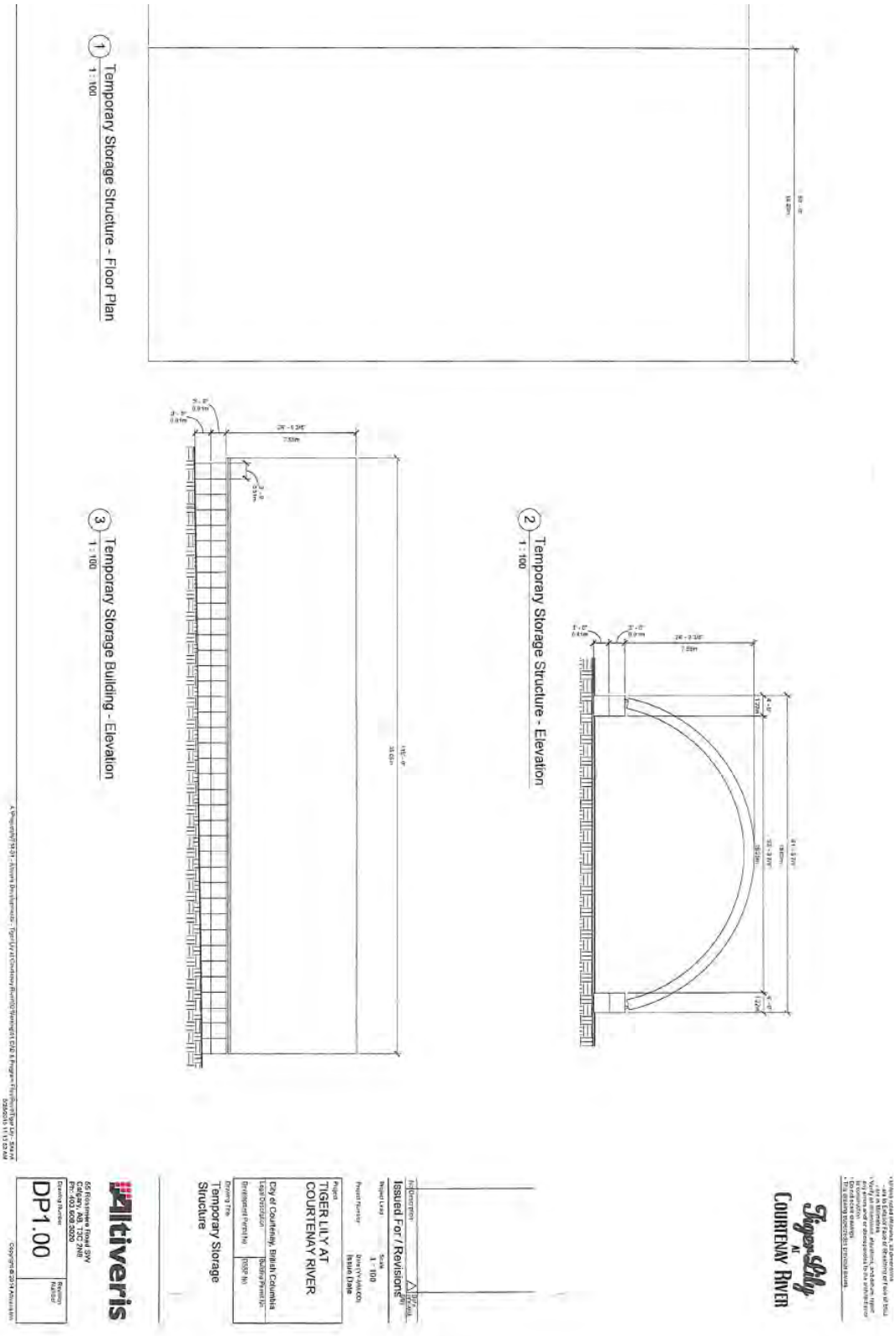
Schedule 1
Page 6 of 9



Schedule 1
Page 7 of 9



Schedule 1
Page 8 of 9

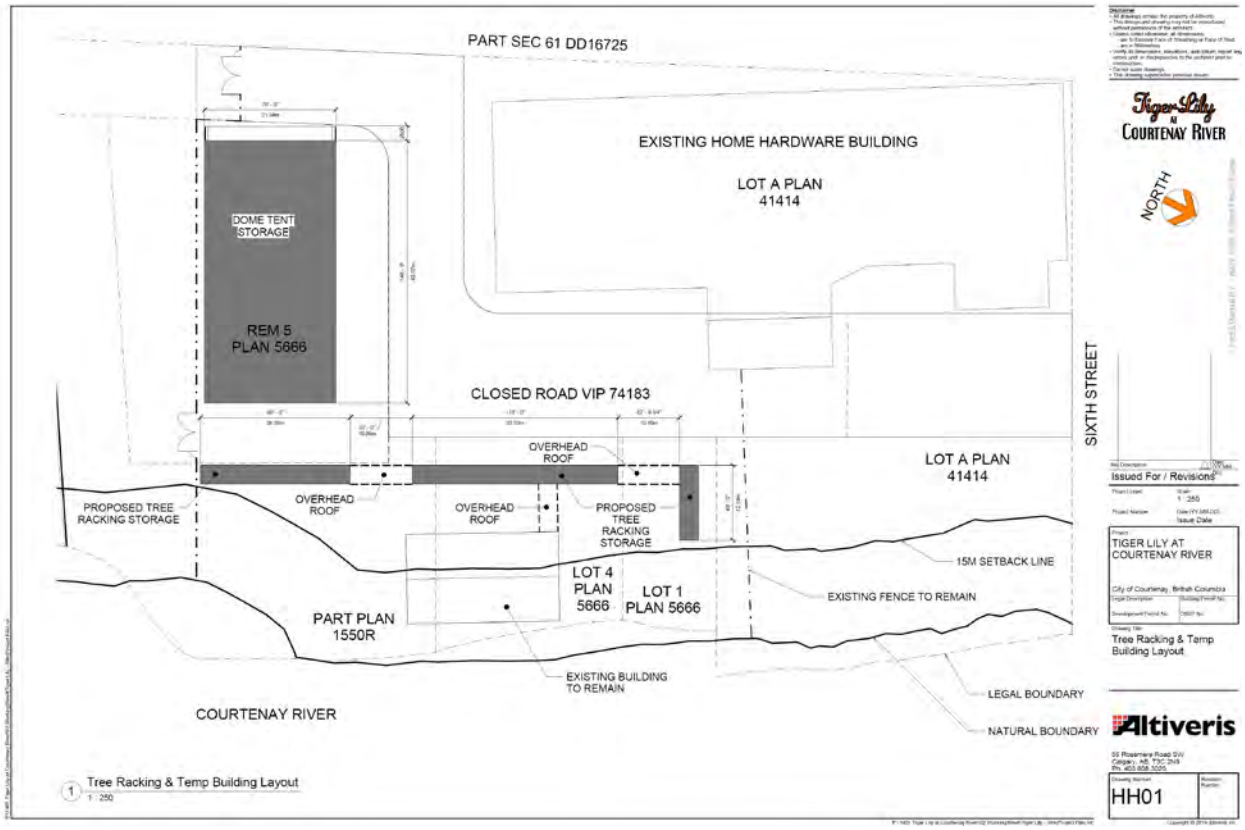


Schedule 1
Page 9 of 9

ATTACHMENT NO. 1 – Subject Properties

ATTACHMENT NO. 2 – Tree Racking and Temporary Building Layout (1 of 2)

ATTACHMENT NO. 2 – Tree Racking and Temporary Building Layout (2 of 2)



ATTACHMENT NO. 3 –Applicant Submissions (1 of 4)

McElhanney

October 9, 2015

Our File: 2211-47394-1

Mr. Ian Buck
Director of Development Services
City of Courtenay
830 Cliffe Avenue
Courtenay, BC V9N 2J7

Dear Mr. Buck,

**HOME HARDWARE (COURTENAY) STORAGE IMPROVEMENT PROJECT-
850 BECKENSELL AVENUE, COURTENAY**

The following development synopsis has been prepared on behalf of CBS Land Corp., in support of development permit and environmental development permit applications for the above-noted property.

1.0 GENERAL

The proposed storage improvements are located on (4) of the multiple properties that form the Home Hardware building supply commercial operation on Beckensell Ave.; legally described as Lots 1, 4 & 5 Plan 5666, and that part of Lot 5 Plan 5666 shown outlined in red on Plan 1550-R, Section 61, Comox District, Plan 35641.

Home Hardware has been operating at its current location for decades. Operational activities include a commercial store, multiple storage outbuildings, and outdoor supplies storage. It is understood that re-development planning for portions of the lands is well underway, with a formal application submission expected this fall.

Towards maintaining existing Home Hardware materials storage capacity, within a reduced overall footprint, proposed storage improvements include the following (as presented on Altiveris drawing HH01 attached):

- The installation of a 21.3x42.7m dome shelter, south of the existing store.
- (3) tree racking storage facilities, within the existing asphalt storage areas.

2.0 DEVELOPMENT & ENVIRONMENTAL PERMIT

The proposal seeks to formalize existing storage operations and improve overall storage efficiency; noting available yard space will soon be reduced. This application does not introduce any 'new' site programming activities.

RECEIVED
OCT 14 2015
CITY OF COURTENAY

495 Sixth St
Courtenay BC
Canada V9N 6V4

Tel 250 338 5495
www.mcelhanney.com

Given this application represents an extension of the existing land use (limited to additional storage facilities), the bulk of the Downtown & Environmental development permit guidelines do not apply. To this end, a completed development permit application and compliance checklist has been submitted for staff review. Please advise if further application information is necessary.

Enclosed for your reference are sample tree racking and dome structure photographs/brochures.

We confirm all proposed storage structures are 'temporary' in nature, on the understanding that further site re-development will likely occur within 5-7 years. At that time, proposed structures will either be relocated or removed from the site.

All proposed storage structures are located on existing asphalt surfacing, used for materials storage. The dome shelter lies outside of the 30m Courtenay River setback; while the tree racking structure locations respects the 15m setback.

3.0 SUSTAINABILITY & AFFORDABLE HOUSING

As the proposal does not include either a subdivision application or a change in land use, the City's affordable housing and sustainability policies do not apply to this proposal.

Yours truly,

MCELHANNEY CONSULTING SERVICES LTD.

Derek Jensen, AScT

Reviewed by: Chris Durupt, P.Eng.

DJ/njg

Enclosures

cc. Altiveris, Bob Armeneau

ATTACHMENT NO. 3 –Applicant Submissions (2 of 4)

Lewkowich Engineering Associates Ltd.
geotechnical • health, safety & environmental • materials testing

Altiveris Construction Inc
55 Rossmere Road SW
Calgary, AB
T3C 2N8

File Number: F2221.02
Date: November 20, 2015

Attention: Mr. Mark Colbeck

PROJECT: **TIGER LILY AT COURTENAY RIVER: PHASE 1**
610 ANDERTON AVENUE, COURTENAY, BC

LEGAL DESCRIPTION: **LOTS 1, 4, &5 PLAN 5666, SECTION 61, COMOX DISTRICT, PLAN 35641**

SUBJECT: **FLOOD ASSESSMENT FOR TEMPORARY STRUCTURE**

Dear Mr. Colbeck:

1. INTRODUCTION

As requested, Lewkowich Engineering Associates Ltd (LEA) has evaluated potential flood hazards related to proposed storage improvements. This report provides a summary of our findings and recommendations.

2. ASSESSMENT OBJECTIVES

a. Our assessment, as summarized within this report, is intended to meet the following objectives:

i. Certify that the land is considered geotechnically safe and suitable for the use intended (defined for the purposes of this report as the installation of a temporary dome structure and storage racks), provided the recommendations in this report are followed.

ii. Identify any geotechnical deficiency that might impact the design and construction of the development, and prescribe the geotechnical works and any changes in the standards of the design and construction of the development that are required to ensure the land, buildings, and works and services are developed and maintained safely for the use intended.

iii. Provide geotechnically related recommendations with regard to flooding hazards.

Suite A - 2569 Kenworth Road, Nanaimo, B.C., Canada V9T 3M4 • Tel: (250) 756-0355 Fax: (250) 756-3831
www.lewkowich.com

Client: Altiveris Construction Inc
Project: 610 Anderton Ave, Courtenay, BC
File #: F2221.03
Date: November 20, 2015
Page: 2 of 4

3. BACKGROUND

a. LEA understands that the subject site is located within the City of Courtenay Downtown Development Permit Area and within the 200 year flood plain.

b. LEA understands that the Client wishes to install a 21.3m wide and 42.7m long dome shelter as well as three (3) tree racking storage facilities within the existing asphalt paved storage areas. We understand that these structures are temporary and will likely be removed in 5 to 7 years when the land is re developed.

c. We understand that the dome shelter lies outside of the 30m flood plain setback, and that the racking structures will be offset at least 15m from present natural boundary.

d. The temporary dome structure will be founded on concrete lock blocks (1.5m x 0.75m x 0.75m) stacked two blocks high. The blocks will bear directly on existing asphalt pavement.

e. Detailed site conditions are summarized in previous LEA's previous assessments (F2221.01 and F2221.02).

f. There are currently several small buildings and covered storage structures within the 15m setback from the present natural boundary.

g. The provincial *Flood Hazard Area Land Use Management Guidelines* state that the purpose of floodplain setbacks are, "…to keep development away from areas of potential erosion and avoid restricting the flow capacity of the floodway. Keeping the floodway clear of development can reduce the risk of damage to neighbouring properties and reduce disruptions to natural river processes…." (Section 3.0.4)

4. CONCLUSIONS

a. From a geotechnical point of view, the land is considered safe and suitable for the use intended (defined for the purposes of this report as the installation of a temporary dome structure and storage racks), provided the recommendations in this report are followed.

b. We do not believe that this development will further impede natural river processes during flood conditions. These structures will be outside of areas with the highest potential for erosion and should pose little risk of damaging neighbouring properties.

5. ACKNOWLEDGEMENTS

Lewkowich Engineering Associates Ltd acknowledges that this report may be requested by the building inspector (or equivalent) of the City of Courtenay as a precondition to the issuance of permits. It is acknowledged that the Approving Officers and Building Officials may rely on this report when making a decision on application for development of the land. We acknowledge that this report has been prepared for, and at the expense of the Client. We have not acted for or as an agent of the City of Courtenay in the preparation of this report.

6. LIMITATIONS

The conclusions and recommendations submitted in this report are based upon the data obtained from surface exposures and a limited number of widely spaced subsurface explorations. The nature and extent of variations between these explorations may not become evident until construction or further investigation. The recommendations given are based on the subsurface soil conditions encountered during the investigation, current construction techniques, and generally accepted engineering practices. No other warrantee, expressed or implied, is made. Due to the geological randomness of many soil formations, no interpolation of soil conditions between or away from the test holes has been made or implied. Soil conditions are known only at the test hole locations. If other soils are

encountered, unanticipated conditions become known during construction or other information pertinent to the structures become available, the recommendations may be altered or modified in writing by the undersigned.

7. CLOSURE

Lewkowich Engineering Associates Ltd appreciates the opportunity to be of service on this project. If you have any comments, or additional requirements at this time, please contact us at your convenience.

Respectfully Submitted,
Lewkowich Engineering Associates Ltd

Johannes Fischer, EIT

Chris Hudec, M.A.Sc., P.Eng.
Senior Project Engineer

ATTACHMENT NO. 3 –Applicant Submissions (3 of 4)

current ENVIRONMENTAL
Unit H - 244 4th Street
Courtenay, BC V9N 1G6
p: 250.871.1944
w: currentenvironmental.ca

January 5, 2016

Altiveris Group of Companies
55 Rossmere Road SW
Calgary, Alberta
T3C 2N8

Regarding: **Development Permit Application No. 1517 – Environmental Considerations for Temporary Storage and Building Facilities at the Tiger Lily Development, Courtenay, BC.**

Attention: **Bob Armeneau**

Bob,

This memo is provided to outline environmentally-related considerations for the construction and use of temporary storage facilities at the Tiger Lily development. Since these structures are to be located within 30 m of the high water mark of the Courtenay River, the City of Courtenay development permit process requires the submission of an impact assessment from a Registered Professional Biologist.

Based on a review of the proposed work, the following points are considered:

1. None of the proposed, temporary buildings will be located within 15 m of the high water mark of the river (more below).
2. All of the structures will be located on impervious areas, void of vegetation.
3. The buildings are temporary.

As such, the potential environmental impacts associated with the proposed work are considered to be very low. The following mitigation measures are to be implemented during construction of the proposed buildings:

1. If excavation of soils is to occur:
    a. Prevent the release of deleterious materials into the river:
        i. Sediment.
            1. Stockpile excavated soils in locations that will not erode into the river, or cover exposed soils with mulch or poly sheeting.
        ii. Hazardous materials.

1. Use clean machinery free of leaks.
2. Create a spill response plan and maintain adequate spill response supplies onsite during construction.

15 m Setback

Section 35 of the Fisheries Act designates the act of serious harm to fish which is the death of fish or any permanent alteration to, or destruction of, fish habitat a federal, punishable offence. The subject reach of the Courtenay River is not subject to regulation under the BC RAR due to the fact that it is subject to tidal influence. As such the prescription of setbacks for watercourses is based on directives provided in Land Development Guidelines for the Protection of Aquatic Habitat (Chilibeck, 1993) and the professional opinion of the project biologist. The proposed development plan will establish a 15 m setback for the Courtenay River that will include improving riparian habitat, and the maintenance of water quality and stormwater function. The Green Shores program also uses a 15 m setback width for shoreline projects. This width is generally at least as wide as most of the setback areas along the Courtenay River.

The successful implementation of these measures will reduce risk to environmental features and help ensure no significant negative impacts to aquatic habitats at the site.

Please call with any questions or comments.

Sincerely,

CURRENT ENVIRONMENTAL

WARREN FLEENOR, R.P. BIO.,

ATTACHMENT NO. 3 –Applicant Submissions (4 of 4)

McElhanney

January 6, 2016

Our File:2211-47394-01

Ms. Dana Leitch
Land User Planner
City of Courtenay
830 Cliffe Avenue
Courtenay, BC, V9N 2J7

Dear Ms. Leitch,

DEVELOPMENT PERMIT APPLICATION NO 1517 (HOME HARDWARE)

Per the City's January 4, 2016 email request, please find enclosed the cost quotation from Sturdi Construction Ltd. for the decommissioning of the proposed temporary storage structure.

