

# NORTH SHORE STREAMKEEPERS MEETING

Wednesday, September 19, 2018 – 7:00pm - 9:00pm  
North Vancouver City Hall, 141 West 14th St.

## MINUTES

Attendance: 32

### 1. **Presentation - Summary of the Lynn Creek Ephemeral Channel Enhancement Project** (Glen Parker)

See **Appendix A** for presentation "*NSSK - Lynn Creek Ephemeral Channel Overview and Project Plan.pdf*"

*Highlights:*

- Idea is to connect the channel to the water table at a number of points, so it stays wetter in the drier parts of the year.
- There was one natural jam in the channel and we wanted to duplicate it, to create scour holes at the river floods the channel.
- The structures (logs, boulders and cable connections) need to withstand 200-year flood levels.
- Streamkeepers (Jan Lander, Doug Hayman), BCIT Rivers Institute (Dave Harper), DFO (Sandie Hollick-Kenyon) provided expertise, Northwest Hydraulics did the drawings, Vancouver Fraser Port Authority (formerly Port Metro Vancouver) provided seed money.
- Tsleil-Waututh let us have a stockpile of materials (boulders and tree trunks) we could have, and a staging area at the mouth of the Lynn we used to sort it.
- Work was completed at end of August 2018 (thank you to all the volunteers); by mid-September the scour holes are already showing formation of pools.
- More from the North Shore News:  
<https://www.nsnews.com/news/streamkeepers-building-coho-salmon-habitat-in-north-van-s-lynn-creek-1.23415761>
- Jane Paddon and Dolores Parker then presented *A Salmon's Garden in Lynn Creek*, sung and accompanied with ukuleles. See **Appendix B** for the chords and lyrics.
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### 2. **NSSK Board updates (Barbara)**

- Two long-term members, Michael Gosnell and Bob Gelling, passed away this summer. We want to recognize all their contributions.
- We will post on the message board info about Estate Planning, sponsored by Pacific Salmon Foundation.

### 3. **Municipal, Federal, and Agency Updates (40 min)**

#### **a. DNV Environmental Protection (Erika Nassichuk):**

- Lynn Channel project: We are going to do a two-phase planting, as we need to deal with knotweed on site, then do planting, and will hold a volunteer planting event. Also, DNV wants to do a ribbon-cutting ceremony this fall. **[Update: Opening and planting event to be held Oct. 11. Information is posted on the message board: <http://www.nssk.ca/what-we-do/messageboard/>]**

- PowerPoint: Tony Oak and summer student took YSI meter out to survey Morten Creek, to gather data on whether to allow runoff water into the Morten Creek – summary is that it doesn't look like a good idea, as the drainage water had quality issues. It would likely be OK in the winter, but not in the summer. Tony Oak will continue on through the winter to gather that data. Slides from the presentation are included in **Appendix C**.
- Ron den Daas has question about a construction project in DNV; a DNV land parcel was partly filled, presumably without permission. The DNV is aware of the project he is talking about.
- Reminder to all Streamkeepers and any members of the public: **DNV has a zero tolerance policy, will ticket when anything at a construction site is up to standard. If anyone sees any turbid water runoff entering a storm drain, email environment@dnv.org.**

## **b. DNV Trails and Habitat**

### **Megan Cooper:**

- Upcoming events:
  - Gardening Day at Gerry's Garden (border DNV/CNV) Sept. 22
  - Planting at Rivers Day (DNV) at Delbrook Sept. 22, starting at 10AM, paired with community art project at 11AM.
  - Coming up in Oct: Hastings Creek at Harold and Baird – bank stabilization planting work
  - Corporate event with Arc'teryx at Harbourview Park involving blackberry removal and planting. Tsleil-Waututh and contractors have been working in the area to remove invasives.
  - Corporate event with Telus will have 50 staff members come in and help replant north side of Hastings in Princess Park.

### **Tyler Farley:**

- Restoration in Princess Park will mirror what was done in April 2018, protecting riparian area, beefing up dog area fence to try and keep dogs out of the creek.
- Other recent/ongoing trail work:
  - Lynn Canyon near corner pools, a brand new bridge and boardwalk built, taking away access to salmon and amphibian creek that runs into the area.
  - Improvements to Hastings Creek trail near Arborlynn.
  - Significant boardwalk replacement along Varley Trail, reducing erosion going into Lynn Creek.
  - Trail re-alignment in south Lynn Canyon Park (before Sea-to-Sky trail) to move the trail away from the creek.
  - Baden-Powell had been a big project this year, aiming to reduce erosion; a brand new sign standard for trails will be launching in upcoming weeks along the B-P.
  - Mackay trail: Moving trail away from creek, on a side channel downstream from kiosk.
  - DNV hired contractors (Echo Ecological) to do additional plantings along Bridal Path, Harbourview, Maplewood Creeks.

