



THE MUNICIPALITY OF THE VILLAGE OF LIONS BAY

INFRASTRUCTURE COMMITTEE MEETING OF THE VILLAGE OF LIONS BAY HELD ON MONDAY, JANUARY 16, 2017 at 7:00 PM COUNCIL CHAMBERS, 400 CENTRE ROAD, LIONS BAY

AGENDA

- 1. Call to Order**
- 2. Appointment of Recorder**
- 3. Approval of the Agenda**
- 4. Public Questions & Comments**
- 5. Approval of Minutes**
 - A. Infrastructure Committee Meeting – November 28, 2016 (Page 3)
 - B. Action Items from the Minutes
- 6. Business Arising from the Minutes**
- 7. Unfinished Business**
 - A. UBC Water Hydrology Project Update (Page 7)
 - Draft MOU for the project
 - Intakes visit by Steven
- 8. New Business**
 - A. Report on the drone contractor for intake inspection(s)
 - B. Request to the Greater Vancouver Water District (GVWD)
 - Lions Bay requests GVWD conduct a cost and feasibility of supplying GVWD water via pipeline to the Village of Lions Bay treatment plant(s), with pipeline alignments along Highway 99, the CN/BC Rail alignment, undersea along the foreshore, or alignment or combination of alignments, and that the cost of this study be funded from GVWD.
 - C. Next meeting date discussion
- 9. Public Questions & Comments**
- 10. Adjournment**

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LIONS BAY INFRASTRUCTURE COMMITTEE MEETING
MONDAY 28 NOVEMBER 2016 AT 7:00 PM
IN COUNCIL CHAMBERS, LIONS BAY COMMUNITY CENTRE

MINUTES OF THE MEETING

In Attendance:

Fred Bain – Councillor and Committee Chair
Karl Buhr – Mayor
Tony Greville – Resident
Jim Mutrie - Resident
Brian Ulrich – Resident
Jim Hughes – Councillor

Staff:

Naizam Jaffer – Public Works Manager

Regrets:

Peter DeJong – CAO

1. CALL TO ORDER

Meeting was called to order at 19:02.

2. APPOINTMENT OF RECORDER

Recorder: Fred Bain and Nai Jaffer

3. APPROVAL OF AGENDA

A. The agenda was approved with the addition of 8.B, “Wells”

4. PUBLIC PARTICIPATION

No public participation given

5. APPROVAL OF MINUTES

Approved as circulated

6. BUSINESS ARISING FROM THE MINUTES

A. Action Items

- i. Nai to forward to IC members a link with specs to the new rain gauges – Done
- ii. Karl to finalize a draft MOU for the UBC project, to be reviewed by the IC before the

next meeting – Agenda item 7.C.i., this meeting

- iii. Tony to send Steve (UBC) a reminder about another visit to come and see our intakes, pending a long enough dry spell to make it safe to go up there (Nai to advise on window of opportunity based on rainfall) -Agenda item 7.C.ii. This meeting.
 - iv. Nai and Kevin Healy (CREUS) to meet with staff (Garth and Will) to review the proposed design with revisions and tweaks to their satisfaction.¹
 - Nai met with Kevin and staff to discuss the changes to the infiltration gallery proposed by the IC. Additional comments and modifications were discussed with Kevin agreeing to provide these in a draft drawing for staff review. North Construction has agreed to complete the works towards the latter portion of summer 2017.
 - v. Kevin (CREUS) to visit the Harvey intake in order to design the weir and then prepare a report including cost estimates for this work. Kevin was able to visit the weir and has a clear picture of what's required to shore up / strengthen the deteriorating weir. Over the next month he will be developing a design for preliminary review and will also get some idea of costs – likely through North Construction – for his proposed design.
 - vi. Nai and Peter to craft an argument for transferring the allocated funds from the road repair to the Harvey Weir Kevin is reviewing the condition of the weir and will draft a report that will support Peter and Nai in their bid to have the funds from the Harvey Creek road safety improvements to the strengthening of the weir. An extension to the grant window will also be required. Preliminary feedback from the Ministry in this regard has been positive.
- B.** There was a brief discussion about stream flow sensors upstream of the weir.
- i. Consensus appeared the location of the sensors would need Steven's (UBC) input as he will know what would work best for their research.

7. UNFINISHED BUSINESS

A. Report from Nai

- i. Harvey weir progress
 - Discussed in 6.A.v.
- ii. PRV screens and filters

¹ Subject: Infiltration Gallery Proposal for Magnesia Intake

- The new Magnesia Creek PRV is flooding due to water backfilling from the French drain. The remedy is to extend the outlet across the road, which North Construction will do when they return to complete the infiltration gallery next summer SCADA update for primary communications Staff's initial thoughts were to implement a hard wired system that was not susceptible to weather or tree falls. While solving the problem of communications to the plants, the broader picture of hooking up other water & wastewater features is being ignored. Nai to request at re-budget of these funds in the 2017 budget in order to accomplish Councils initial goal of evaluating communication methodologies with a broader view including the ability to connect future infrastructure.

iii. Infiltration gallery progress/update

- Discussed in 6.A. iv

B. Bayview culvert tender ISL Engineering is working on the base plan and drawings for preliminary review. It is anticipated that surveyors will begin pick-up of existing road features within at week. Drainage and reclamation of the 'Public Realm'

- i. Discussions surrounding the claiming of public land and altering or inadvertently restricting drainage ensued. The IC recommends drainage issues be managed in the public realm.