Yours truly,

McELHANNEY CONSULTING SERVICES LTD.

Derek Jensen, A.Sc.T.
Project Manager

Reviewed by:
Chris Durupt, P. Eng.

DJ:njg

Cc: Courtenay River Developments Phase 1 Inc., Bob Armeneau
Altiveris, Shawn Vincent

Job quote jan 4,2016

To; Shawn Vincent

From; Sturdi construction ltd
George, 250.218.1061

To disassemble a 70x140 ft tarp structure at the existing central builders location

Quote includes all labour
2-man lifts
1- crane
Stacked ,ready for transport

Total before 5%tax $16,000.00

Thank you

THE CORPORATION OF THE CITY OF COURTENAY

STAFF REPORT

To: Council **File No.:** 1760-02

From: Chief Administrative Officer **Date:** March 7, 2016

Subject: Annual Revenue Anticipation Borrowing Bylaw

PURPOSE:

The purpose of this report is for Council to consider and endorse the adoption of the Revenue Anticipation Borrowing Bylaw No. 2843, 2016

POLICY ANALYSIS:

Section 177 of *The Community Charter* allows Council to adopt a revenue anticipation borrowing bylaw for the purpose of borrowing money to meet the City's lawful expenditures until the annual property tax revenues have been received. The maximum amount that the revenue anticipation borrowing bylaw can be set at it 75% of all the property taxes imposed for the prior year. Once collected, revenue from the property taxes must me used to repay the money borrowed.

EXECUTIVE SUMMARY:

The annual Revenue Anticipation Borrowing Bylaw provides the security required by the Bank of Nova Scotia to financially secure the City's operating line of credit in the amount of $2, 500,000, as well as the corporate visa program upper limit in the amount of $1,000,000.

CAO RECOMMENDATIONS:

That based on the March 7, 2016 staff report "Annual Revenue Anticipation Borrowing Bylaw", Council approves as Option 1, as follows:

"That, based on the March 7, 2016 staff report "Annual Revenue Anticipation Borrowing Bylaw", Council endorses the adoption of the Revenue Anticipation Borrowing Bylaw No. 2843, 2016"

Respectfully submitted,

David Allen, BES, CLGEM, SCLGM
Chief Administrative Officer

BACKGROUND:

Each year the City adopts a revenue anticipation borrowing bylaw pursuant to Section 177 of the Community Charter. This bylaw is typically presented to City Council in November or December of the previous year for which the Bylaw is to apply. This bylaw provides the security required by ScotiaBank to financially secure the City's operating line of credit in the amount of $2,500,000 as well as the corporate visa program limit in the amount of $1,000,000.

DISCUSSION:

The Revenue Anticipation Borrowing Bylaw provides local governments with a means to manager their cash flow requirements. While the City has not used its operating line of credit for many years, it does use the corporate visa program to manage purchases, pay vendors and access discounts whenever available. In order to meet the terms of the banking agreement with the ScotiaBank, the Revenue Anticipation Bylaw is required as security for both the operating line of credit and the corporate visa program.

Should Council decline passing the Bylaw, the City would be required to operate without its corporate visa program and operating line of credit.

FINANCIAL IMPLICATIONS:

There are no financial cost implications.

ADMINISTRATIVE IMPLICATIONS:

Once the Bylaw is approved, Staff will forward a copy of the original to the ScotiaBank for their records and will diarize that this matter be brought forward at the latter part of 2016 in preparation for the 2017 calendar year.

ASSET MANAGEMENT IMPLICATIONS:

If the City were at a point of requiring the use of its operating line of credit, failure to pass this bylaw would delay the ability of the City to meet its commitments and this could have an impact on purchases necessary to maintain or manage the City's capital assets.

STRATEGIC PRIORITIES REFERENCE:

Not applicable

OFFICIAL COMMUNITY PLAN REFERENCE:

Not applicable

REGIONAL GROWTH STRATEGY REFERENCE:

Not applicable

CITIZEN/PUBLIC ENGAGEMENT:

Not applicable

OPTIONS:

1. That Council endorses the Revenue Anticipation Borrowing Bylaw No 2843, 2016 (Recommended)

2. That Council does not support the adoption of the proposed Bylaw.

Prepared by:

Brian Parschauer, BA, CPA-CMA
Director of Finance

THE CORPORATION OF THE CITY OF COURTENAY

STAFF REPORT

To: Council **File No.:** 470-20

From: Chief Administrative Officer **Date:** March 7, 2016

Subject: Comox Valley Exhibition Grounds Requisition Bylaw Amendment

PURPOSE:

The purpose of this report is for Council to decide whether they wish to consent to and approve the CVRD motion to allow:

> "That the conversion/establishment bylaw for the Comox Valley Exhibition Grounds service, being the "Comox Valley Exhibition Grounds Service Conversion Bylaw No. 136, 2010", be amended to increase the maximum requisition amount by 25 per cent, as per the Local Government Act regional district establishing approval exemption regulation;
>
> And Further that the participants consent to the amendment of Bylaw No. 136 in writing."

POLICY ANALYSIS:

In order for the CVRD board to proceed with the bylaw amendment to increase the maximum requisition, it requires a council resolution supporting the bylaw amendment from affected municipalities and electoral areas.

EXECUTIVE SUMMARY:

Staff recently received a report from the CVRD requesting that the City of Courtenay provide written support of the CVRD's request to amend the maximum requisition for the Comox Valley Exhibition Grounds. The original 2016 CVRD request was for the City of Courtenay to pay $138,932, an increase of $10,429 from 2015's actual request. Supporting the current request to allow the requisition amount to increase by 25 percent has the potential to raise the requisition for the City from $138,932 to $173,950.

CAO RECOMMENDATIONS:

No recommendation. This is a level of service decision that rests with Council.

Respectfully submitted,

David Allen, BES, CLGEM, SCLGM
Chief Administrative Officer

BACKGROUND:

The CVRD provides recreation services to people living in the service area of Electoral Areas A through C, as well as to the Village of Cumberland, Town of Comox and City of Courtenay. This proposed increase to the exhibition grounds requisition is to generate funds to sustain the park's long-term operating expenses, to assist with capital replacement costs, and to make future site improvements.

DISCUSSION:

The CVRD is asking for consent from service participants to amend Bylaw No. 136 of 2010 so that the service amendments to this particular area can be adopted into the CVRD's 2016 – 2020 financial plan. The request is to allow the CVRD to increase the maximum requisition by 25 percent, changing it from $0.033 to $0.0413 per $1,000 of net taxable value of land and improvements. This maximum requisition increase will allow the CVRD to proceed with new exhibition grounds initiatives as well as provide them with the ability to meet asset management recommended changes.

This requisition request has an impact on the Village of Cumberland, City of Courtenay, the Town of Comox as well as Electoral Areas A, B and C.

FINANCIAL IMPLICATIONS:

The CVRD is asking for consent from service participants so that the revised plan can be incorporated into the March 22, 2016 CVRD 2016 – 2020 Financial Plan. The result of this request is that the CVRD's requisition request to the City could potentially change from $138,932 to approximately $173,950, an increase of approximately $35,000. The actual increase will be based on the annual CVRD financial plan process.

ADMINISTRATIVE IMPLICATIONS:

There are minimal administrative implications for staff other than processing the revision for 2016 budgetary consideration as well as providing written notification of Council's decision to the CVRD.

ASSET MANAGEMENT IMPLICATIONS:

N/A

STRATEGIC PRIORITIES REFERENCE:

This issue is one where the City would be able to provide an area of Influence since this is within the strategic area of Investing in key relationships. Whatever decision the City makes will impact the regional government's decision with respect to this increase.

OFFICIAL COMMUNITY PLAN REFERENCE:

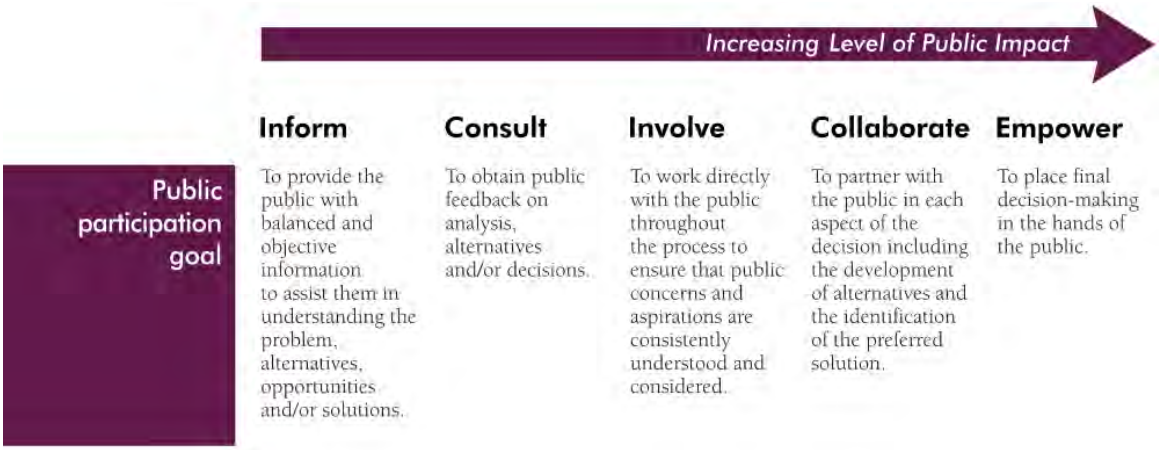
N/A

REGIONAL GROWTH STRATEGY REFERENCE:

N/A

CITIZEN/PUBLIC ENGAGEMENT:

Staff would inform the public based on the IAP2 Spectrum of Public Participation:
http://c.ymcdn.com/sites/www.iap2.org/resource/resmgr/imported/IAP2%20Spectrum_vertical.pdf



OPTIONS:

1. That Council provide a written response suggesting that the CVRD consider a maximum requisition amount below 25 percent.

#2. That Council consent to the above amendment and provide written approval of the aforementioned maximum requisition increase of 25%.

#3. That Council not approve the 25 percent increase and that they provide written notification of their decision not to support the CVRD request.

Prepared by:

Brian Parschauer, BA, CPA-CMA
Director of Finance

Attachments:

Attachment No. 1 : Correspondence from CVRD dated February 24, 2016 regarding Exhibition Grounds-CVRD maximum requisition - Bylaw 419

600 Comox Road, Courtenay, BC V9N 3P6
Tel: 250-334-6000 Fax: 250-334-4358
Toll free: 1-800-331-6007
www.comoxvalleyrd.ca

Comox Valley REGIONAL DISTRICT

File: 3900-01

February 24, 2016

Via e-mail: jward@courtenay.ca

City of Courtenay
1809 Beaufort Avenue
Courtenay, BC V9N 2J7

Attention: Mr. John Ward, Director of Legislative Services

Dear Mr. Ward:

Re: Bylaw 419 being "Comox Valley Exhibition Grounds Service Conversion Bylaw No. 136, 2010, Amendment No. 1"

The Comox Valley Regional District board of directors approved the following motion at its February 23, 2016 meeting:

> "THAT the conversion/establishment bylaw for the Comox Valley Exhibition Grounds service, being the "Comox Valley Exhibition Grounds Service Conversion Bylaw No. 136, 2010", be amended to increase the maximum requisition amount by 25 per cent, as per the Local Government Act regional district establishing approval exemption regulation;
>
> AND FURTHER THAT the participants consent to the amendment of Bylaw No. 136 in writing."

To enable the CVRD board to proceed with the bylaw amendment to increase the maximum requisition and raise the taxes, council resolutions in support of the bylaw amendment are being sought from the Village of Cumberland, the City of Courtenay and the Town of Comox. The electoral area directors are requested to consent in writing to the bylaw amendment on behalf of the electors. The CVRD is interested in receiving consent from the service participants to enable the service amendments to be incorporated into the 2016-2020 financial plan, which is proposed for three readings at the CVRD board meeting to be held on March 22, 2016. A follow-up report that proposes an increase to the 2016 requisition is expected for consideration at the CVRD committee of the whole meeting on March 1, 2016.

Please find attached the following material as way of background information:

- Staff report dated February 12, 2016, which was presented at the February 16, 2016 committee of the whole committee.
- Bylaw 419 being "Comox Valley Exhibition Grounds Service Conversion Bylaw No. 136, 2010, Amendment No. 1" at third reading.

- Bylaw 136 being the "Comox Valley Exhibition Grounds Service Conversion Bylaw No. 136, 2010"
- Frequently asked questions – exhibition grounds service requisition lift

In light of the above, the CVRD requests that council consider the following:

> "THAT the City of Courtenay consent to the adoption of Comox Valley Regional District Bylaw No. 419 being "Comox Valley Exhibition Grounds Service Conversion Bylaw No. 136, 2010, Amendment No. 1" that would increase the maximum requisition for the Comox Valley exhibition grounds service by 25 percent under section 346 of the *Local Government Act* (RSBC, 2015, c.1).1"

If you have any questions, please contact me by telephone at 250-334-6007 or via email at jwarren@comoxvalleyrd.ca.

We look forward to hearing from you at your earliest convenience.

Sincerely,

J. Warren

James Warren
General Manager of Corporate Services

Attachments: Staff report dated February 12, 2016
Bylaw 419
Bylaw 136
Frequently asked questions.

Comox Valley REGIONAL DISTRICT

Staff report

DATE: February 12, 2016

FILE: 1700-02/2016 (660)

TO: Chair and directors
Committee of the Whole

FROM: Debra Oakman, CPA, CMA
Chief Administrative Officer

RE: 2016 – 2020 financial plan – Comox Valley exhibition grounds – function 660

Purpose
To provide the committee of the whole with the proposed 2016-2020 financial plan and work plan highlights for the Comox Valley exhibition grounds service function 660.

Policy analysis
Bylaw No. 136 grants the powers of acquiring, constructing, equipping, operating and maintaining exhibition and recreation services for the Comox Valley in Electoral Areas 'B' (Lazo North) and 'C' (Puntledge – Black Creek), the City of Courtenay, the Town of Comox and the Village of Cumberland by way of supplementary letters patent issued on the 19th day of February 1971 and specifically including Electoral Area 'A' (Baynes Sound – Denman / Hornby Islands), by way of supplementary letters patent issued on the 18th day of January 1973.

Strategic plan connections
The upper announcer's stand is identified in the CVRD 2015-2018 Strategic Priorities. The project is a carryover from the previous year. The request for proposals (RFP) was advertised and the successful proponent has been chosen and is working on the project. It is anticipated that the announcer's stand will be completed by April 2016.

Citizen/public relations
The 2016 proposed tax rate is $0.0280 per $1,000 of assessed value, an increase of $0.0016 from 2015. With the proposed tax rate, the average $350,000 house would pay approximately $9.80 into this service.

This facility is enjoyed by many Comox Valley residents. From the large rentals such as Vancouver Island Musicfest and Comox Valley Exhibition, to the consistent long term renters, Comox Valley Farmers Market and Comox Valley Therapeutic Riding Society, to the equestrian and canine user groups, dog walkers and free styling detectorists looking for coin spills, the grounds have thousands of visitors each year. In 2015, a local service club held a Rib Fest and while the weather did not cooperate, the club deemed it a success and are planning on making this an annual event.

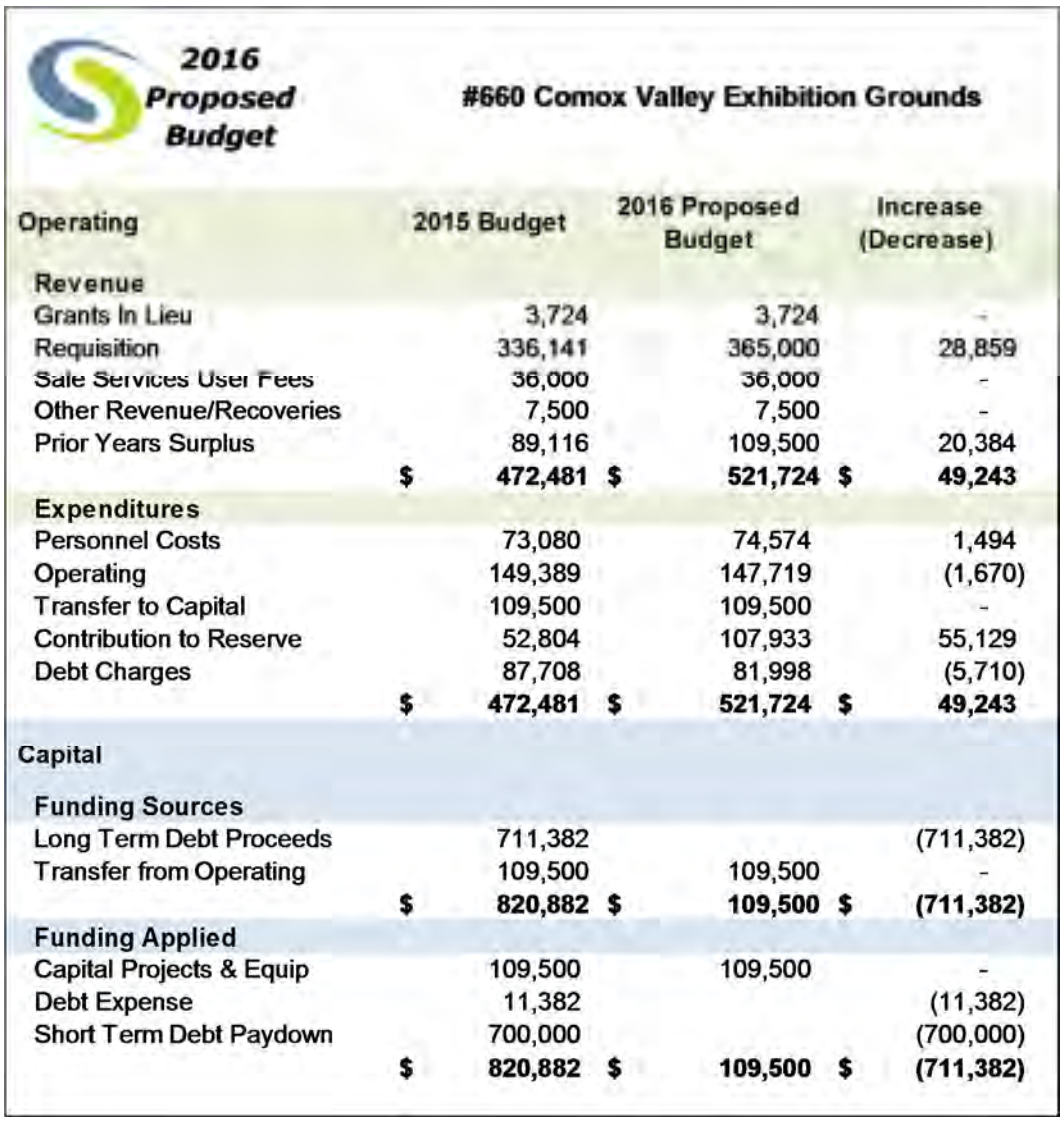
As of 2013, the curling centre facility was moved from this service to the recreation complexes service, function 645, leaving the exhibition grounds and supporting facilities in function 660.