- Tyler also brought five wooden creek name signs he made on his own time for members to take and mount in appropriate locations (signs for Mosquito Creek, Hastings, McCartney, Mackay, Morten)

### c. City of North Vancouver

#### Dave Matsubara (CNV):

- Mackay Creek project:
  - Want to build off-channel ground watershed habitat and stormwater treatment in area of Heywood Park.
  - Stormwater from Hamilton Ave/Hamilton Heights area currently exits into a ditch before emptying into Mackay. Right now that ditch area is grass: It will be converted into infiltration/bioswales/pond. As part of the project, CNV already took down some invasives (10m-tall holly trees). Project is heavily underway for the next four weeks near intersection of Hamilton Ave. and W 17<sup>th</sup> St.
  - Grant funding (federal) goes until February; planting may happen in the spring. Fencing will also be part of the project, and will likely be done in phases due to its high cost.
  - The existing trail will be pulled away from riparian area a bit, but any larger relocation of the trail would be in conflict with use of active areas, and the CNV is not wanting to take down mature trees.
- Mackay Creek Flood Protection and Enhancement:
  - This is Flood mitigation project with funding from Emergency Management B.C.; focus of project is undersized pedestrian bridge (near Capilano mall) – which is the primary flood constraint. It will be removed and rebuilt larger, similar in size/style to Lynn Creek Rusty Bridge.
  - As part of project, proposing to remove the weirs that are in Mackay Creek, as those weirs raise the creek levels by 1m where there are (idea for them was to trap sediment, not performing).
  - Oil/grit separator on west side, just below Hyack Park, will be replaced with a newer "JellyFish" filter; use a filter medium to removed; Gravel bars tend to form right at outflow; higher quality of water coming out, [jellyfish separator]?
  - Hyack Park, alders, cottonwood, big leaf maples, invasives; will use an excavator to do an invasive removal – area a bit overgrown and attracts dumping; [Streamkeepers comment; many birds, rare birds use that area]; it will not become "active" park, it will still be wooded. Mackay Rd will be narrowed, removing parking. (Mackay Rd will not be closed, as was part of the original plan.) Backchannel proposed, with subsurface intake on the North side. Channel is not being changed, at the downstream end will be opening to the backchannel. Can't do anything right now about treating Marine Dr runoff, only installing flaps to prevent backwater.
  - For more information, see <https://www.cnv.org/parks-recreation-and-culture/parks-and-greenways/park-projects/lower-mackay-creek-enhancement>

#### Angela Negenman:

- Nothing. (Rivers Day info to come later)

**d. DFO Community Advisor (Sandie Hollick-Kenyon)**

- Show of photos of Morten Creek: replacing settling tanks; Seymour net fishing (Pink, Coho); Coho festival booth; Capilano cable pool cleanup; Ron's Mural at Seymour Hatchery (open house day); Evidence of beavers on Mackay Creek under Welch St. Bridge – getting very closed up. More beaver structures downstream (right now fish passage is clear); Fish ladder on Mosquito at Marine; fish ladder/culvert on Wagg.
- See **Appendix D**.

**e. Pacific Streamkeepers Federation (Zo Ann Morten)**

- Not present – is running for District Council.

**4. Ongoing issues, initiatives and large projects – by watershed (40 min)**

**a. Tseil-Waututh Nation**

- Not present

**b. McCartney Creek**

Glen Parker (Presentation – See **Appendix E**)

- Repairing culvert under Mount Seymour Parkway; added new notched baffles in the culvert (corrugated pipe).
- Will be doing twice-annual fish count in October – will post to the message board.

**c. Maplewood and Seymour Flats**

- Development is going on: Wild Bird Trust and developer working together.
- Maplewood box culverts from last year: each one has coho fry.
- Keegan will be going to the Oct. 2<sup>nd</sup> Port of Vancouver open house at Corrigan Nature House to find out more about the Marine Habitat Restoration Project. (See <https://porttalk.ca/maplewood> and <https://www.portvancouver.com/development-and-permits/development/maplewood-marine-restoration-project/>)

**d. Seymour River**

**Glen Parker:**

Hatchery/Operations update:

- 40,000 coho fed fry released above the dam in the upper watershed on June 21, 2018. Another ~15,000 fed fry were scatter released between the hatchery and Twin Bridges. [According to hatchery manager Brian Smith, tagging shows that some of the fish are getting below the rockslide and into the ocean]
- 2018 Coho fin clipping has been completed and Steelhead clipping should be completed by the end of September.
- Approximately 8,000 coho fry have been clipped for a DFO net pen project. These fry will be raised at the hatchery until the spring of 2019 and then transferred to net pens in Port Moody.
- The river seine will be conducted every Thursday until mid-October. Approximately 200 fish in first 2 seines. Tagged 7 coho and 3 steelhead. These fish received a telemetry tag and were released above the fish fence

(below the rock slide) and will be monitored to determine if they are able to migrate through the slide.