C. UBC Hydrology Study

- i. Karl has been working with UBC on formulating a draft Memorandum of Understand(MOU).A preliminary draft was presented and feedback was requested by Karl.

- Brian suggested the Objectives could be condensed
- Tony was asked to push Steve for a site visit

ACTION: IC members to review draft and provide feedback to Karl before next Monday.

8. NEW BUSINESS

A. Hydraulic retention times in Lions Bay water network, tank controls, and mid-network re-chlorination. The discussion began with conversation about the water tanks and their value to and requirement for within the water distribution system.

- Karl's concern is in regards to having excess infrastructure when and wanted reassurances that each tank was required. Nai advised that tank volumes take into

account fire storage, equalization storage (25% of the volume) and emergency storage (25% of the volume). Nai advised that modelling of the tanks would be carried out in advance of the capital replacement and that scenarios such as the replacement of Phase IV and Phase V tanks with one tank and the need for the Highway Tank would be addressed. Nai also indicated that the proposed steel bolted-glass lined tanks would be seismically sufficient.

- ii. The discussion moved to chlorine concentrations within the system and concern with respect to the amount of chlorine being used. Karl's concerns were with respect to high chlorine dosing at the plants in order to achieve residuals downstream in the system. Karl has received complaints about high chlorine odours in the water.

- Nai explained that some people are more sensitive to chlorine residuals. Nai suggested that complainants should be forwarded to Public Works so they can track the number of complaints, if they occur in response to creek issues such as high turbidity, if they're closer to the dosing points at the tanks, etc. The discussion ended with a past consideration that involved looping the end of Isleview with the end of Lions Bay Ave.

- B. Wells Brian brought up the notion of using wells to augment or 'peak shave' our water supply. The Arsenic issue appears to not be significant as once thought. Sampling results to date show insignificant levels of Arsenic

- The added water supply could augment our existing supplies and reduce the stress on the creeks especially during summer months
- It was noted that, in general, well water does not need the same level of treatment as surface water supplies that it tends to have a higher mineral content, and has less pathogens – the opposite of ground water.

9. Public Comments and Questions

- A. none

10. NEXT MEETING: January 16, 2017 (after that, February 20, 2017)

MEMORANDUM OF UNDERSTANDING

BETWEEN:

THE UNIVERSITY OF BRITISH COLUMBIA, a corporation continued under the *University Act* of British Columbia, with offices at 103 – 6190 Agronomy Road, Vancouver, British Columbia, V6T 1Z3,

("UBC")

AND:

THE VILLAGE OF LIONS BAY, a British Columbia municipality, with offices at 400 Centre Road, Lions Bay, British Columbia V0N 2E0,

("Lions Bay")

(both referred to as the "**Parties**").

This Memorandum of Understanding ("**MOU**") is a non-binding summary of the basis upon which UBC and Lions Bay intend to collaborate on using data¹ from Lions Bay to model water supply in catchments worldwide (the "**Collaboration**").

Collaboration Objectives:

1. Lions Bay looks at streamflow from its geologically-constant watershed on two time horizons:
 - a. In the short term, Lions Bay would like to know if catchment hydrology can be modelled well enough to predict stream flows until the next precipitation event. Non-reservoir communities like Lions Bay rely only on immediate flows out of their watershed (whether from surface streams on a use-it-or-lose it basis, or from wells on a depleting water table basis), and it would be valuable to know when to institute water conservation measures based just on current stream flowrates and the weather forecast.
 - b. In the long term, given climate change², Lions Bay would like to determine if long-term data can model flow trends well enough to project when supply from a given catchment will approach demand, to afford time to plan for alternative supply (such as additional intake infrastructure, pipelining or desalination).

1

¹Such data may include streamflow (measured by flow meters and tracer studies), precipitation, snowpack extent, temperature, soil moisture, evaporation/transpiration, cloud cover/solar radiation, humidity, and wind.

2

²In Lions Bay's case, for example, current regional planning projections call for higher high temperatures, more hot days, less snowpack and more intense rain events.

2. UBC seeks opportunities to publish research of national and international import, continuing to establish BC's and Canada's reputation as a water resource leader.

Together, the Parties wish to explore a collaboration that partners the expertise and research capacities of UBC with Lions Bay's convenient location, isolated closed-system water catchment, and political willingness to commit the community to a long-term study.

1. Term: The initial term of this MOU will be 24 months, commencing on _____, 2017 and ending on _____ (the "Term"). This MOU will automatically renew for further two-year terms. Either Party may terminate this MOU at any time upon five business days prior written notice to the other Party.