Financial plan overview

Each year the Comox Valley Regional District (CVRD) prepares an updated five-year financial plan that represents the operation of each service from one budget year to the next.

Figure 1 below summarizes the 2016 proposed budget as compared to the 2015 adopted budget. Access the 2016-2020 five year financial plan through the online budget binder at Comox Valley exhibition grounds, function 660. Significant variances from 2015 adopted budget will be discussed in the financial plan highlights section below.

Figure 1



2016 Proposed Budget

#660 Comox Valley Exhibition Grounds

Operating	2015 Budget	2016 Proposed Budget	Increase (Decrease)
Revenue			
Grants In Lieu	3,724	3,724	-
Requisition	336,141	365,000	28,859
Sale Services User Fees	36,000	36,000	-
Other Revenue/Recoveries	7,500	7,500	-
Prior Years Surplus	89,116	109,500	20,384
	$ 472,481	**$ 521,724**	**$ 49,243**
Expenditures			
Personnel Costs	73,080	74,574	1,494
Operating	149,389	147,719	(1,670)
Transfer to Capital	109,500	109,500	-
Contribution to Reserve	52,804	107,933	55,129
Debt Charges	87,708	81,998	(5,710)
	$ 472,481	**$ 521,724**	**$ 49,243**
Capital			
Funding Sources			
Long Term Debt Proceeds	711,382		(711,382)
Transfer from Operating	109,500	109,500	-
	$ 820,882	**$ 109,500**	**$ (711,382)**
Funding Applied			
Capital Projects & Equip	109,500	109,500	-
Debt Expense	11,382		(11,382)
Short Term Debt Paydown	700,000		(700,000)
	$ 820,882	**$ 109,500**	**$ (711,382)**

Financial plan highlights

Highlights of the 2016-2020 proposed financial plan for Comox Valley exhibition grounds function 660 include:

Revenue Sources

The majority of the revenue for the exhibition grounds service is realized through taxation. User fees account for approximately 12 per cent of the requisition. The proposed $365,000 requisition for 2016 represents an increase of $28,859 over 2015 and will assist in funding the increased contributions to the reserve fund. The 2016 maximum requisition for this service is $368,004. Although the requisition

and financial plan for this service is currently stable over the five years, new projects and initiatives may be restricted by the current maximum requisition. In order to proceed with new initiatives or to meet asset management works, it is recommended that the maximum requisition be increased by 25 percent effective 2017.

Personnel
There are no plans for personnel changes in the foreseeable future.

Operations
This is a relatively stable service with the operational costs remaining fairly consistent year to year, which are illustrated in table 1.

In 2015, a request for quotations was issued for an on-site operations contractor. A one year contract in the amount of $36,600 was awarded to CWC Waste Water Services, operated by Gary Jerzak, with the option to renew for an additional one year term.

Debt
In 2015 the short term debt for the exhibition grounds revitalization project was repaid by entering into long term debt for a period of eight years, until October 2023. The interest rate on this debt issue for the entire term is 2.4 per cent.

The 2016 principal charges will be $67,364 and interest charges will be $14,634, for a total of $81,998.

Capital
Two capital projects that are being carried forward from 2015 for completion in 2016 are the upper announcer's stand and the therapeutic riding barn roof. Last year's budget had $50,000 allocated to the refurbishing the barn roof. During the quoting process it was discovered that the roof was rotting and a full replacement is required rather than just re-coating and re-screwing. It is estimated that the cost of the project will be approximately $110,000. A recommendation to increase the funding to replace the therapeutic riding barn roof is included in this staff report.

The asset management plan for the CVRD exhibition grounds will be reviewed in 2016. A report will come forward to this committee upon the completion of the assessment. The report will provide direction on the future of the site and give recommendations of the financial support that this function will need. A lift in the maximum requisition may need to be considered effective 2016 in order to address recommendations and priorities coming out of the report.

Reserves
There is a proposed contribution to the future expenditure reserve in 2016 of $107,933, an increase over the 2015 reserve contribution of $55,129. Estimated reserve balances at December 31, 2015 are shown in table 1 below.

Table 1 Projected Reserve Funds at December 31, 2015

	Projected to Dec 31, 2015
Future Expenditure reserve	**$141,523**
Capital Works Reserve	**$258,826**

Recommendations from the chief administrative officer:

1. THAT the 2016-2020 proposed financial plan for the Comox Valley exhibition grounds, function 660, be approved.

2. THAT the 2016-2020 recommended financial plan for the Comox Valley exhibition grounds, function 660, include an additional $60,000 in the 2016 capital plan, for a total of $110,000, to replace the therapeutic riding barn roof to be funded from operating by reducing the future expenditure reserve contribution.

3. THAT the conversion/establishment bylaw for the Comox Valley Exhibition Grounds service, being the "Comox Valley Exhibition Grounds Service Conversion Bylaw No. 136, 2010", be amended to increase the maximum requisition amount by 25 per cent, as per the Local Government Act regional district establishing approval exemption regulation;

   AND FURTHER THAT the participants consent to the amendment of Bylaw No. 136 in writing.

Respectfully:

D. Oakman

Debra Oakman, CPA, CMA
Chief Administrative Officer

Prepared by:

D. Walters

Darcy Walters
Senior Manager of Recreation Facilities

Concurrence:

T. Ian Smith

T. Ian Smith, MCE
General Manager of Community Services

COMOX VALLEY REGIONAL DISTRICT

BYLAW NO. 419

A bylaw to amend the service establishing bylaw for the Comox Valley exhibition grounds service to increase the maximum requisition by 25 percent

WHEREAS the Comox Valley exhibition grounds service was created by the adoption of Bylaw No. 136 being "Comox Valley Exhibition Grounds Service Conversion Bylaw No. 136, 2010" on the 23rd day of November 2010;

AND WHEREAS the board wishes to amend the bylaw to increase the maximum requisition by 25 percent;

AND WHEREAS participating area approval has been obtained by writing from the directors of Electoral Areas 'A' (Baynes Sound – Denman / Hornby Islands), 'B' (Lazo North) and 'C' (Puntledge – Black Creek) under section 347 of the *Local Government Act* (RSBC, 2015, c.1);

AND WHEREAS pursuant to section 346 of the *Local Government Act* (RSBC, 2015, c.1) the councils of the Town of Comox, the Corporation of the City of Courtenay and the Village of Cumberland have consented to the adoption of this bylaw;

AND WHEREAS this amendment is exempt from inspector of municipalities' approval under regulation where the amendment increases the maximum amount that may be requisitioned under the bylaw by an amount less than or equal to 25% of the baseline value;

NOW THEREFORE the board of the Comox Valley Regional District in open meeting assembled enacts as follows:

Amendment

1. Bylaw No. 136 being "Comox Valley Exhibition Grounds Service Conversion Bylaw No. 136, 2010" is hereby amended by replacing section 6 (maximum requisition), which reads:

   "In accordance with section 800.1(1)(e) of the Local Government Act, the maximum amount that may be requisitioned annually for the cost of the service is the amount that may be raised by a property value tax rate of three and three/tenths cents per one thousand dollars ($0.033 per $1,000) applied to the net taxable value of land and improvements for regional hospital district purposes."

   with the following section 6 (maximum requisition):

   "In accordance with section 339 of the *Local Government Act* (RSBC, 2015, c.1), the maximum amount that may be requisitioned annually for the cost of the service is the amount that may be raised by a property value tax rate of $0.0413 per $1,000 applied to the net taxable value of land and improvements for regional hospital district purposes."

Citation
This Bylaw No. 419 may be cited as "Comox Valley Exhibition Grounds Service Conversion Bylaw No. 136, 2010, Amendment No. 1".

Read a first and second time this	**23rd**	**day of**	**February**	**2016.**
Read a third time this	**23rd**	**day of**	**February**	**2016.**
Adopted this		**day of**		**2016.**

_____ _____
Chair Corporate Legislative Officer

I hereby certify the foregoing to be a true and correct copy of Bylaw No. 419 being "Comox Valley Exhibition Grounds Service Conversion Bylaw No. 136, 2010, Amendment No. 1" as adopted by the board of the Comox Valley Regional District on the day of 2016.

_____
Corporate Legislative Officer

COMOX VALLEY REGIONAL DISTRICT

BYLAW NO. 136

A bylaw to convert the Comox Valley exhibition grounds function in Electoral Areas 'A', 'B' and 'C' and the City of Courtenay, Town of Comox and Village of Cumberland as authorized by supplementary letters patent to a Comox Valley exhibition grounds service

WHEREAS the Comox Valley Regional District board may, by bylaw, under section 774.2(3) of the *Local Government Act* convert a service provided by the regional district in accordance with section 774.2(5) of the *Local Government Act* and by the same bylaw amend the power to the extent that it could if the power were in fact exercised under the authority of an establishing bylaw under the *Local Government Act* provided that the bylaw meets the requirements of section 800.1 and is adopted in accordance with section 802 of the *Local Government Act*;

AND WHEREAS the board was granted the powers of acquiring, constructing, equipping, operating and maintaining exhibition and recreation services for the Comox Valley in Electoral Areas 'B' (Lazo North) and 'C' (Puntledge – Black Creek), the City of Courtenay, the Town of Comox and the Village of Cumberland by way of supplementary letters patent issued on the 19th day of February 1971 and specifically including Electoral Area 'A' (Baynes Sound – Denman / Hornby Islands), by way of supplementary letters patent issued on the 18th day of January 1973;

AND WHEREAS the board wishes to convert the exhibition grounds function to the Comox Valley exhibition grounds service;

AND WHEREAS participating area approval has been obtained by writing from the directors of Electoral Areas 'A' (Baynes Sound – Denman / Hornby Islands), 'B' (Lazo North) and 'C' (Puntledge – Black Creek) under section 801.5 of the *Local Government Act*;

AND WHEREAS pursuant to section 801.4 of the *Local Government Act* the councils of the Town of Comox, the Corporation of the City of Courtenay and the Village of Cumberland have consented to the adoption of this bylaw;

AND WHEREAS the approval of the inspector of municipalities has been obtained under section 801(1)(a) of the *Local Government Act*;

NOW THEREFORE the board of the Comox Valley Regional District in open meeting assembled enacts as follows:

Citation

1. This Bylaw No. 136 may be cited for all purposes as "Comox Valley Exhibition Grounds Service Conversion Bylaw No. 136, 2010".

Service

2. The service established by this bylaw is the Comox Valley exhibition grounds service to provide for the powers of acquiring, constructing, equipping, operating and maintaining exhibition and recreation services for the Comox Valley.

Boundaries

3. The boundaries of the service are coterminous with the boundaries of Electoral Areas 'A' (Baynes Sound / Denman – Hornby Islands), 'B' (Lazo North) and 'C' (Puntledge – Black Creek), the Corporation of the City of Courtenay, the Town of Comox and the Village of Cumberland.

Participating Area

4. Electoral Areas 'A' (Baynes Sound / Denman – Hornby Islands), 'B' (Lazo North) and 'C' (Puntledge – Black Creek), the Corporation of the City of Courtenay, the Town of Comox and the Village of Cumberland are the participating areas for the service.

Cost Recovery

5. As provided in section 803 of the *Local Government Act*, the annual cost of providing the service shall be recovered by one or more of the following:

   (a) property value taxes;

   (b) fees and charges;

   (c) revenues raised by other means authorized by the *Local Government Act* or another act; and

   (d) revenues received by way of agreement, enterprises, gift, grant or otherwise.

Maximum requisition

6. In accordance with section 800.1(1)(e) of the *Local Government Act*, the maximum amount that may be requisitioned annually for the cost of the service is the amount that may be raised by a property value tax rate of three and three/tenths cents per one thousand dollars ($0.033 per $1,000) applied to the net taxable value of land and improvements for regional hospital district purposes.

Apportionment

7. The annual costs of the service shall be apportioned to each participant on the basis of the converted value of land and improvements for hospital purposes in those areas.

Service review

8. All aspects of the Comox Valley exhibition grounds service shall be reviewed every five years, with the first review occurring in 2015.

Read a first and second time this	**29th**	**day of**	**June**	**2010.**
Read a third time this	**29th**	**day of**	**June**	**2010.**
Approved by the Inspector of Municipalities this	**18th**	**day of**	**November**	**2010.**
Adopted this	**23rd**	**day of**	**November**	**2010.**

G. T. Phelps ***J. Warren***

Chair Corporate Legislative Officer

I hereby certify the foregoing to be a true and correct copy of Bylaw No. 136 being "Comox Valley Exhibition Grounds Service Conversion Bylaw No. 136, 2010" as adopted by the board of the Comox Valley Regional District on the 23rd day of November 2010.

J. Warren
Corporate Legislative Officer

Exhibition Grounds Service Requisition Lift

Why the need for a requisition increase?

Although the requisition and financial plan for this service is currently stable over the five years, the service is reaching the maximum contribution. In order to proceed with master plan initiatives and to meet asset management items, it is recommended that the maximum requisition be increased by 25%, effective 2016.

A 25% requisition increase will help to address the:

- long term operating expenses,
- capital replacement costs, and
- future improvements of the site.

How is funding attained for the exhibition grounds?

The majority of funding for the exhibition grounds service is realized through taxation. User fees account for approximately 12 per cent of the requisition. The proposed $365,000 requisition for 2016 represents an increase of $28,859 over 2015 and will assist in funding the increased contributions to the reserve fund. The 2016 maximum requisition for this service is $368,004.

Why the need for a lift in the maximum requisition?

The master plan in place identifies a strategy for developing the site, and the asset management plan, that is scheduled to be reviewed and updated in 2016, determines the lifecycle of equipment and facilities. A lift in the maximum requisition may need to be considered effective in 2016 in order to address recommendations and priorities coming out of an asset management plan report. As this is an aging facility with aging equipment, progress has been made to rejuvenate the grounds over the last few years.

What upgrades have been done at the exhibition grounds?

Upgrades include new fencing, footings, the replacement of a tractor, as well as installation of electrical and water infrastructure.

Are there any capital projects currently in the works?

Two capital projects that are being carried forward from 2015 for completion in 2016 are the upper announcer's stand and the therapeutic riding barn roof. Last year's budget had $50,000 allocated to refurbishing the barn roof. During the quoting process it was discovered that the roof was rotting and a full replacement is required rather than just re-coating and re-screwing. It is estimated that the cost of the roof replacement project will be approximately $110,000.

Is the curling centre part of this service?

The curling centre is not part of this service although it is on the grounds. As of 2013, the curling centre facility is managed and funded under the recreation complexes service, function 645. The curling centre facility recently went through a major renovation including new walls and siding which adds to the overall look of the site.

What does the increase look like?

2016 Current Maximum Requisition	Maximum Tax Rate per $1,000 Assessed Value	Levy for home assessed at $350,000 at Maximum Requisition
$368,004	$0.033	$11.55

2016 Maximum Requisition with Proposed 25% Lift	Maximum Tax Rate per $1,000 Assessed Value	Levy for home assessed at $350,000 at Maximum Requisition
$460,005	$0.0413	$14.45

How would this benefit residents of the Comox Valley?

The exhibition grounds is viewed as a park and is considered a valued community asset. In order to proceed with new initiatives and to meet asset management works, the requisition increase is required to sustain this recreation facility which is enjoyed by many Comox Valley residents, from the large rentals such as Vancouver Island Musicfest and the Comox Valley Exhibition, to the consistent long-term renters: Comox Valley Farmers Market and Comox Valley Therapeutic Riding Society, to the equestrian and canine user groups, dog walkers and free styling detectorists looking for coin spills, the grounds have thousands of visitors each year. In 2015, a local service club held a Rib Fest and while the weather did not cooperate, the club deemed it a success and are planning on making this an annual event. There is much opportunity for this facility to accommodate more user groups, events and programs in the future.

Minutes of a City of Courtenay Heritage Advisory Commission meeting held January27 2016 at 10:00 a.m. at the City of Courtenay

Present:	**L. Burns**	**J. Hagen**	**C. Piercy**	**L. Grant**	**A.Ireson**
		J. Fortin			
Absent:	**D. Griffiths**	**R. Dingwall**	**R. Smith**		

FOR INFO

ADDITION TO AGENDA Information on parks.

MINUTES Moved by L. Grant and seconded by A. Ireson that the November 25 2015 minutes be adopted.

Carried

OLD BUSINESS

40 HOUSES — Have Council approval, now in hands of staff, still pending.

REPORT OF CENTENNIAL COMMITTEE — L. Burns reported on its last meeting held in January, and on the December 1 appreciation night. A final fundraiser for the Centennial Legacy is being planned. The centennial heritage murals round town are on permanent display. The Commission's centennial Courtenay History panels are now stored in City Hall.

1085 5th ST PRESENTATION — Tabled.

WORKSHOPS — Moved by J. Hagen, seconded by A. Ireson: That workshops start again in February to work on Commission projects.

Carried

RIVERFRONT DEVELOPMENT — The motions relating to this area are in the November 2015 minutes, which have yet to be received by Council.

TRAIN STATION — C. Piercy mentioned that Rotary planned a work session inside the station building for Saturday January 30 2015. Discussion followed re the statement prepared by D. Griffiths in May 2015 that specified Heritage authorization was required before any work was done in phase 2, the interior of the building. It was decided that Commission members who are available to do so will attend at the station with Rotary.

DOWNTOWN REVITALISATION — Nancy Gothard is the Staff liaison on this project, and information on further meetings will be circulated by email.

FIFTH STREET — Replies to the questions sent to City staff after last meeting were reported by Lawrence. The "Complete Street" design is to be completed in 2016, with construction to follow in 2017/18.
The freight depot at 890 5th Street is not under City jurisdiction, but belongs to the Island Corridor Foundation.