- It has been a very slow start to the adult coho return. Our first seine in 2017 was August 31<sup>st</sup> and more than 300 coho were captured. This year our first seine was August 30<sup>th</sup> and less than 50 adult coho were captured.

#### Rock Slide update:

- 8 blasts completed with blasts scheduled for September.
- Possible that this year's storms will open a channel for upstream fish passage but are planning for blasting in 2019.

#### Community outreach/Education Programs:

- 10 classes already booked for the fall GDS program. A total of 20 classes will be booked for this fall. First class is currently scheduled for October 1<sup>st</sup>.
- Rivers Day event at the Seymour Estuary September 23<sup>rd</sup>. Top soil and native plants will be added/planted to the Kiosk area during the day.

#### **e. Lynn Creek (Morten, Hastings, Keith)**

##### **Doug Hayman:**

- It was a busy summer for us [at the Morten Hatchery]. First of all, we levelled up the trailer. We had raised it up 3-4 inches, now it sure works better – we can even open both doors without a problem.
- The next job was to install the new Square tank that Sandie [DFO] got for us. The mobile crane and operator that were hired made the job not too tough – that's because he put it in the right place. Of course, it took a little bit of work to prepare. Thanks to the volunteers who were a big help.
- Next was to put the round tank back in place, which took a little work again, but the volunteers came through once more.
- We also had to build a new platform beside the Square tank, which turned out pretty good as well. That left the plumbing to do, which is 95% done. We have a leak in our surface waster to fix, but have the pipe and materials to do it and will do it soon.
- Many thanks to all our volunteers Wally, Glen, Gary, Nick, Jane, Jan, Tasha, Tim and Greg with his handy hand saw, which he was very good at using. Not to forget Sandie's help, or Tyler [DENV], who was also a big help.
- One of the last things we had to do was two trips to the transfer station to get rid of all the old materials. Many thanks to all, I just hope I did not leave anybody out.

##### **Jamie Martz:**

- Tim, Haley, Jamie will be keeping Hastings Creek culverts clear over the fall; Tim will continue to maintain the two fish ladders.

##### **Lyle Vallie:**

- DNV's replacement of Ross Rd bridges delayed a year (so no longer beginning in Jan. 2019 with in-stream work planned for August 2019: Looking at 2020 instead.)

##### **Janet Dysart:**

- Hunter Park planting took place last weekend, ~50 plants.

**Rhiannon Coppin:**

- Keith Creek culvert addition as part of Hwy 1 and Mtn Hwy interchange is supposed to be getting fixed – the lengthening of the culvert as part of new off-ramp construction resulted in Keith Creek flowing under the opening of the pipe and bubbling up part way down the pipe, at the seam with the old part of the culvert. DNV was contacted, and followed up with the Hwy1 project team, which began repairs and planned to have them completed by the end of August. They did not appear to be done when I last visited in mid-September, as Keith Creek was still pump-and-hose diverted through the culvert at that time.

**f. Mosquito Creek (Wagg, Thain)**

**Keegan Casidy:**

- Keeping weirs on Mosquito, one on Mission/Thain clean; had meeting with Dave Matsubara. Karen, who was keeping them clear in the past, was being compensated for her time. Dave wants Keegan to track his time. If it turns out the CNV is able to bill Metro Vancouver for the work in the future, Keegan would like to have the proceeds go to NSSK.
- In the summer, Fell channel dried out: Water was coming through lock blocks and not making it into the intake; estimate 1,000 fish were lost – had been well-seeded with fry before that.
- Beginning a Mosquito in-stream project happening upstream of Bewicke bridge, a 200m area. It will be similar to Lynn Channel project, but this is main channel habitat. The plan is to have boulder weirs installed to narrow the passage, and encourage scours. Next step is to meet with Squamish Nation.
- There is an ongoing raw sewage issue on upper Mosquito Creek – sewage from Grouse Mountain Resort was spilling out this summer. [Discussion around table is that it is likely on Grouse Mtn land – not sure if DNV or Metro Van or DFO have been the go-to on this in the past, or if anyone is monitoring this now.]