2. Collaborative Activities: during the Term the Parties will:

(1.a) On the part of UBC,

(1.a.i) Contribute academic, administrative and field personnel to the Collaboration. Initially, Assistant Professor Steven Weijjs³, head of the Hydro-Info-Theory Lab in the Department of Civil Engineering, will lead the Collaboration's efforts;

(1.a.ii) Utilise academic and institutional research funding resources to support the Collaboration.

(1.b) On the part of Lions Bay,

(1.a.i) By Council endorsement of this MOU, commit the community to long-term participation in the Collaboration;

(1.a.ii) Provide access to Lions Bay's water intake facilities and other restricted entry areas as required;

(1.a.iii) Seek provincial and federal funding, including for permanent streamflow monitoring on Lions Bay's Harvey, Alberta and Magnesia Creeks (this effort does not preclude UBC from seeking opportunities to do the same);

(1.a.iv) Approach Metro Vancouver Regional District for in-kind or monetary funding under its Climate Change Impacts & Adaption Strategy work;

(1.a.v) Make available to UBC all pertinent historical and current operating data, studies and reports, plus hi-resolution LIDAR data;

3

³Dr. Weijjs's research focuses on the contribution of various sources of information to hydrological predictability. He has a ___ degree in __, and ____. Dr. Weijjs has extensive fieldwork experience in the Swiss Alps, where he developed ____.

(1.a.vi) Contribute staff, elected official and Infrastructure Committee⁴ time to the Collaboration, to an in-kind value of \$_____a year (at a fully allocated nominal value of \$100 per hour).

(1.c) The Parties intend to jointly address *inter alia* the following topics of interest:

(1.c.i) At what rate does groundwater in a given catchment recharge during various kinds of precipitation events? Does groundwater only replenish from precipitation, or does subterranean inflow from *other* catchments have an effect, and can it be modeled? Are there safe ways to increase surface infiltration into the groundwater?

(1.c.ii) If more of a catchment's water production is from groundwater than from snow melt, does replenishment take place in hours, days, months or years? Can sub-surface flows be measured to determine how much water is being missed at a given intake location and whether there is a better intake location?

(1.c.iii) What percentage of event water runs off directly, what percentage is lost to evaporation and what percentage is stored subsurface or in snow pack?

(1.c.iv) The general understanding in Lions Bay and possibly other surface-supply communities has been that it is snowpack that provides the summer water supply. Is that indeed the case given Lions Bay's experience in 2015, when snowpack was gone by July yet the creeks kept flowing (and perhaps decaying linearly excluding spikes from immediate precipitation)? Can the relative contributions to surface creekflow from snowpack and groundwater be determined in a given catchment?

(1.c.v) Reservoir-supplied communities typically view lake capacity on a three year drought horizon as an indicator of supply security. What sort of measurement should surface runoff/groundwater communities consider, especially in light of climate change?

4

⁴The Lions Bay Infrastructure Committee is a permanent Standing Committee of Council, comprised of volunteer engineers and scientists, elected officials and staff. Current members include ex-officio senior staff Peter DeJong (Lions Bay CAO) and Naizam Jaffer (Lions Bay Public Works Manager), plus elected officials Fred Bain (Lions Bay Councillor and Chair), Karl Buhr (Lions Bay Mayor, and a non-professional chemical engineer), and Jim Hughes (Lions Bay Councillor and a highway construction and workplace safety practitioner), plus members Tony Greville (a chemist and Chair of the BC Water and Wastewater Association's Standards Committee), Jim Mutrie (a professional civil engineer) and Brian Ulrich (a professional mechanical engineer).

1. **Publicity:** The Parties will be entitled to publicly acknowledge the existence of this MOU. Neither Party will have the right to use the other's names, trademarks, crests and logos without express written permission for each usage. Promotional releases will only be in text mutually agreed by the Parties.
2. **Intellectual Property:** The Parties agree that each Party will retain its own intellectual property and that nothing in this MOU grants any rights in a Party's intellectual property to the other Party. However, the Parties agree to disclose to each other any technical achievements under the Collaboration or intellectual property that may be developed in the Collaboration under an appropriate confidentiality agreement.
3. **Confidential Information:** Any exchange of confidential information between the Parties will be governed by a separate written confidentiality agreement.
4. **Expenses:** Unless the relationship of the Parties results in a formal agreement that specifically provides otherwise, each Party will act as specified herein at its own risk and expense in undertaking any of the activities described herein.
5. **Non-Binding:** The matters recorded in this MOU represent the expression of sincere intention by the Parties. Until such intention is embodied in a binding written agreement, such expression of intention will not be legally binding upon the Parties.

As of this _____ day of _____, 2017.

For UBC

[Name], [Title]For Lions Bay, as authorized by resolution of Council of
[Name], [Title]For Lions Bay, as authorized by resolution of Council of

_____, 2017:

Karl Buhr, Mayor