Moved by C. Piercy, seconded by L. Grant: That a letter to the ICF be drafted for the Commission's approval, re the condition of the freight depot, which stands on a street on Courtenay's Heritage Register.
Carried

NEW BUSINESS

WAR MEMORIALS — Heritage bc is mapping BC's war memorials – information to be sent to them.

CUMBERLAND FAIR — Cumberland Heritage Fair will be held on February 20 from 10 am to 4 pm. The theme is "Distinctive Destinations". We will use the maps on the new downtown walking guide brochures for display, and the brochures as giveaways.

Volunteers: 10 – 12, Lawrence and Cliff; 12 – 2, Judy; 2 – 4, Julie

PARK NAMES — Judy introduced the topic of the origins of City park names. A workshop is planned to research the names, and have the information entered on the City's website. Judy will organize workshops, to be held on Wednesdays at 10 am in the Museum.

CORRESPONDENCE — Lawrence noted Heritage BC emails, and the Heritage BC Conference to be held on Granville Island on May 5 – 7. Lawrence and Andrew expressed interest in going.

Next Meeting: February 24 2016 at 10 a.m.
The meeting adjourned at 11:55 am.

Lawrence F Burns
Chair

THE CORPORATION OF THE CITY OF COURTENAY

MEMORANDUM

To: Council **File No.:** 3720-20

From: Chief Administrative Officer **Date:** February 22, 2016

Subject: Memo on Requirement to Consider Applications

ISSUE:

This memo is to clarify the City's obligation to accept development and boundary extension applications.

BACKGROUND:

At the February 1st, 2016 Regular Council Meeting, Council passed the following resolution:

Moved by Wells and seconded by Frisch that Council not consider any further requests for boundary extensions until a staff report is provided regarding options for application processes and application fees.

There was discussion around the ability to refuse an application for boundary extension at the counter if Council passed a resolution placing a moratorium on new applications. At the meeting, staff advised they would expect a property owner would still be entitled to have an application brought forward even if Council took a position to not consider boundary extension requests. Staff advised they would clarify the issue and provide an update.

KEY CONSIDERATIONS:

Following the Council meeting staff conducted a review of the relevant legislation and requested clarification from the City's solicitor. The following is a summary of the findings.

Section 460 of the *Local Government Act* (LGA) provides that local governments must consider applications to amend zoning and OCP's and for permits under Part 14, and allows local governments to establish a time period within which an application cannot be resubmitted. Staff referenced this requirement at the meeting.

However, when it comes to requests for boundary extension these applications are not covered under s. 460 of the LGA. Rather, boundary extensions are addressed in s.12 of the LGA which does not have language requiring local government to consider applications. This section only requires that either the minister must notify the council or have received a request from the council for the extension. Additionally, council must give public notice of the proposed extension and must receive electoral approval.

Accordingly, the procedures under s. 12, and the decision to accept an application (or not) are matters of policy. Council is entitled to decide not to consider requests for boundary extensions provided the decision is not made in bad faith and is made on the basis of social, political and economic factors. Appropriate rationale should form part of a policy to refuse applications. As per Council's February 1st resolution, staff will bring forward a report outlining fees and policy recommendations later this year.

Respectfully submitted,

David Allen, BES, CLGEM, SCLGM
Chief Administrative Officer

THE CORPORATION OF THE CITY OF COURTENAY

MEMORANDUM

To: Council **File No.:** 6140-103

From: Chief Administrative Officer **Date:** February 24, 2016

Subject: Lewis Park Trees Removal

PURPOSE:

To notify Council that three (3) large spruce trees located adjacent to the ballfields in Lewis Park are to be removed to ensure that the potential risk to public safety and the City's infrastructure is addressed.

BACKGROUND:

The three (3) large spruce trees have been monitored for the past few years due to their declining condition. As a result of recent increasing signs of distress, an arborist was contracted to assess the trees and provide mitigating measures.

All three trees are infested with Spruce Bark Beetle and have significant butt rot. Although plant health care measures were performed to help retain these trees, the past year of drought, insect infestation and the spreading of the butt rot, most likely due to flooding have caused the decline of the trees in health and structural stability.

The Arborists report identifies moderate to high risk of failure.

The trees are being removed as per the Arborists recommendation. This is due to their proximity to the ball fields, walkways and parking lots where patrons congregate.

FINANCIAL IMPLICATIONS:

The cost of the tree removal, including stump grinding and field restoration is $3,800.00. This amount will be funded within the 2016 operating budget.

PUBLIC ENGAGMENT

Public notification has been developed and signs will be erected to notify park patrons. A news release has been drafted and will be issued prior to commencement of the work.

Prepared by,

Trevor Kushner, BA, DLGM, CLGA
Director of Public Works Services

THE CORPORATION OF THE CITY OF COURTENAY

BRIEFING NOTE

To: Council **File No.:** 5340-20

From: Chief Administrative Officer **Date:** March 7, 2016

Subject: Comox Valley Sewer Service – Cost Apportionment Update

ISSUE:

On February 29, 2016, the City received notification from CVRD staff that they were prepared to adjust the City's annual sewer service requisition as a result of a sewer flow calibration problem with CVRD equipment that reported sewer flows that were too low for the City of Courtenay and were conversely too high for the Town of Comox. This situation continued for several months in 2015 before corrective action was undertaken.

Once the matter was identified, the City of Courtenay, along with the Town of Comox and CVRD staff discussed how to properly adjust sewer flows for both communities knowing that this would have a direct financial impact on all entities. The attached report identifies the most recent discussion between the parties and notes that over the course of the next five years, CVRD staff is recommending that the CVRD sewer requisition be adjusted by 6% each year, and the CVRD's sewer surplus used to assist in reducing the impact to the requisition assigned to the City of Courtenay.

BACKGROUND:

The City of Courtenay and the Town of Comox proportionately share the costs associated with the regional infrastructure based on relative sewer flows from each entity to the regional wastewater treatment plant.

The regional sewer system was constructed in the early 1980's and was designed with a 25 year life cycle. A 10 year capital plan was subsequently developed and approved by members of the Sewer commission in 2012 in anticipation of the infrastructure nearing the end of its life cycle. As a means to provide necessary capital revenues for the CVRD's 10 year capital plan, increases of 12% were originally identified from surrounding benefitting municipalities during the 2014 to 2018 financial planning process. In 2015 – 2019, the CVRD then adjusted those increases slightly lower by changing the percentage from 12% down to 11% in 2015, 10% in 2016, 9% in 2017, 8% in 2018 and in 2019 no increase. CVRD Requisitions beyond 2019 were anticipated to begin levelling off so that high increases could be avoided.

KEY CONSIDERATIONS:

The Comox Valley Regional District annual sewer requisition is based on prior year sewer flows and a dollar rate applied to that flow. The 2016 requisition was set at $3,368,168, which represented a 10 percent increase from last year's requisition.

During the course of 2015, it was found that the CVRD had equipment calibration problems that questioned the reliability of the sewer flow apportionments between the City of Courtenay and the Town of Comox. Prior to 2015, the length of time that the calibration was incorrect is unknown, however for

2015, it was determined that flows were inaccurate from January 1 to May 11th. Various methodologies were applied and it was determined that the flows were approximately 204,000 cubic meters too low.

As there was no redundancy equipment available to verify sewer flow distribution numbers, Staff in both communities as well as CVRD staff engaged in discussions to resolve the problem to the satisfaction of all parties concerned. There were various scenarios presented on how to address the problem and the impact to both Courtenay and Comox.

The attached CVRD document recognizes that correcting the sewer flows and adjusting the 2016 requisition all in one year would present a significant hardship to residents of Courtenay. The City would have been faced with a requisition of $3,616,183, which compared to 2015 represented an overall requisition increase of $554,200 ($3,616,183 - $3,061,970).

In order to reduce the impact, the report suggests using the CVRD's 2015 sewer surplus to offset the extra cost (see Tables 7 and 8 on pages 4 and 5 of the CVRD report). They are suggesting that the recovery of this amount be staggered over the next five years and that the payment by the City increase to $3,483,685, which represents an increment of $116,517 plus the $306,198 that was originally requested.

	2016	2017	2018	2019	2020	5 year draw
Revised	3,484,685	3,693,766	3,915,392	4,150,315	4,399,334	19,643,492
original	3,368,168	3,671,303	3,965,007	3,965,007	3,965,007	18,934,492
	116,517	22,463	-49,615	185,308	434,327	**709,000**

In total, the requisition for Courtenay increases from 10% to 13.7% in 2016. If the full value had been required, the City would have seen the requisition increase by 18%. The 2017 – 2020 budgets will see 6% increases.

The City's sewer budget is being amended to accommodate these recommended requisition amounts, and will be finalized once the CV Sewage Commission has determined the final 2016 CV sewage service budget

This report is prepared for Council's information, and in support of the City representatives on the CV Sewage Commission.

Prepared By

Brian Parschauer, BA, CPA-CMA
Director of Finance

Attachment : Staff Report from CVRD CAO with respect to the Comox Valley Sewage Service – cost apportionment update.

Comox Valley REGIONAL DISTRICT

Staff report

DATE:

FILE: 5340-20

TO: Chair and Directors
Comox Valley Sewage Commission

FROM: Debra Oakman, CPA, CMA
Chief Administrative Officer

RE: Comox Valley sewage service – cost apportionment updated

Purpose
To discuss the apportionment of sewer flows based on meter adjustments completed in 2015 and to recommend a strategy to mitigate the financial impact of sewer flow changes.

Policy analysis
The Comox Valley Regional District (CVRD) operates a sewerage service primarily for the City of Courtenay and Town of Comox, established by Bylaw No. 2541, being the "Comox Valley Sewerage Service Establishment Bylaw No. 2541, 2003". The apportionment section of Bylaw No. 2541 states that the costs of the service shall be apportioned between the participating areas on the basis of the metered volume of sewage flows from each municipality relative to the total volume of combined sewage flows at the Comox Valley water pollution control centre (CVWPCC) during the previous calendar year.

Executive summary
Apportionment of costs:
The majority of the annual revenue required for the Comox Valley sewerage service (function 335-338) is provided by the City of Courtenay and the Town of Comox as municipal tax requisition. Pursuant to Bylaw No. 2541, the costs of the service shall be apportioned between the participating areas on the basis of the metered volume of sewage flows from each municipality relative to the total volume of combined sewage flows at the CVWPCC during the previous calendar year.

An annual calibration and inspection of the CVRDs flow meters, located at four sites throughout the Town of Comox and the City of Courtenay, is required by Environment Canada under the *Wastewater Systems Effluent Regulations* (WSER). Caltest Services had been conducting the work for many years however in 2015 SFE Global (SFE) began performing the required work.

Upon SFE's initial inspection on March 19 2015, of the Courtenay pump station, SFE noted that based on standards for Parshall Flume flow meters, the ultrasonic level sensor was positioned 27 centimeters too close to the flume throat and measuring in the drawdown of the flume. On May 11 2015, SFE crews were contracted to move the ultrasonic sensor to the standard location for Parshall Flume flow meters, and then proceeded to calibrate the meter with a new sensor to invert distance. Since SFE's work on May 11th, the meter and its calibration have been independently checked by a third party and then checked again by SFE using a separate verification method. The meter, in its current location and calibration, meets the standards for a Parshall Flume flow meter.

As a result of the above flow meter repositioning and recalibration the measured flow for the City of Courtenay has increased compared to before the meter repositioning. The magnitude of this increase is captured by the CVRDs all-flows report from May 12, 2015 (the day after the adjustment and recalibration was completed) through to December 31, 2015. If the 2015 all-flows report is used,

based on metered volume reads, to calculate the 2016 apportionment of costs, the following table provides the calculated apportionment.

Table No. 1: Apportionment based on 2015 all-flows report

Source	Contributory Flow	Total Flow	Flow as % of Total
Courtenay	3,094,794	4,589,140	67.44
Comox	1,494,346	4,589,140	32.56

It was requested by staff at the Town of Comox that an adjustment be completed from January 1, 2015 through to May 12, 2015 in order to adjust the metered flow for that period of time. In order to determine the adjustment amount, the CVRD has calculated the average apportionment of flow over years 2010 to 2014 for the months of May through December (attached as Appendix A). The average apportionment is 34.37 per cent for Comox and 65.63 per cent for Courtenay. Based on the months of May through December 2015, the updated (since meter adjustment) average apportionment of flow is 29.96 per cent for Comox and 70.04 per cent for Courtenay. Using the above values, an adjustment amount can be calculated.

Table No. 2: Adjustment amount calculation

Period	Apportionment %	
	Comox	Courtenay
2010-2014 May to Nov (5yr average)	34.37%	65.63%
2015 May to Nov	29.96%	70.04%
	4.41%	-4.41%

It can be seen above in table no. 2 that the adjustment amount is 4.41 per cent. In other words, the portion of flow from Courtenay compared to the total flow is now measuring 4.41 per cent higher (on average) than prior to the May 11 meter repositioning and recalibration. Applying the 4.41 per cent adjustment amount to Courtenay's metered flow from January 1 to May 11, 2015 and then utilizing metered flow measurements from May 12 through December 31, 2015 provides the following table no. 3.

Table No. 3: Sewer all-flows – adjusted from Jan 1st to May 11th, 2015

Month (2015)	Courtenay	Comox	Total	Courtenay	Comox
	P/S	P/S		%	%
Jan (adjusted)	286,631	149,376	436,007	65.74	34.26
Feb (adjusted)	273,430	147,685	421,115	64.93	35.07
Mar (adjusted)	272,252	133,549	405,801	67.09	32.91
Apr (adjusted)	247,870	121,424	369,294	67.12	32.88
May 1-11 (adjusted)	87,452	39,788	127,240	68.73	31.27
May 12-31	159,980	69,384	229,364	69.75	30.25
June	251,358	103,427	354,785	70.85	29.15
July	261,954	108,911	370,865	70.63	29.37
August	270,220	104,136	374,356	72.18	27.82
September	260,061	97,202	357,263	72.79	27.21
October	262,599	100,018	362,617	72.42	27.58
November	271,941	113,346	385,287	70.58	29.42
December	393,100	206,100	599,200	65.60	34.40
Total	**3,298,848**	**1,494,346**	**4,793,194**	**68.82%**	**31.18%**

It can be seen above in table no. 3 that the adjusted split in flow for 2015 is 31.18 per cent for Comox and 68.82 per cent for Courtenay, which varies from that calculated above in table no. 1 by 1.38 per cent.

Bylaw No. 2541 states that apportionment will be on the basis of the metered volume of sewage. In order to consider the 2015 adjustments to the metered amounts it is recommended that the commission pass a resolution to apply the adjusted meter flow as shown in table no. 3 above.

In addition, staff will be preparing for consideration a policy or amendment to the bylaw to provide clear direction to future staff with regard to calculation of adjustments. This would be similar to the Comox Valley water supply service fees and charges bylaw that includes language referencing adjustments/corrections to meter reads.

Budget implications:
The following table no. 4 shows the municipal requisition included in the 2016-2020 proposed financial plan for the Comox Valley sewerage service based on apportionment per 2014 flows.

Table No. 4: Municipal requisition – proposed 2016-2020 financial plan – includes 10% increase in 2016

Participant	2014 Flows	2015	2016	2017	2018	2019	2020
Comox	35.90%	1,714,895	1,886,384	2,056,158	2,220,651	2,220,651	2,220,651
Courtenay	64.10%	3,061,970	3,368,168	3,671,303	3,965,007	3,965,007	3,965,007
	Totals	**$4,776,865**	**5,254,552**	**5,727,461**	**6,185,658**	**6,185,658**	**6,185,658**
	change from previous year		**$477,687**	**472,909**	**458,197**	**-**	**-**
	% change for previous year		**10%**	**9%**	**8%**		

All amounts in $ unless noted

It can be seen above that the proposed financial plan includes a 10 per cent increase in the required requisition in 2016 to plan for the funding of long term capital requirements. This is followed by an additional nine per cent increase in 2017 and eight per cent in 2018. In 2016 the increase equates to an additional $171,489 for Comox and $306,198 for Courtenay. These increases have been included in the financial plan for several years and both Comox and Courtenay have been preparing for these increases.

As per the CVRDs sewer service establishment bylaw the apportionment of sewer services costs between Comox and Courtenay is based on the previous year's portion of the metered flow contributed by each participant. For discussion purposes only, the following table compares the 2015 apportionment with the adjusted 2016 apportionment based on the previous section (table no. 3 – 31.18 per cent for Comox and 68.82 per cent for Courtenay).

Table No. 5: Cost apportionment comparison – based on flow change and 10% increase

Participant	2015 Apportionment		Table 3 - 2016 Apportionment		Difference ($)	Net change
	%	Amount ($)	%	Amount ($)		
Comox	35.90%	1,714,895	31.18%	1,638,369	(76,526)	($248,015)
Courtenay	64.10%	3,061,970	68.82%	3,616,183	**554,213**	**$248,015**
Total	100%	4,776,865	100%	5,254,552	$477,687	

It can be seen from the above table that the combination of a required increase in the requisition of 10 per cent plus the change in apportionment equates to an over $500,000 increase in requisition for the City of Courtenay. It can also be seen that the change in apportionment benefits Comox by

completely offsetting the 10 per cent increase. In fact the Comox 2016 requisition would be lower than their 2015 requisition. The net change for each community is shown in the final column.

Considering that the City of Courtenay only recently became aware of the meter repositioning and recalibration completed in 2015 and its impact on the apportionment of costs, it has had little time to plan for the additional increase in requisition. While various options have been discussed the following two options are presented for consideration:

Option 1 – Utilize a portion (approx. $1.35 million) of the 2015 surplus for the Comox Valley sewerage service (function 335-338) over the next few years to reduce the Town of Comox 2016 to 2019 tax requisition while holding the City of Courtenay tax requisition to the same increases as originally proposed and planned for by Courtenay staff. The following table provides a summary of the 2015 surplus for the sewerage service.

Table 6: 2015 Surplus Summary

Account Description	Surplus	Variance Comment
DND Operating Contribution	107,000	additional revenue (flow) than budgeted
Other Revenue	80,000	additional septage and compost sales
Salaries and Wages	224,000	unfilled vacancy
Engineering Fees	120,000	UV disinfection study, DCC bylaw update
Transfer to Capital	1,600,000	Compost facility expansion, Comox No. 2 PS, Hudson & Greenwood Trunk
Total	**[1]2,131,000**	

A portion of the surplus (approx. $1.35million) could be applied to hold Courtenay's requisition increase at the previously planned amount currently shown in the 2016-2020 proposed financial plan for the next three years. The following table compares the previously planned municipal requisition with apportionment based on 2015 adjusted flows and with apportionment based on utilizing some of the 2015 surplus.

Table 7: Comparison of proposed, adjusted and use of surplus – 2016 to 2020

		2015	2016	2017	2018	2019	2020
Requisition per 2016 proposed financial plan (2014 flows)							
Comox	35.90%	1,714,895	1,886,384	2,056,158	2,220,651	2,220,651	2,220,651
Courtenay	64.10%	3,061,970	3,368,168	3,671,303	3,965,007	3,965,007	3,965,007
Municipal Req.		**4,776,865**	**5,254,552**	**5,727,461**	**6,185,658**	**6,185,658**	**6,185,658**
Requisition per 2016 proposed financial plan (2015 adjusted flows) – Table 5							
Comox	31.18%		1,638,369	1,785,822	1,928,688	1,928,688	1,928,688
Courtenay	68.82%		3,616,183	3,941,639	4,256,970	4,256,970	4,256,970
Municipal Req.			**5,254,552**	**5,727,461**	**6,185,658**	**6,185,658**	**6,185,658**
Maintain Courtenay at same requisition (using adjusted 2015 flows) – Table 3							
Comox	31.18%		1,526,002	1,663,342	1,796,410	1,874,690	1,928,688
Courtenay	68.82%		3,368,168	3,671,303	3,965,007	4,137,785	4,256,970
Revised Municipal Req.			**4,894,170**	**5,334,645**	**5,761,417**	**6,012,475**	**6,185,658**
Use of 2015 surplus			360,382	392,816	424,241	173,183	0
Total Municipal Req. Revenue			**5,254,552**	**5,727,461**	**6,185,658**	**6,185,658**	**6,185,658**
Courtenay change from 2016 prop FP			0	0	0	172,779	291,963
Comox change from 2016 prop FP			(360,382)	(392,816)	(424,241)	(345,962)	(291,963)

All amount in $ unless noted

[1] Summary total of main variances from function 335 & 336, does not include 337 & 338.

It can be seen above that by utilizing surplus funds from the 2015 financial plan Courtenay's requisition can be held at previously planned increases for three years in order that planning can be completed within Courtenay for further increases beginning in year 2019 as a result of the meter adjustment and its impact on cost apportionment. Over this same period it can be seen that the Comox requisition amount is significantly reduced compare to previously planned amounts. This also provides the opportunity to further analyze the future needs of the service. Option 1 utilizes the sewer service function surplus from 2015 that could otherwise be added into the service reserve fund for capital needs.

Option 2 – Would be to reduce the previously planned tax requisition increases for 2016, 2017 and 2018 and spread the tax increases out evenly over the next five years. Currently the financial plan proposes increases as follows - 2016 – 10%, 2017 – 9%, 2018 – 8%. Alternatively the tax increases could be smoothed over five years at six per cent per year. The result of this tax smoothing strategy would retain the service surplus for capital works and keep the tax and adjusted flow impacts to a similar level of tax increase as previously planned (table no. 8).

Table No. 8 – based on 2015 adjusted meter flows and 6% increase 2016, 2017, 2018, 2019, 2010

		2015	2016	2017	2018	2019	2020
Comox	31.18%	1,714,895	1,578,792	1,673,520	1,773,931	1,880,367	1,993,189
Courtenay	68.82%	3,061,970	3,484,685	3,693,766	3,915,392	4,150,315	4,399,334
		4,776,865	**5,063,477**	**5,367,286**	**5,689,323**	**6,030,682**	**6,392,523**
Change from prior year			286,612	303,809	322,037	341,359	361,841

The service does not require new debt for the next five years however either of the above options can have an impact on future long term debt requirements. In the case of option 1 the 2015 surplus could be used to help offset future debt while in the case of option 2 the higher requisition could be contributed towards reserves to also help offset future dept.

It will be important that by fall 2016 staff have reviewed and updated costing information for several of the capital works projects in order to provide recommendations for a long term financial strategy for the sewer service, function number 335 to 338.

Staff recommend that Option 2 be approved.

Summary:
The repositioning of the level sensor within the Courtenay pump station Parshall Flume flow meter and the impact on cost apportionment between the two participating municipalities has resulted in staff from the Town of Comox, City of Courtenay and CVRD meeting several times and having numerous discussions on how to best move forward. We identified a need to address the 2015 metered flow reads for the full year, the need for the development of language should future adjustments be required and a need to investigate vendor performance with regard to the historical position of the meter sensor. Staff are making several recommendations including an adjustment to the 2015 meter flow reads, the development of flow adjustment policy language, a smoothing out of the tax increases, and finally a report to review and update capital works costing along with the development of a long term financial strategy for the sewer service.

Recommendations from the chief administrative officer:

1. THAT the 2015 adjusted meter readings be used as the basis to determine all flows for 2016 cost apportionment purposes pursuant to Comox Valley sewer service establishment bylaw No. 2541.

2. THAT the Comox Valley sewer service (function 335) 2016 to 2020 recommended financial plan be amended to reflect a change in tax requisition increased from 2016 (10%), 2017 (9%), 2018 (8%) to a six (6%) increase for each year 2016 to 2020;

   AND FURTHER THAT the 2015 carry forward surplus of $1.35 million be placed into reserves.

3. THAT the capital works plan be reviewed and costs updated to develop a long term financial funding strategy for the sewerage service, function no. 335.

Respectfully:

_____

Debra Oakman, CPA, CMA
Chief Administrative Officer

Prepared by:

_____

Marc Rutten, P. Eng.
General Manager of
Engineering Services

Attachments: Appendix A – "Apportionment of Flow – five year average compared to 2015"
Appendix B – "Associated Engineering report titled – CVRD Flow Metering Review, dated September 21, 2015"
Appendix C – "Historic reads from 1985 to 2015

% of flow Month	% Comox	Courtenay
MAY	**32.03%**	**67.97%**
2015	32.03%	67.97%
JUN	**29.15%**	**70.85%**
2015	29.15%	70.85%
JUL	**29.37%**	**70.63%**
2015	29.37%	70.63%
AUG	**27.82%**	**72.18%**
2015	27.82%	72.18%
SEP	**27.21%**	**72.79%**
2015	27.21%	72.79%
OCT	**27.58%**	**72.42%**
2015	27.58%	72.42%
NOV	**29.42%**	**70.58%**
2015	29.42%	70.58%
DEC	**34.40%**	**65.60%**
2015	34.40%	65.60%
Grand Total	**29.96%**	**70.04%**

% of flow Month	% Comox	Courtenay
JAN	**38.64%**	**61.36%**
2010	38.31%	61.69%
2011	38.94%	61.06%
2012	38.71%	61.29%
2013	39.30%	60.70%
2014	38.01%	61.99%
FEB	**38.72%**	**61.28%**
2010	38.28%	61.72%
2011	39.05%	60.95%
2012	38.39%	61.61%
2013	37.60%	62.40%
2014	40.23%	59.77%
MAR	**39.21%**	**60.79%**
2010	38.43%	61.57%
2011	40.01%	59.99%
2012	39.21%	60.79%
2013	37.83%	62.17%
2014	40.38%	59.62%
APR	**36.99%**	**63.01%**
2010	36.78%	63.22%
2011	37.32%	62.68%
2012	37.71%	62.29%
2013	35.99%	64.01%
2014	37.10%	62.90%
Grand Total	**38.44%**	**61.56%**

% of flow Month	% Comox	Courtenay
MAY	**34.36%**	**65.64%**
2010	34.29%	65.71%
2011	34.55%	65.45%
2012	34.46%	65.54%
2013	33.79%	66.21%
2014	34.68%	65.32%
JUN	**33.04%**	**66.96%**
2010	34.01%	65.99%
2011	31.76%	68.24%
2012	33.43%	66.57%
2013	32.90%	67.10%
2014	33.03%	66.97%
JUL	**32.85%**	**67.15%**
2010	33.61%	66.39%
2011	31.96%	68.04%
2012	33.98%	66.02%
2013	32.54%	67.46%
2014	32.19%	67.81%
AUG	**32.39%**	**67.61%**
2010	32.95%	67.05%
2011	31.30%	68.70%
2012	34.55%	65.45%
2013	31.74%	68.26%
2014	31.37%	68.63%
SEP	**31.82%**	**68.18%**
2010	33.03%	66.97%
2011	30.49%	69.51%
2012	32.40%	67.60%
2013	31.42%	68.58%
2014	31.73%	68.27%
OCT	**34.12%**	**65.88%**
2010	35.65%	64.35%
2011	32.69%	67.31%
2012	34.88%	65.12%
2013	33.33%	66.67%
2014	34.07%	65.93%
NOV	**36.30%**	**63.70%**
2010	36.84%	63.16%
2011	34.48%	65.52%
2012	37.49%	62.51%
2013	35.97%	64.03%
2014	36.47%	63.53%
DEC	**38.46%**	**61.54%**
2010	38.89%	61.11%
2011	35.62%	64.38%
2012	39.77%	60.23%
2013	38.21%	61.79%
2014	38.89%	61.11%
Grand Total	**34.37%**	**65.63%**

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September 21, 2015
File: 20152062.00.A01.00 2015-2062.00.A.01.00

Mike Imrie
Manager of Wastewater Services
Comox Valley Regional District
600 Comox Road
Courtenay, BC V9N 3P6

Re: CVRD FLOW METERING REVIEW

Dear Mike:

We are pleased to submit our letter report on our review of the Courtenay Pump Station flow meter calibration.

1 BACKGROUND

The Comox Valley Regional District (CVRD) would like Associated Engineering (AE) to carry out a review of several documents related to flow metering at CVRD facilities. Caltest Services Ltd. (Caltest) has previously been inspecting and calibrating the CVRD's flow meters. Recently, SFE Global (SFE) took over this work.

In SFE's first round of inspections/calibrations, they noted that the Courtenay Pump Station's 18" Parshall flume was not set up correctly, and eventually made some changes. Consequently, SFE estimated that the flume was under-reporting flows by 15-20%, and as a result the CVRD may have been under-reporting totals for some users. The CVRD would like to confirm that SFE's conclusions and actions are correct.

2 SCOPE OF WORK

Prepare a short letter providing some background, a description of the documents that were reviewed, and a professional opinion on SFE's conclusions/recommendations, including comments on Caltest's past approach if appropriate. In addition AE contacted SFE to confirm their calibration procedures.

3 PRINCIPLES OF OPERATION

A Parshall flume is a widely-accepted method of measuring flow. It measures flow by creating a gradual narrowing of the channel width concurrent with a drop in the channel bottom to create critical flow conditions. Flow rates are determined by energy conservation principles. Water levels are measured upstream of the drop using a water level gauge. An ultrasonic depth meter is used at the Courtenay Pump Station and actually measures the vertical distance from the sensor to the water surface. This information is converted within the logger to units of flow using a pre-programmed flow equation or lookup table according to the following equations:

$d=y_0-y$
$Q=ad^b$ (value of "a" depends on units of measure being used, "b" is dimensionless)

Where y=vertical distance from the ultrasonic level meter to the water surface at the primary measurement point
y_0=vertical distance from the ultrasonic level meter to the flume bottom (the "zero span")

And Q is the flow rate

Exponents "a" and "b" vary with the size and dimensions of the flume. The value of "a" depends on the system of units being used. Various standard sizes and dimensions have been developed, and the coefficients for a standard 18-inch (450mm) flume as used in the Courtenay Pump Station are 1056 and 1.538 for "a" and "b", respectively, with d in metres and Q in L/s. Standard dimensions are provided in the attached document parshall-flume-master-dimension.pdf and flow rating is provided in the attached document 18-inch-parshall-flume-discharge-table.pdf.

The Parshall flume is an industry standard that has extensive use and experience. It has a reported accuracy in the range of 3-5% of full-span flow provided that it is constructed and installed to standard dimensions. Its' accuracy also depends on accurate measurements of water depth at the primary measurement point, which is supposed to be located 2/3 of the length of the convergence channel upstream of the throat. For an 18-inch (450mm) flume, this translates to a distance of 965 mm. Depth measurements require accurate calibration of the depth meter, principally the "zero span" which is set to the distance from the sensor to the bottom of the flume when the flume is empty.

4 DOCUMENTS REVIEWED

2011.pdf

- Calibration test report by Caltest dated October 4, 2011.
- Flume water level was lowered to zero to check meter zero; reported 0.000% but measurements are not provided so it is not certain if this is the relative error or the reported flow (it is likely % of full-span flow as the relative error compared with zero flow approaches infinity at zero flow).
- Recorders and totalizers were checked at zero flow with a 4-20 mA simulator (this tests A-D conversion but not sensor accuracy).

2012.pdf

- Calibration test report by Caltest dated December 10, 2012.

- Flume water level was lowered to zero to check meter zero.
- Recorders and totalizers were checked with a 4-20 mA simulator (tests A-D conversion but not sensor accuracy).
- Added 100% test (full flow) and reported 100% value. Again, no measurements are reported so it appears none were recorded and saved making the validity of this test difficult to interpret. It appears they tested the A-D conversion with the 4-20 mA simulator.

Jan 2014.pdf

- Calibration test report by Caltest dated January 18, 2014.
- Flume water level was lowered to zero to check meter zero.
- Recorders and totalizers were checked with a 4-20 mA simulator (tests A-D conversion but not sensor accuracy).

DSCN2529.jpg

- Photo of recorder face.
- No identifying markers. This may be for the Courtenay pump station but is not guaranteed to be the actual device.
- Sticker indicating calibration due date January 15, 2015.

18inch Parshall flume discharge table 12APR15.pdf

- Provides rating table in several units.
- Provides equations for 70% Submergence Transition (consistent with standard values):
  - $Q(cfs) = 6\ H(ft)^{1.538}$
  - $Q(l/s) = 1056\ H(m)^{1.538}$
- References quoted:
  - Water Measurement Manual, 3rd Edition, United States Department of the Interior, Bureau of Reclamation.
  - ASTM D 1941-91 (2007): Standard Test Method for Open Channel Flow Measurement of Water with Parshall Flume.
- Stated to be accurate to 3-5%.

449A - CVRD Flow Meter Final Report 12APR15 (reduced).pdf

- SFE report on field measurements to confirm accuracy of flow meters at four facilities including the subject Parshall flume at the Courtenay Pump Station.
- Initial observation on March 19, 2015 is that sensor is located 270 mm too close to the flume throat.
- Measured depth 250 mm at 12:02 PM; meter depth or flow are not reported (rated flow is 125 L/s per flume equation).

- Manual flow measurement was made by portable velocity meter and depth measurement:
  - Dated March 30, 2012 at 11:58 AM (does not agree with field inspection date of March 19, 2015).
  - Measured average velocity = 0.59 m/s.
  - Rectangular 1.83 m x 1.00 m pipe (does not indicate which dimension is width. Common practice is w x h, but calculated flow suggests otherwise when compared to other flow readings).
  - Depth of flow is reported as 250 mm.
  - AE calculates flow from these measurements to be 266 or 148 L/s depending on which dimension is taken as width; (the former being wide and latter being narrow) flow meter reading is not provided for comparison.
- Subsequent measurement was made on April 7, 2015 to confirm initial observations:
  - They found a depth of 260 mm at the measurement point and 270 mm at the “proper measurement point” at 9:54 AM.
  - According to the flume equation, the rated flow at 260 mm is 133 L/s and the rated flow at 270 mm is 141 L/s, yielding a difference of about 5%.
  - Indicated flow rate on the flow meter at 9:54 AM was reported to be 114 L/s, i.e. 20% lower than the manual depth measurement would indicate.
- Flume dimensions are given in the report and agree with standard dimensions except as follows:
  - Depth measurement point is 680 mm upstream of throat vs standard of 965 mm. This equals to a difference of 285mm whereas SFE had stated earlier that the difference was 270 mm (this discrepancy will yield a small error).
  - Flume height is 1120 mm vs standard value of 914 mm (not critical to performance).
  - Drop in invert is 910 mm vs 229 mm (the data appears to be reported incorrectly as other measurements from invert to sensor face indicate 210 mm which is comparable to the standard).
- SFE concluded that the flume was reading 80 to 85% lower than actual (they likely meant that the reading was 80-85% of actual, and the accuracy of this conclusion cannot be confirmed).
- SFE recommended to move sensor back to the standard measuring point and adjust level.
- Sensor make/model are not provided (meter is stated to be Milltronics and subsequent report identifies meter model to be OCMIII. Transducer model is not provided).

449A - Courtney Pump Station Calibration 14MAY15.pdf

- Letter report from SFE to CVRD re flow meter adjustment and calibration.
- SFE visited the Courtenay Pump Station site on Monday May 11 2015 at approximately 10:15 a.m.
- Initial flow was recorded as 405 l/s before adjustment; time is not given (could be after the sensor was moved).
- SFE crews moved the ultrasonic sensor to the 2/3rd point of the distance from the throat to the inlet of the flume.
- Calibrated the sensor face to invert distance (zero span distance) at 12:10 PM:
  - Initial reading 1337 mm (not clear if this was the reading or programmed zero span)
  - Calibrated to measured zero span of 1357 mm.
  - Concluded that the meter was under-reporting by 20 mm (not certain if this is accurate).
  - Effect of this change was to increase indicated flow from 405 l/s to 465 l/s (note the flow rates are about 3 times greater than were reported on April 7, 2015 and suggest units may have actually been m^3/hr).
- No measurement of depth or record of zero span were provided before re-location to compare with indicated depth and confirm accuracy at original location.
- No record of depth measurement at ambient flow rate to confirm actual flow.
- No indication of how the sensor was mounted or how far the sensor was moved.

5 ASSESSMENT

The accuracy of the Parshall flume depends on two factors:

1. Location of the depth sensor:
   As noted by SFE the sensor was originally located too close to the throat and in the draw-down zone for the flume. SFE re-located the sensor to the correct position. Using standardized Parshall flume equations and SFE's depth measurements, the previous sensor location would under-estimate flow rates by about 5%.

2. Calibration of the depth sensor:
   SFE re-calibrated the zero span after they moved the transducer and the meter readings should be accurate. However, there is no documentation of any measurements taken to confirm the accuracy of the adjusted meter and there appears to be some confusion over the units of flow used for the measurements (m^3/hour vs l/s).

   Calibration of the Milltronics OCMIII unit is relatively straightforward, although the Milltronics OCMIII equipment manual provides little guidance. Programming the meter requires the system of units and

coefficients “a” and “b” to be entered. The meter’s zero span needs to be set once the unit and transducer are installed to match the height of the transducer above the bottom of the flume (the zero flow level). In the OCMIII, this is accomplished with an “auto-calibration” procedure (Milltronics procedure F13) based on a measured water level, which sets the zero span value (Milltronics OCMIII parameter P-46) and is best accomplished with the flume empty.

SFE informs us that they actually set the zero span (P46) directly by measuring the zero span from the flume invert to the top of the flume and then adding the height from the top of the flume to the transducer, instead of using the auto-calibration procedure. They find that the auto-calibration procedure produces variable results due to fluctuating water levels with the flume in service. SFE then monitored the water level readings indicated by the meter over a period of several minutes and compared those readings with measured depths made with both a ruler and a staff gauge that came supplied with the meter, to verify that the depth measurements were correct, which we consider a reasonable procedure.

Previously, Caltest supposedly isolated the flume and calibrated the meter with zero flow which should give the most accurate calibration but we have not confirmed if this was done or if it is indeed possible.

As noted above the flow is calculated within the meter using a standard equation or a standard lookup table. Parameters “a” and “b” need to be entered in the correct system of units, for the meter to compute discharges from the measured depths. There is no practical way to confirm the computed flows directly, short of a dye dilution test or volumetric measurement; although a velocity measurement in the approach channel will give a rough check. Water depths can be confirmed at other stages and the stored parameter values can also be retrieved and stored for confirmation that they are accurate, although this was not done

Once it is calibrated the meter should not need re-calibration unless the transducer is moved or the flume is disturbed as the Milltronics ultrasonic depth meter used in the unit is noted for its reliability and stability. Subsequent tests only need to verify the accuracy of the readings. Re-calibration should only be done if verification tests indicate a discrepancy.

SFE concluded that the flow meter had been under-reporting flow by about 15-20%, but this cannot be confirmed from the data provided. They appear to have been comparing the zero span (P-46 value) for the original and revised meter locations and, if so, their conclusion is not valid as the zero span should vary with the transducer location. SFE re-calibrated the gauge zero after moving the transducer, which is the correct procedure, and the meter is now believed to be accurate although this cannot be guaranteed.

6 CONCLUSIONS

The original installation by Caltest did not conform with standard practices for a Parshall flume as the transducer was installed too far downstream as indicated by SFE. We have no specific reason to question the original calibration of the flow meter other than the transducer location as noted above, for lack of verification measurements. Based on the available information provided, our best estimate is that the original flow monitor installation by Caltest was under-reporting flow rate by about 5%. This is within the normal tolerance for such a flow meter. SFE's assertion that the flow meter was under-reporting by 20% is not supported by the available information.

The flow meter in its current configuration is believed to be accurate but this cannot be confirmed due to the lack of verification data.

7 RECOMMENDATIONS

In view of the inconsistencies noted above and the critical nature of the flow measurements, AE recommends that the flow meter calibration be confirmed with a three-point verification and a manual flow metering process using a portable velocity meter.

The three-point verification involves:

1. Empty the flume and check zero span setting.
2. Check full span reading with a board or similar reflector on the top of the flume; measure invert to reflector depth and compare with flow meter reading of depth.
3. Measure actual depth and flow with flume in service and compare with meter readings.

Flume dimensions should also be re-measured and compared with standard dimensions and any discrepancies resolved. A complete memory dump should be made to confirm all program settings.

It is also noted that the meter calibration assumes a free outlet and could be affected by backwater if the degree of submergence exceeds 70%. Field measurements should include measurement of maximum tailwater depth to check for possible submergence.

AE recommends that a dye test be conducted to confirm the flow meter accuracy. Under good field conditions the dye test has an accuracy of 2-5%.

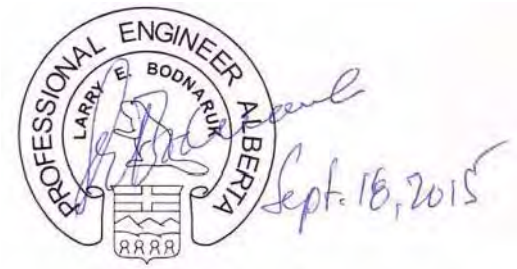
AE also recommends that all field measurements be reported in mm and L/s to avoid further confusion.

8 CLOSURE

We trust our letter report addresses your issues and concerns.

Please contact me if you have any questions.

Yours truly,



Larry E. Bodnaruk, P.Eng.
Senior Water Resource Engineer

John van der Eerden, M.Eng., P.Eng.
Vice President - Water Resources

LEB/JVE/lp

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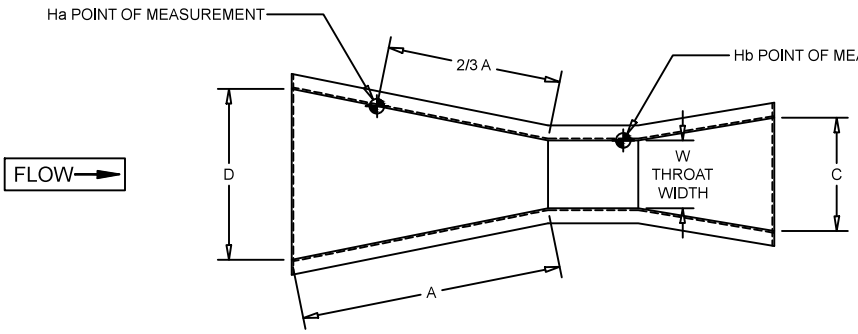
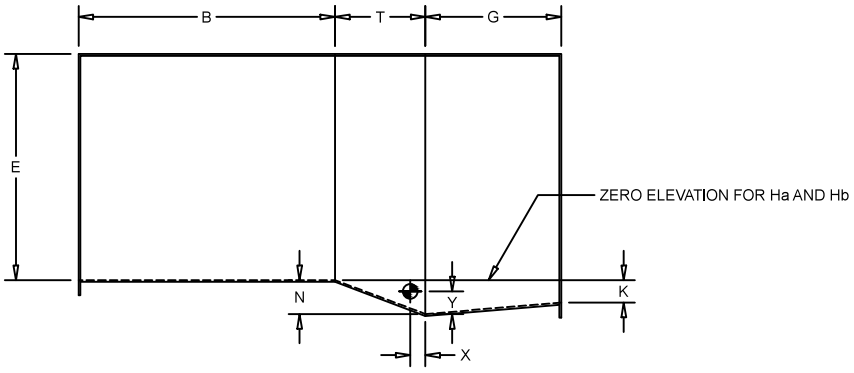


PLAN VIEW



ELEVATION VIEW

W (SIZE)	A	2/3 A	B	C	D	E	T	G	K	N	X	Y
1'' [2.54 CM]	1'-2 9/32'' [36.27 CM]	9 17/32'' [24.21 CM]	1'-2'' [35.56 CM]	3 21/32'' [9.29 CM]	6 19/32'' [16.75 CM]	9'' [22.86 CM]	3'' [7.62 CM]	8'' [20.32 CM]	3/4'' [1.91 CM]	1 1/8'' [2.86 CM]	5/16'' [0.79 CM]	1/2'' [1.27 CM]
2'' [5.08 CM]	1'-4 5/16'' [41.43 CM]	10 7/8'' [27.62 CM]	1'-4'' [40.64 CM]	5 5/16'' [13.49 CM]	8 13/32'' [21.35 CM]	10'' [25.4 CM]	4 1/2'' [11.43 CM]	10'' [25.4 CM]	7/8'' [2.22 CM]	1 11/16'' [4.29 CM]	5/8'' [1.59 CM]	1'' [2.54 CM]
3'' [7.62 CM]	1'-6 3/8'' [46.67 CM]	1'-0 1/4'' [31.12 CM]	1'-6'' [45.72 CM]	7'' [17.78 CM]	10 3/16'' [47.23 CM]	1'-6'' [45.72 CM]	6'' [15.24 CM]	1' [30.48 CM]	1'' [2.54 CM]	2 1/4'' [5.72 CM]	1'' [2.54 CM]	1 1/2'' [3.81 CM]
6'' [15.24 CM]	2'-0 7/16'' [62.07 CM]	1'-4 5/16'' [41.44 CM]	2' [60.96 CM]	1'-3 1/2'' [38.74 CM]	1'-3 5/8'' [39.69 CM]	2' [60.96 CM]	1' [30.48 CM]	2' [60.96 CM]	3'' [7.62 CM]	4 1/2'' [11.43 CM]	2'' [5.08 CM]	3'' [7.62 CM]
9'' [22.86 CM]	2'-10 5/8'' [87.95 CM]	1'-11 1/8'' [58.74 CM]	2'-10'' [86.36 CM]	1'-3'' [38.1 CM]	1'-10 5/8'' [57.47 CM]	2'-6'' [76.2 CM]	1' [30.48 CM]	1'-6'' [45.72 CM]	3'' [7.62 CM]	4 1/2'' [11.43 CM]	2'' [5.08 CM]	3'' [7.62 CM]
12'' [30.48 CM]	4'-6'' [137.2 CM]	3' [91.44 CM]	4'-4 7/8'' [134.3 CM]	2' [60.96 CM]	2'-9 1/4'' [84.46 CM]	3' [91.44 CM]	2' [60.96 CM]	3' [91.44 CM]	3'' [7.62 CM]	9'' [22.86 CM]	2'' [5.08 CM]	3'' [7.62 CM]
18'' [45.72 CM]	4'-9'' [144.8 CM]	3'-2'' [96.52 CM]	4'-7 7/8'' [141.9 CM]	2'-6'' [76.2 CM]	3'-4 3/8'' [102.6 CM]	3' [91.44 CM]	2' [60.96 CM]	3' [91.44 CM]	3'' [7.62 CM]	9'' [22.86 CM]	2'' [5.08 CM]	3'' [7.62 CM]
24'' [60.96 CM]	5' [152.4 CM]	3'-4'' [101.6 CM]	4'-10 7/8'' [149.5 CM]	3' [91.44 CM]	3'-11 1/2'' [120.7 CM]	3' [91.44 CM]	2' [60.96 CM]	3' [91.44 CM]	3'' [7.62 CM]	9'' [22.86 CM]	2'' [5.08 CM]	3'' [7.62 CM]
36'' [91.44 CM]	5'-6'' [167.6 CM]	3'-8'' [111.8 CM]	5'-4 3/4'' [164.5 CM]	4' [121.9 CM]	5'-1 7/8'' [157.2 CM]	3' [91.44 CM]	2' [60.96 CM]	3' [91.44 CM]	3'' [7.62 CM]	9'' [22.86 CM]	2'' [5.08 CM]	3'' [7.62 CM]
48'' [121.9 CM]	6' [182.9 CM]	4' [121.9 CM]	5'-10 5/8'' [179.4 CM]	5' [152.4 CM]	6'-4 1/4'' [193.7 CM]	3' [91.44 CM]	2' [60.96 CM]	3' [91.44 CM]	3'' [7.62 CM]	9'' [22.86 CM]	2'' [5.08 CM]	3'' [7.62 CM]
60'' [22.86 CM]	6'-6'' [198.1 CM]	4'-4'' [132.1 CM]	6'-4 1/2'' [194.3 CM]	6' [182.9 CM]	7'-6 5/8'' [230.2 CM]	3' [91.44 CM]	2' [60.96 CM]	3' [91.44 CM]	3'' [7.62 CM]	9'' [22.86 CM]	2'' [5.08 CM]	3'' [7.62 CM]
72'' [182.9 CM]	7' [213.4 CM]	4'-8'' [142.2 CM]	6'-10 3/8'' [209.2 CM]	7' [213.4 CM]	8'-9'' [266.7 CM]	3' [91.44 CM]	2' [60.96 CM]	3' [91.44 CM]	3'' [7.62 CM]	9'' [22.86 CM]	2'' [5.08 CM]	3'' [7.62 CM]
84'' [213.4 CM]	7'-6'' [228.6 CM]	5' [152.4 CM]	7'-4 1/4'' [224.2 CM]	8' [243.8 CM]	9'-11 3/8'' [303.2 CM]	3' [91.44 CM]	2' [60.96 CM]	3' [91.44 CM]	3'' [7.62 CM]	9'' [22.86 CM]	2'' [5.08 CM]	3'' [7.62 CM]
96'' [243.8 CM]	8' [243.8 CM]	5'-4'' [162.6 CM]	7'-10 1/8'' [239.1 CM]	9' [274.3 CM]	11'-1 3/4'' [339.7 CM]	3' [91.44 CM]	2' [60.96 CM]	3' [91.44 CM]	3'' [7.62 CM]	9'' [22.86 CM]	2'' [5.08 CM]	3'' [7.62 CM]
120'' [304.8 CM]		6' [182.9 CM]	14' [426.7 CM]	12' [365.8 CM]	15'-7 1/4'' [475.6 CM]	4' [121.9 CM]	3' [91.44 CM]	6' [182.9 CM]	6'' [15.24 CM]	1'-1 1/2'' [34.29 CM]	1' [30.48 CM]	9'' [22.86 CM]
144'' [365.8 CM]		6'-8'' [203.2 CM]	16' [487.7 CM]	14'-8'' [447.0 CM]	18'-4 3/4'' [560.7 CM]	5' [152.4 CM]	3' [91.44 CM]	8' [243.8 CM]	6'' [15.24 CM]	1'-1 1/2'' [34.29 CM]	1' [30.48 CM]	9'' [22.86 CM]

REV	REVISION DESCRIPTION	BY	DATE
1			

NOTES:
1) FLOW IS FROM LEFT TO RIGHT
2) 30'' [76.2 CM] AND 42'' [106.7 CM] SIZES ARE NOT ASTM / ISO STANDARD AND ARE NOT PROVIDED
3) 1-INCH [2.54 CM] AND 2-INCH [5.08 CM] SIZES SHOULD NOT BE USED ON SANITARY FLOWS

OPENCHANNELFLOW
BOISE | ATLANTA

DWG NO. PARSHALL FLUME MASTER | DATE 10.11.04

PARSHALL FLUME MASTER DIMENSIONS

Unless otherwise indicated, dimensions are in feet and inches, with centimeters indicated in [ ]. Angles are in degrees.

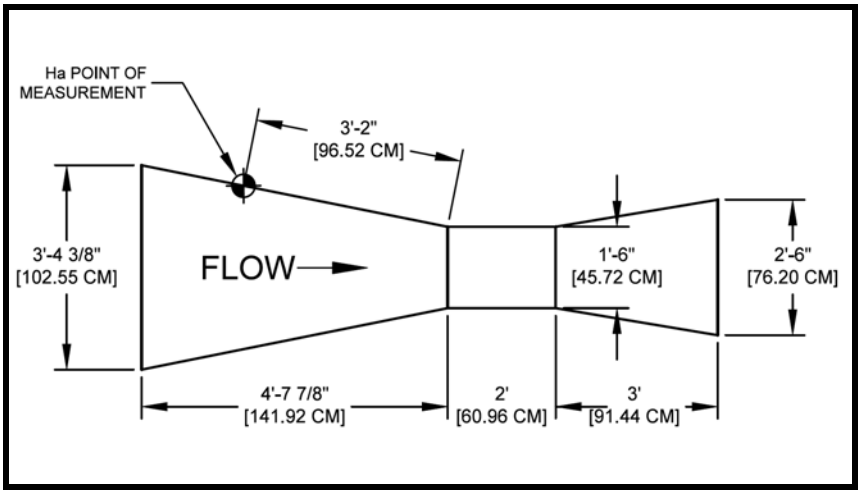
18-Inch Parshall Flume Discharge Table

70% Submergence Transition ±3-5% Accuracy

Formulas (H in feet): CFS = 6 $H_{ft.}^{1.538}$ GPM = 2693 $H_{ft.}^{1.538}$ MGD = 3.878 $H_{ft.}^{1.538}$

Formulas (H in meters): L/S = 1056 $H_{m}^{1.538}$ M3/HR = 3803 $H_{m}^{1.522}$

FEET	INCHES	METERS	CFS	GPM	MGD	L/S	M3/HR
0.01	0.12	0.0030	Excessive error due to fluid-flow properties and boundary conditions				
0.02	0.24	0.0061					
0.03	0.36	0.0091					
0.04	0.48	0.0122					
0.05	0.60	0.0152					
0.06	0.72	0.0183					
0.07	0.84	0.0213					
0.08	0.96	0.0244					
0.09	1.08	0.0274					
0.10	1.20	0.0305	0.1738	78.02	0.1124	4.923	17.71
0.11	1.32	0.0335	0.2013	90.34	0.1301	5.700	20.51
0.12	1.44	0.0366	0.2301	103.3	0.1487	6.517	23.45
0.13	1.56	0.0396	0.2603	116.8	0.1682	7.370	26.52
0.14	1.68	0.0427	0.2917	130.9	0.1885	8.260	29.72
0.15	1.80	0.0457	0.3243	145.6	0.2096	9.185	33.05
0.16	1.92	0.0488	0.3582	160.7	0.2315	10.14	36.50
0.17	2.04	0.0518	0.3932	176.5	0.2541	11.13	40.06
0.18	2.16	0.0549	0.4293	192.7	0.2775	12.16	43.75
0.19	2.28	0.0579	0.4665	209.4	0.3015	13.21	47.54
0.20	2.40	0.0610	0.5048	226.6	0.3263	14.30	51.44
0.21	2.52	0.0640	0.5442	244.2	0.3517	15.41	55.45
0.22	2.64	0.0671	0.5845	262.3	0.3778	16.55	59.56
0.23	2.76	0.0701	0.6259	280.9	0.4045	17.72	63.78
0.24	2.88	0.0732	0.6682	299.9	0.4319	18.92	68.09
0.25	3.00	0.0762	0.7115	319.3	0.4599	20.15	72.50
0.26	3.12	0.0792	0.7558	339.2	0.4884	21.40	77.01
0.27	3.24	0.0823	0.8009	359.5	0.5176	22.68	81.61
0.28	3.36	0.0853	0.8470	380.1	0.5474	23.99	86.31
0.29	3.48	0.0884	0.8940	401.2	0.5778	25.32	91.09
0.30	3.60	0.0914	0.9418	422.7	0.6087	26.67	95.97



Sources: Water Measurement Manual, 3rd Edition, United States Department of the Interior, Bureau of Reclamation

ASTM D 1941-91 (2007): Standard Test Method for Open Channel Flow Measurement of Water with Parshall Flume

18-Inch Parshall Flume Discharge Table

70% Submergence Transition ±3-5% Accuracy

Formulas (H in feet): CFS = 6 $H_{ft.}^{1.538}$ GPM = 2693 $H_{ft.}^{1.538}$ MGD = 3.878 $H_{ft.}^{1.538}$

Formulas (H in meters): L/S = 1056 $H_{m}^{1.538}$ M3/HR = 3803 $H_{m}^{1.522}$

FEET	INCHES	METERS	CFS	GPM	MGD	L/S	M3/HR
0.31	3.72	0.0945	0.9905	444.5	0.6402	28.05	100.9
0.32	3.84	0.0975	1.040	466.8	0.6722	29.46	106.0
0.33	3.96	0.1006	1.091	489.4	0.7048	30.88	111.1
0.34	4.08	0.1036	1.142	512.4	0.7379	32.33	116.3
0.35	4.20	0.1067	1.194	535.8	0.7715	33.81	121.6
0.36	4.32	0.1097	1.247	559.5	0.8057	35.31	127.0
0.37	4.44	0.1128	1.300	583.6	0.8404	36.82	132.5
0.38	4.56	0.1158	1.355	608.0	0.8756	38.37	138.0
0.39	4.68	0.1189	1.410	632.8	0.9113	39.93	143.7
0.40	4.80	0.1219	1.466	657.9	0.9474	41.52	149.4
0.41	4.92	0.1250	1.523	683.4	0.9841	43.12	155.2
0.42	5.04	0.1280	1.580	709.2	1.0213	44.75	161.0
0.43	5.16	0.1311	1.638	735.3	1.0589	46.40	167.0
0.44	5.28	0.1341	1.697	761.8	1.0970	48.07	173.0
0.45	5.40	0.1372	1.757	788.6	1.1356	49.76	179.0
0.46	5.52	0.1402	1.817	815.7	1.1746	51.47	185.2
0.47	5.64	0.1433	1.879	843.1	1.2141	53.20	191.4
0.48	5.76	0.1463	1.940	870.9	1.2541	54.95	197.7
0.49	5.88	0.1494	2.003	898.9	1.2945	56.72	204.1
0.50	6.00	0.1524	2.066	927.3	1.3354	58.51	210.5
0.51	6.12	0.1554	2.130	956.0	1.3767	60.32	217.1
0.52	6.24	0.1585	2.195	985.0	1.4184	62.15	223.6
0.53	6.36	0.1615	2.260	1014	1.4606	64.00	230.3
0.54	6.48	0.1646	2.326	1044	1.503	65.87	237.0
0.55	6.60	0.1676	2.392	1074	1.546	67.75	243.8
0.56	6.72	0.1707	2.460	1104	1.590	69.66	250.6
0.57	6.84	0.1737	2.527	1134	1.634	71.58	257.5
0.58	6.96	0.1768	2.596	1165	1.678	73.52	264.5
0.59	7.08	0.1798	2.665	1196	1.722	75.48	271.6
0.60	7.20	0.1829	2.735	1227	1.768	77.45	278.7
0.61	7.32	0.1859	2.805	1259	1.813	79.45	285.9
0.62	7.44	0.1890	2.876	1291	1.859	81.46	293.1
0.63	7.56	0.1920	2.948	1323	1.905	83.49	300.4
0.64	7.68	0.1951	3.020	1356	1.952	85.54	307.8
0.65	7.80	0.1981	3.093	1388	1.999	87.60	315.2
0.66	7.92	0.2012	3.167	1421	2.047	89.68	322.7
0.67	8.04	0.2042	3.241	1454	2.095	91.78	330.2
0.68	8.16	0.2073	3.316	1488	2.143	93.90	337.9
0.69	8.28	0.2103	3.391	1522	2.191	96.03	345.5
0.70	8.40	0.2134	3.467	1556	2.241	98.18	353.3
0.71	8.52	0.2164	3.543	1590	2.290	100.3	361.0
0.72	8.64	0.2195	3.620	1625	2.340	102.5	368.9
0.73	8.76	0.2225	3.698	1660	2.390	104.7	376.8
0.74	8.88	0.2256	3.776	1695	2.440	106.9	384.8
0.75	9.00	0.2286	3.855	1730	2.491	109.2	392.8
0.76	9.12	0.2316	3.934	1766	2.543	111.4	400.9
0.77	9.24	0.2347	4.014	1801	2.594	113.7	409.0
0.78	9.36	0.2377	4.094	1838	2.646	116.0	417.2
0.79	9.48	0.2408	4.175	1874	2.699	118.2	425.5
0.80	9.60	0.2438	4.257	1911	2.751	120.6	433.8

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FEET	INCHES	METERS	CFS	GPM	MGD	L/S	M3/HR
0.81	9.72	0.2469	4.339	1947	2.804	122.9	442.2
0.82	9.84	0.2499	4.422	1984	2.858	125.2	450.6
0.83	9.96	0.2530	4.505	2022	2.912	127.6	459.1
0.84	10.08	0.2560	4.589	2059	2.966	130.0	467.6
0.85	10.20	0.2591	4.673	2097	3.020	132.3	476.2
0.86	10.32	0.2621	4.758	2135	3.075	134.7	484.8
0.87	10.44	0.2652	4.843	2174	3.130	137.2	493.5
0.88	10.56	0.2682	4.929	2212	3.186	139.6	502.3
0.89	10.68	0.2713	5.015	2251	3.242	142.0	511.1
0.90	10.80	0.2743	5.102	2290	3.298	144.5	519.9
0.91	10.92	0.2774	5.190	2329	3.354	147.0	528.8
0.92	11.04	0.2804	5.278	2369	3.411	149.5	537.8
0.93	11.16	0.2835	5.366	2408	3.468	152.0	546.8
0.94	11.28	0.2865	5.455	2448	3.526	154.5	555.9
0.95	11.40	0.2896	5.545	2489	3.584	157.0	565.0
0.96	11.52	0.2926	5.635	2529	3.642	159.6	574.2
0.97	11.64	0.2957	5.725	2570	3.700	162.1	583.4
0.98	11.76	0.2987	5.816	2610	3.759	164.7	592.7
0.99	11.88	0.3018	5.908	2651	3.818	167.3	602.0
1.00	12.00	0.3048	6.000	2693	3.878	169.9	611.4
1.01	12.12	0.3078	6.093	2734	3.938	172.5	620.8
1.02	12.24	0.3109	6.186	2776	3.998	175.2	630.3
1.03	12.36	0.3139	6.279	2818	4.058	177.8	639.8
1.04	12.48	0.3170	6.373	2860	4.119	180.5	649.4
1.05	12.60	0.3200	6.468	2903	4.180	183.2	659.0
1.06	12.72	0.3231	6.563	2945	4.241	185.9	668.7
1.07	12.84	0.3261	6.658	2988	4.303	188.6	678.4
1.08	12.96	0.3292	6.754	3031	4.365	191.3	688.2
1.09	13.08	0.3322	6.850	3074	4.427	194.0	698.1
1.10	13.20	0.3353	6.947	3118	4.490	196.7	707.9
1.11	13.32	0.3383	7.045	3162	4.553	199.5	717.8
1.12	13.44	0.3414	7.142	3206	4.616	202.3	727.8
1.13	13.56	0.3444	7.241	3250	4.680	205.1	737.8
1.14	13.68	0.3475	7.340	3294	4.744	207.9	747.9
1.15	13.80	0.3505	7.439	3339	4.808	210.7	758.0
1.16	13.92	0.3536	7.539	3383	4.872	213.5	768.2
1.17	14.04	0.3566	7.639	3428	4.937	216.3	778.4
1.18	14.16	0.3597	7.739	3473	5.002	219.2	788.6
1.19	14.28	0.3627	7.840	3519	5.067	222.0	798.9
1.20	14.40	0.3658	7.942	3564	5.133	224.9	809.3
1.21	14.52	0.3688	8.044	3610	5.199	227.8	819.7
1.22	14.64	0.3719	8.147	3656	5.265	230.7	830.1
1.23	14.76	0.3749	8.249	3702	5.332	233.6	840.6
1.24	14.88	0.3780	8.353	3749	5.398	236.6	851.2
1.25	15.00	0.3810	8.457	3795	5.466	239.5	861.7
1.26	15.12	0.3840	8.561	3842	5.533	242.4	872.4
1.27	15.24	0.3871	8.666	3889	5.601	245.4	883.0
1.28	15.36	0.3901	8.771	3936	5.669	248.4	893.7
1.29	15.48	0.3932	8.876	3984	5.737	251.4	904.5
1.30	15.60	0.3962	8.982	4031	5.805	254.4	915.3

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FEET	INCHES	METERS	CFS	GPM	MGD	L/S	M3/HR
1.31	15.72	0.3993	9.089	4079	5.874	257.4	926.2
1.32	15.84	0.4023	9.196	4127	5.943	260.4	937.1
1.33	15.96	0.4054	9.303	4175	6.013	263.5	948.0
1.34	16.08	0.4084	9.411	4224	6.082	266.5	959.0
1.35	16.20	0.4115	9.519	4272	6.152	269.6	970.0
1.36	16.32	0.4145	9.628	4321	6.223	272.7	981.1
1.37	16.44	0.4176	9.737	4370	6.293	275.8	992.2
1.38	16.56	0.4206	9.847	4419	6.364	278.9	1003
1.39	16.68	0.4237	9.957	4468	6.435	282.0	1015
1.40	16.80	0.4267	10.07	4518	6.506	285.1	1026
1.41	16.92	0.4298	10.18	4568	6.578	288.2	1037
1.42	17.04	0.4328	10.29	4618	6.650	291.4	1048
1.43	17.16	0.4359	10.40	4668	6.722	294.5	1060
1.44	17.28	0.4389	10.51	4718	6.794	297.7	1071
1.45	17.40	0.4420	10.63	4769	6.867	300.9	1083
1.46	17.52	0.4450	10.74	4819	6.940	304.1	1094
1.47	17.64	0.4481	10.85	4870	7.013	307.3	1106
1.48	17.76	0.4511	10.97	4921	7.087	310.5	1117
1.49	17.88	0.4542	11.08	4972	7.161	313.8	1129
1.50	18.00	0.4572	11.19	5024	7.235	317.0	1141
1.51	18.12	0.4602	11.31	5075	7.309	320.3	1152
1.52	18.24	0.4633	11.42	5127	7.383	323.5	1164
1.53	18.36	0.4663	11.54	5179	7.458	326.8	1176
1.54	18.48	0.4694	11.66	5231	7.533	330.1	1188
1.55	18.60	0.4724	11.77	5284	7.609	333.4	1200
1.56	18.72	0.4755	11.89	5336	7.684	336.7	1212
1.57	18.84	0.4785	12.01	5389	7.760	340.0	1224
1.58	18.96	0.4816	12.13	5442	7.836	343.4	1236
1.59	19.08	0.4846	12.24	5495	7.913	346.7	1248
1.60	19.20	0.4877	12.36	5548	7.990	350.1	1260
1.61	19.32	0.4907	12.48	5601	8.066	353.5	1272
1.62	19.44	0.4938	12.60	5655	8.144	356.8	1284
1.63	19.56	0.4968	12.72	5709	8.221	360.2	1296
1.64	19.68	0.4999	12.84	5763	8.299	363.6	1308
1.65	19.80	0.5029	12.96	5817	8.377	367.1	1321
1.66	19.92	0.5060	13.08	5871	8.455	370.5	1333
1.67	20.04	0.5090	13.20	5926	8.533	373.9	1345
1.68	20.16	0.5121	13.33	5980	8.612	377.4	1358
1.69	20.28	0.5151	13.45	6035	8.691	380.8	1370
1.70	20.40	0.5182	13.57	6090	8.770	384.3	1383
1.71	20.52	0.5212	13.69	6145	8.850	387.8	1395
1.72	20.64	0.5243	13.82	6201	8.930	391.3	1408
1.73	20.76	0.5273	13.94	6256	9.009	394.8	1420
1.74	20.88	0.5304	14.06	6312	9.090	398.3	1433
1.75	21.00	0.5334	14.19	6368	9.170	401.8	1446
1.76	21.12	0.5364	14.31	6424	9.251	405.4	1459
1.77	21.24	0.5395	14.44	6480	9.332	408.9	1471
1.78	21.36	0.5425	14.56	6537	9.413	412.5	1484
1.79	21.48	0.5456	14.69	6593	9.495	416.0	1497
1.80	21.60	0.5486	14.82	6650	9.576	419.6	1510

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FEET	INCHES	METERS	CFS	GPM	MGD	L/S	M3/HR
1.81	21.72	0.5517	14.94	6707	9.658	423.2	1523
1.82	21.84	0.5547	15.07	6764	9.740	426.8	1536
1.83	21.96	0.5578	15.20	6821	9.823	430.4	1549
1.84	22.08	0.5608	15.33	6879	9.905	434.0	1562
1.85	22.20	0.5639	15.45	6936	9.988	437.7	1575
1.86	22.32	0.5669	15.58	6994	10.07	441.3	1588
1.87	22.44	0.5700	15.71	7052	10.15	445.0	1601
1.88	22.56	0.5730	15.84	7110	10.24	448.6	1614
1.89	22.68	0.5761	15.97	7168	10.32	452.3	1628
1.90	22.80	0.5791	16.10	7226	10.41	456.0	1641
1.91	22.92	0.5822	16.23	7285	10.49	459.7	1654
1.92	23.04	0.5852	16.36	7344	10.58	463.4	1667
1.93	23.16	0.5883	16.49	7403	10.66	467.1	1681
1.94	23.28	0.5913	16.63	7462	10.75	470.9	1694
1.95	23.40	0.5944	16.76	7521	10.83	474.6	1708
1.96	23.52	0.5974	16.89	7580	10.92	478.3	1721
1.97	23.64	0.6005	17.02	7640	11.00	482.1	1735
1.98	23.76	0.6035	17.16	7700	11.09	485.9	1748
1.99	23.88	0.6066	17.29	7760	11.17	489.6	1762
2.00	24.00	0.6096	17.42	7820	11.26	493.4	1775
2.01	24.12	0.6126	17.56	7880	11.35	497.2	1789
2.02	24.24	0.6157	17.69	7940	11.43	501.0	1803
2.03	24.36	0.6187	17.83	8001	11.52	504.9	1817
2.04	24.48	0.6218	17.96	8061	11.61	508.7	1830
2.05	24.60	0.6248	18.10	8122	11.70	512.5	1844
2.06	24.72	0.6279	18.23	8183	11.78	516.4	1858
2.07	24.84	0.6309	18.37	8245	11.87	520.2	1872
2.08	24.96	0.6340	18.51	8306	11.96	524.1	1886
2.09	25.08	0.6370	18.64	8367	12.05	528.0	1900
2.10	25.20	0.6401	18.78	8429	12.14	531.9	1914
2.11	25.32	0.6431	18.92	8491	12.23	535.8	1928
2.12	25.44	0.6462	19.06	8553	12.32	539.7	1942
2.13	25.56	0.6492	19.20	8615	12.41	543.6	1956
2.14	25.68	0.6523	19.33	8677	12.50	547.5	1970
2.15	25.80	0.6553	19.47	8740	12.59	551.5	1984
2.16	25.92	0.6584	19.61	8802	12.68	555.4	1999
2.17	26.04	0.6614	19.75	8865	12.77	559.4	2013
2.18	26.16	0.6645	19.89	8928	12.86	563.4	2027
2.19	26.28	0.6675	20.03	8991	12.95	567.3	2041
2.20	26.40	0.6706	20.17	9054	13.04	571.3	2056
2.21	26.52	0.6736	20.32	9118	13.13	575.3	2070
2.22	26.64	0.6767	20.46	9181	13.22	579.3	2085
2.23	26.76	0.6797	20.60	9245	13.31	583.4	2099
2.24	26.88	0.6828	20.74	9309	13.41	587.4	2114
2.25	27.00	0.6858	20.88	9373	13.50	591.4	2128
2.26	27.12	0.6888	21.03	9437	13.59	595.5	2143
2.27	27.24	0.6919	21.17	9501	13.68	599.5	2157
2.28	27.36	0.6949	21.31	9566	13.77	603.6	2172
2.29	27.48	0.6980	21.46	9630	13.87	607.7	2187
2.30	27.60	0.7010	21.60	9695	13.96	611.8	2201

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70% Submergence Transition ±3-5% Accuracy

Formulas (H in feet): $CFS = 6\ H_{ft.}^{1.538}$ $GPM = 2693\ H_{ft.}^{1.538}$ $MGD = 3.878\ H_{ft.}^{1.538}$

Formulas (H in meters): $L/S = 1056\ H_{m}^{1.538}$ $M3/HR = 3803\ H_{m}^{1.522}$

FEET	INCHES	METERS	CFS	GPM	MGD	L/S	M3/HR
2.31	27.72	0.7041	21.75	9760	14.05	615.9	2216
2.32	27.84	0.7071	21.89	9825	14.15	620.0	2231
2.33	27.96	0.7102	22.04	9890	14.24	624.1	2246
2.34	28.08	0.7132	22.18	9955	14.34	628.2	2260
2.35	28.20	0.7163	22.33	10021	14.43	632.3	2275
2.36	28.32	0.7193	22.47	10087	14.53	636.5	2290
2.37	28.44	0.7224	22.62	10152	14.62	640.6	2305
2.38	28.56	0.7254	22.77	10218	14.72	644.8	2320
2.39	28.68	0.7285	22.92	10284	14.81	649.0	2335
2.40	28.80	0.7315	23.06	10351	14.91	653.1	2350
2.41	28.92	0.7346	23.21	10417	15.00	657.3	2365
2.42	29.04	0.7376	23.36	10484	15.10	661.5	2380
2.43	29.16	0.7407	23.51	10550	15.19	665.7	2395
2.44	29.28	0.7437	23.66	10617	15.29	670.0	2411
2.45	29.40	0.7468	23.81	10684	15.39	674.2	2426
2.46	29.52	0.7498	23.96	10751	15.48	678.4	2441
2.47	29.64	0.7529	24.11	10819	15.58	682.7	2456
2.48	29.76	0.7559	24.26	10886	15.68	686.9	2472
2.49	29.88	0.7590	24.41	10954	15.77	691.2	2487
2.50	30.00	0.7620	24.56	11021	15.87	695.5	2502

Sources: Water Measurement Manual, 3rd Edition, United States Department of the Interior, Bureau of Reclamation

ASTM D 1941-91 (2007): Standard Test Method for Open Channel Flow Measurement of Water with Parshall Flume

THE CORPORATION OF THE CITY OF COURTENAY

MEMORANDUM

To: Council **File No.:** 8330-71792 (Planning)

From: Chief Administrative Officer **Date:** March 4, 2016

Subject: Courtenay River Third Crossing Review - Update

ISSUE:

This memorandum is to update Council on the status of the review of existing studies identifying the need for a third river crossing of the Courtenay River to support long term traffic flow.

BACKGROUND:

At the November 16, 2015 regular Council meeting, Council resolved:

"*Moved by Hillian and seconded by Theos that Council direct staff to provide a report to Council regarding the proposed 11th Street river crossing at the earliest possible date."*

Staff previously presented a memorandum to Council (dated January 14th, 2016) regarding the work associated with completing the resolution and identified that a staff report be presented to Council for the February 15, 2016 or March 7, 2016 regular council meeting.

KEY CONSIDERATIONS:

As identified in the previous Memorandum to Council, staff has engaged a consultant to review past transportation studies related to need and optional locations for a third crossing of the Courtenay River, with a particular focus on the 11th Street corridor recommendation.

The consultants are intently working towards the timelines provided. Additional data gathering was determined to be necessary to confirm the initial modelling traffic projections and the recommendation for a third bridge crossing. Traffic counts taking place along 5th Street and Old Island Highway during the week of February 15th, 2016 in support of updated the modelling data output. This work has delayed the consultant's technical analysis and staff's ability to meet the originally planned timelines. We anticipate receiving the updated traffic analysis and technical memorandum from the consultant by March 4th. Finalization of the staff report will occur immediately following the receipt of the information from the consultant.

We continue to work to meet the timelines associated with presenting this topic at Council on March 14th.

Prepared by:

L Hatch

Lesley Hatch, P.Eng.
Director of Engineering Services

THE CORPORATION OF THE CITY OF COURTENAY

MEMORANDUM

To: Council **File No.:** 6140-001-01

From: Chief Administrative Officer **Date:** March 4, 2016

Subject: Puntledge Park – Rotary Riverside Trail Stairs Closure

PURPOSE:

To provide Council with an update regarding the Rotary walkway and stairs located in Puntledge Park which were closed to public access on February 4th 2016 due to public safety concerns.

BACKGROUND:

The concrete stairs located along the Puntledge River between Robert Lang Drive and the start of Ruth Masters Greenway were constructed approximately twenty (20) years ago as part of a Rotary Club project. The concrete stairs and walkway were designed by an Engineer and constructed using standard methods and utilized accepted products. The stair and walkway construction is robust. However, it is their proximity to the eroding river bank that is now a matter of public safety.

The river bank in this area has been slowly eroding for several years. Minor slope erosion was noticed through routine inspections in late 2014. However, with the high water flows and rainfall experienced in 2015, a major slope failure occurred in September of 2015. The heavy rainfall brought down several large conifers that were helping to stabilize the slope. This slope failure resulted in a closure of a portion of the stairs and a temporary bypass stairway was constructed in November 2015 which still allowed access to the majority of the concrete walkway. In late January 2016, a routine inspection alerted Public Works to increased slope failure, as a result of the recent high water flows.

The entire stairs and walkway are now being undermined and have lost foundation support. As a result, the stairs were closed to public access on February 4, 2001 and a geotechnical and structural review was undertaken by McElhanney Consulting Services to determine options.

FINANCIAL IMPLICATIONS:

The geotechnical and structural report has been received and is being reviewed by staff. A preliminary review suggests the preferred option is to decommission the existing walkway and relocate the stairs to a more suitable safe location away from the river bank. Options and costs will be presented to Council as part of the 2016 Parks Capital budget.

PUBLIC ENGAGEMENT

Public notification has been developed and released to the public. Fencing and signage along the trail has been erected to advise users of the trail and stair closure. Further public engagement will follow a decision on how to best address the issue.

Prepared by,

Trevor Kushner, BA, DLGM, CLGA

Director of Public Works Services


Trail Closure
Rotary Riverside Trail
Ruth Masters Greenway
Puntledge Greenway
ROBERT LANG DR.
MITCHELL RD.
ROD & GUN RD.
Puntledge Park
1ST ST.
Malcolm Morrison Park
Morrison Greenway
EMBLETON CRES.
WILLEMAR AVE.
WOODS AVE.
MENZIES AVE.
4TH ST.
Puntledge Park El. School
Roy Morrison Nature Park
Lake Trail School

Office of the Chair

600 Comox Road, Courtenay, BC V9N 3P6
Tel: 250-334-6000 Fax: 250-334-4358
Toll free: 1-800-331-6007
www.comoxvalleyrd.ca

Comox Valley REGIONAL DISTRICT

File: 540-20/SSSC

February 12, 2016

Sent via email only: jward@courtenay.ca

Mayor and Council
City of Courtenay
830 Cliffe Avenue
Courtenay BC V9N 2J7

Dear Mayor and Council:

Re: South sewer select committee revised terms of reference

Forwarded for your information is a revised terms of reference for the Comox Valley Regional District (CVRD) south sewer select committee. The committee was established in 2013 as a liaison between the committee partners: the CVRD, the K'ómoks First Nation and the Village of Cumberland to advise on matters relating to the governance, financial, technical, environmental and societal conditions relating to the south sewer project. As the Village of Cumberland has opted to withdraw from the project, the terms of reference have been updated accordingly.

The terms of reference have also been amended to include one elected official from the Village of Cumberland and City of Courtenay as liaisons on the committee. While Cumberland and Courtenay are not partners in the project, the liaison role allows for open communications and the improved awareness of each organization's opportunities and challenges. The liaison would act as a non-voting participant on the committee and, as with all south sewer select committees members, would not receive remuneration from the CVRD for meeting attendance. I would request that you consider appointing a member of your council in this liaison capacity. The calendar of meetings for the remainder of the year are as follows:

Meetings to begin at 12:15 p.m. in the boardroom of the CVRD offices located at 550B Comox Road, Courtenay unless otherwise determined.

- Wednesday, March 16, 2016
- Wednesday, April 20, 2016
- Wednesday, May 18, 2016
- Wednesday, June 15, 2016
- Wednesday, July 20, 2016
- Wednesday, August 17, 2016
- Wednesday, September 21, 2016
- Wednesday, October 19, 2016
- Wednesday, November 9, 2016

Please contact James Warren, general manager of corporate services, at jwarren@comoxvalleyrd.ca should you choose to appoint a liaison from your council. Please visit the south sewer project website for complete information and updates.

Sincerely,

Bruce Jolliffe
Chair

Enclosure: South sewer select committee terms of reference – updated January 26, 2016

cc: David Allen, chief administrative officer, City of Courtenay
Debra Oakman, chief administrative officer
John Ward, director of legislative services, City of Courtenay

Terms of Reference
SOUTH SEWER SELECT COMMITTEE

Mission: Established by the Comox Valley Regional District (CVRD) and including representatives from the CVRD and the K'ómoks First Nation, this committee considers matters relating to the south sewer project and reports its findings to the K'ómoks First Nation council and CVRD board. The committee is also a liaison between the two parties represented on the committee and will share information amongst the parties. The committee will seek input and approval, where required, directly from the CVRD electoral areas services committee and the K'ómoks First Nation.

Authority: The south sewer select committee serves as an advisory body to the CVRD electoral areas services committee and the board.

Mandate: The south sewer select committee will have the authority to provide advice to the electoral areas services committee and the K'ómoks First Nation on matters pertaining to its mission. Such advice is to include matters relating to the governance, financial, technical, environmental and societal conditions relating to the south sewer project.

Membership: As a select committee of the CVRD board, the south sewer select committee is comprised of:

- Two members representing the CVRD electoral areas and appointed by the CVRD:
  - Director Bruce Jolliffe (Chair)
  - Director Edwin Grieve (Vice-chair)
- Two members representing the K'ómoks First Nation and appointed by the K'ómoks First Nation:
  - Chief Robert Everson
  - Melinda Knox

All parties are encouraged to appoint alternate members to attend in a member's absence.

The committee includes liaison roles for an elected official from:
- _____ (appointed by the City of Courtenay) and.
- _____ (appointed by the Village of Cumberland).

The liaison roles can attend and participate in committee meetings to assist with open communications between the neighbouring jurisdictions while also improving the awareness of each jurisdiction's opportunities and challenges. Liaisons may not attend closed meetings where a conflict of interest may arise.

Committee chair: The committee shall elect a chair and vice-chair from amongst its members at the first meeting of each year.

Resources: Each jurisdiction will determine the appropriate resources to support their jurisdiction on this select committee.

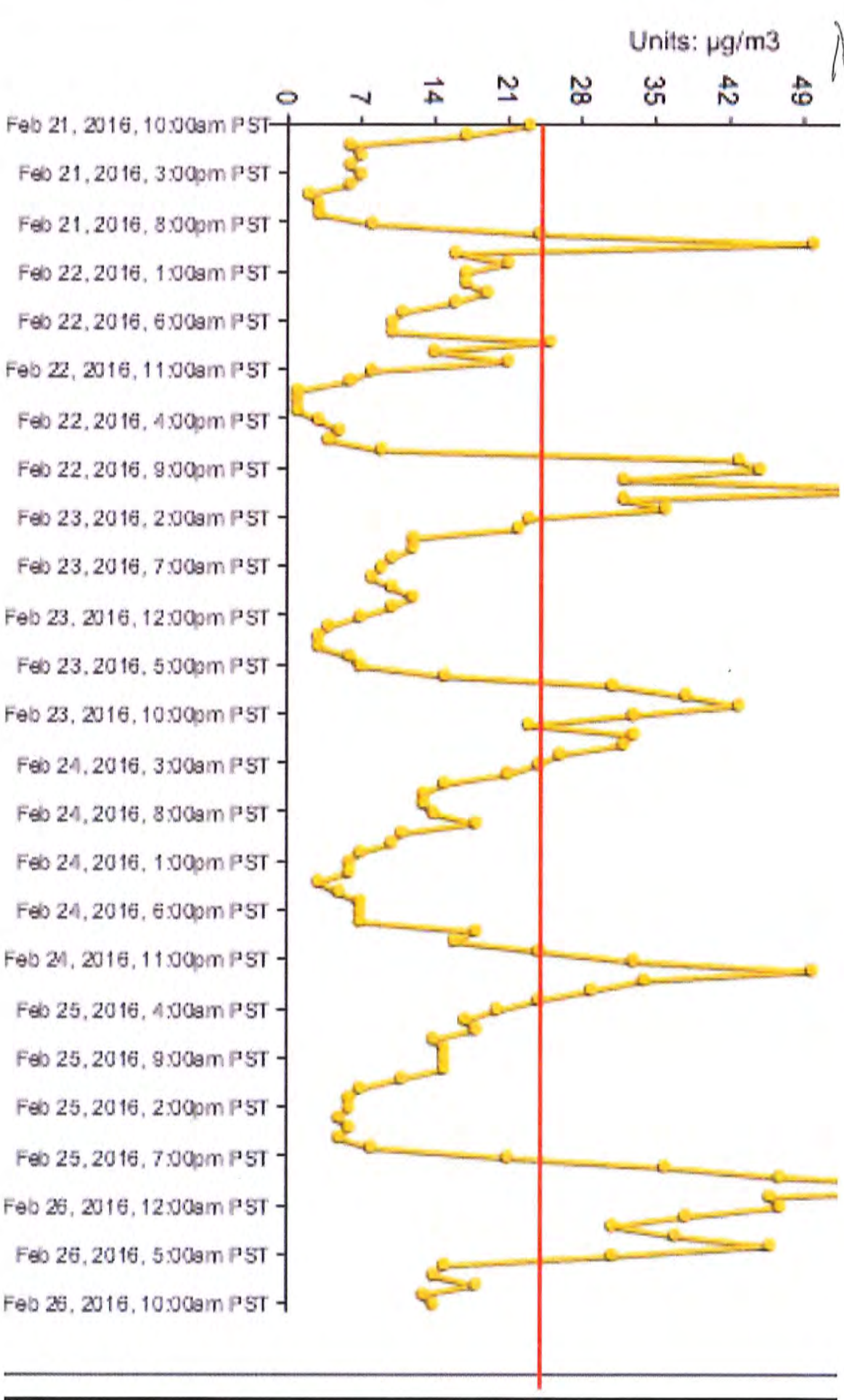
Tenure: This committee is a select committee and shall expire upon reporting its final findings to the CVRD board or on December 31, 2018, whichever is earlier. This committee's terms of reference may be reviewed and amended from time to time, upon the approval of the board.

Reporting: The committee will provide its minutes to the corporate legislative officer within 48 hours of any committee meeting. The minutes will be distributed to the CVRD electoral areas services committee and K'ómoks First Nation for receipt. Where the board feels it is necessary, the committee may be asked to meet with the board and brief the board on an issue(s) within its purview. This invitation shall be extended to the chair of the committee as the representative of the committee.

Contact with the Media: Any contact with the media regarding issues related to the work of this committee shall be handled by the committee chair or shall be referred by the committee chair to the CVRD board chair. If the matter under questioning by the media deals with CVRD board policy around issues related to the work of this committee, the matter shall be referred to the board chair. The chief administrative officer, general manager of engineering services and general manager of corporate services will provide assistance and / or guidance to the board chair and committee chair in responding to the media.

Public Meetings: Unless otherwise provided for in the CVRD procedure bylaw, the committee meetings are open to the public. The committee may close a meeting to the public if the subject matter relates to a matter identified under section 90 of the *Community Charter*.

Terms of Reference History:
Approved: April 30, 2013
Amended: January 26, 2016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New Bus

CITY OF COURTENAY

BYLAW REFERENCE FORM

BYLAW TITLE

Revenue Anticipation Borrowing Bylaw No. 2843, 2016

REASON FOR BYLAW

To provide for borrowing to meet current lawful expenditures of the City

STATUTORY AUTHORITY FOR BYLAW

Section 177 of the *Community Charter*

OTHER APPROVALS REQUIRED

None

STAFF COMMENTS AND/OR REPORTS

Required Annually

OTHER PROCEDURES REQUIRED

February 22, 2016

B. Parschauer
Staff Member

THE CORPORATION OF THE CITY OF COURTENAY

BYLAW NO. 2843

A bylaw authorizing the Corporation of the City of Courtenay to borrow the sum of Three Million, Five Hundred Thousand Dollars ($3,500,000.00) to meet the current lawful expenditures of the Corporation

WHEREAS, pursuant to Section 177 of the *Community Charter*, Council may by bylaw, provide for the borrowing of money that may be necessary to meet current lawful expenditures of the municipality;

AND WHEREAS the debt outstanding under this section shall not exceed the sum of seventy-five percent (75%) of all taxes levied for all purposes in the preceding year and the money remaining due from other governments; such sum being Forty Million, One Hundred and Forty-Six Thousand Dollars ($40,146,000).

AND WHEREAS in order to borrow the said sum, the Corporation shall set aside as security the unpaid taxes for the years 2014 and 2015 and the whole of the taxes for the current year, and the money borrowed shall be a first charge thereon.

NOW THEREFORE, the Council of the Corporation of the City of Courtenay in open meeting assembled, enacts as follows:

1. This bylaw may be cited as **"Revenue Anticipation Borrowing Bylaw No. 2843, 2016"**

2. It shall be lawful for the Corporation to borrow the sum of Three Million Five Hundred Thousand Dollars ($3,500,000.00) in such amounts and at such times as may be so required.

3. The monies so borrowed and the interest thereon shall be paid on or before the 31st of January, 2017.

4. The form of obligation to be given as an acknowledgment of such liability shall be a promissory note or notes for sums as may be required and advanced from time to time, signed by the Mayor and Director of Financial Services and bearing the seal of the Corporation or other agreements as required by the lender. These notes shall be payable with interest before the 31st of January, 2017.

5. There shall be set aside as security for the payment of such money, the whole of the unpaid taxes for the years of 2014 and 2015 and the whole of the taxes for the current year.

Read a first time this 7th day of March, 2016

Read a second time this 7th day of March, 2016

Read a third time this 7th day of March, 2016

Finally passed and adopted this day of , 2016

Mayor

Director of Legislative Services

THE CORPORATION OF THE CITY OF COURTENAY

BYLAW NO. 2846

A bylaw to amend Council Procedure Bylaw No. 2730, 2013

WHEREAS the *Community Charter* requires that a council must, by bylaw, establish the general procedures to be followed by council and committees in conducting their business.

NOW THEREFORE the Council of the Corporation of the City of Courtenay, in open meeting assembled, enacts as follows:

1. This bylaw may be cited for all purposes as **"Council Procedure Amendment Bylaw No. 2846, 2016**".

2. **Council Procedure Bylaw No. 2730, 2013** is hereby amended as follows:

   (a) By deleting **Section 7 (2)** and substituting the following:

   Regular Council Meetings

   7. (2) Regular meetings of Council must take place on the first and third Monday of each month commencing at 4:00 p.m. except when

   (a) the said Monday is a holiday, in which case Council must meet at the regularly scheduled time on the next day following the holiday;

   (b) Council resolves to meet on subsequent days; or

   (c) a quorum is not present within 15 minutes after the time appointed for commencement of the meeting.

   (b) By deleting **Section 10 (1) (e) and (h)** and substituting the following:

   Order of Business at Regular Meetings

   10. (1) (e) Staff reports in the following order where applicable:

   (i) Recreation and Cultural Services

   (ii) CAO and Legislative Services

   (iii) Development Services

(iv) Financial Services

(v) Engineering Services

(vi) Public Works Services

(h) Reports from Council members regarding City related activities including reports from Council and External committees;

(c) By deleting **Section 13 (4)** and substituting the following:

Delegations to Council meetings

(4) The Corporate Officer may refuse to place a delegation or petition on the Council meeting agenda if the subject matter is not considered to fall within the jurisdiction of Council or does not relate to Council's areas of control, influence, or concern. If the delegation wishes to appeal the decision of the Corporate Officer, the appeal must be in writing, and must be presented to Council for consideration at the next available Council meeting.

3. If any section or subsection of this bylaw is for any reason held to be invalid by the decision of a court of competent jurisdiction, such decision will not affect the validity of the remaining portions of this bylaw.

Read a first time this 7th day of March, 2016.

Read a second time this 7th day of March, 2016.

Read a third time this 7th day of March, 2016.

Notice published pursuant to section 94 of the *Community Charter* on the and of March, 2016.

Finally passed and adopted this day of , 2016.

_____

Mayor

_____

Director of Legislative Services