**g. Mackay (Upper, Lower)**

**Ron den Daas:**

- Upper Mackay: Spawner surveys will be starting Sept./Oct.
- Ongoing work/issues include plantings, dealing with invasives, keeping tabs on the beaver dams.

**h. Capilano**

**Glen Parker:**

- Made the news with the last-minute organization of a Capilano River dive to clean up fishing line and other debris: Nine (9) divers were in the water at cable pool, 50lb of fishing tackle retrieved up to the hatchery entrance. More from North Shore News: <https://www.nsnews.com/news/north-shore-streamkeepers-rally-divers-for-capilano-river-cleanup-1.23427985>

**Watershed-independent**

**a. Water Quality Monitoring update**

- Glen Parker: Seems to be going well. [See **Appendix F** for an update from Tony Oak.]
- Angela Negenman: CNV is also now doing a water sampling/monitoring program as per Metro Vancouver's requirements.

## 5. New challenges and opportunities

### a. Lynn Channel Community Art (Glen Parker and Ron den Daas)

- Glen: G3 terminals proposed 40K to work below train bridge, \$28K Lynn Channel; Glenna and Ron meeting with them Sept. 20

### b. Questions for election candidates

- Barbara will post on messageboard – The questions were developed by the NSSK Board. Streamkeepers are encouraged to go to all candidates meetings and ask how they will help preserve our natural heritage:

*As you engage in this year's local elections, we hope you will ask candidates to support policies that will protect our creeks and their inhabitants.*

*We've put together a couple of questions that you may wish to pose to candidates when they show up at your door, or at an all-candidates meeting. Or perhaps these will inspire you to come up with your own!*

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*1. North Vancouver creeks support populations of coho, chum, pink, steelhead and even some chinook. However, these populations are under stress from changes in streamflow related to increased land development, loss of streamside habitat, and poor water quality associated with stormwater runoff. If we want to support and sustain this natural heritage, we need to keep the water in our creeks clean and flowing consistently.*

*Question: If elected, what would you do to make sure we manage tree cover, stormwater quality and flow rates to ensure protection of salmon populations?*

*2. Our wastewater, a.k.a. sewage, even with the new treatment plant being built at Lions Gate, is treated to the lowest levels in Canada. Poor effluent quality adds to stresses on the salmon as they swim through the millions of litres of waste discharged under the Lions Gate Bridge on their migrations to and from the streams!*

*Question: If elected, what would you do to make sure wastewater is treated to the same standard as cities without an ocean to dilute the sewage?*

### c. Spawner signs

- Tyler Farley brought five (5) new large coroplast salmon spawning signs. Streamkeepers can put them up at popular creek access spots; some

members suggested moving them every two weeks to new spots. Members with the spawning signs from last year (another 5) should also put those up now.

**6. Upcoming Volunteer Opportunities and Events (4 min)**

- NSSK Booth – CNV Rivers Day - Sept. 23 (Sunday), 12pm-4pm
- DNV Rivers Day event Sept. 22 (Sat) at Delbrook (Mosquito Creek)

Karen Munro is coordinating volunteer lists for both events; both are major planting and tidying events.

**7. Membership reminder (1 min)**

Join the North Shore Streamkeepers if you are planning on working in the creeks or helping with other activities in North Vancouver. Annual memberships are \$10, which includes liability insurance coverage when undertaking Streamkeeper work.

**8. Other attachments**

- Treasurer's Report [Not covered in meeting] – See **Appendix G**

**Next Meeting**

**Wednesday, November 21, 2018, 7:00pm to 9:00pm**

**District Hall, 355 West Queens Road, North Vancouver**

**Important Contacts**

DFO VIOLATION REPORTING: OBSERVE, RECORD, and REPORT (ORR)  
04-607-4186

**A SPILL OF ANY TYPE**

Environment Canada – Call EMERGENCY MANAGEMENT B.C: 1-800-663-3456  
[www.embc.gov.bc.ca/index.htm](http://www.embc.gov.bc.ca/index.htm)

**City of North Vancouver**

Operations Division 604-987-7155 (8:00 am – 4:30 pm Monday to Friday)  
After-Hours Emergency Line 604-988-2212 (after 4:30pm, weekends & Holidays).

**District of North Vancouver**

Email [environment@dnv.org](mailto:environment@dnv.org) to report public concerns about construction practices or stream erosion/pollution.

To reach the North Shore Streamkeepers (non-emergency), email [info.nssk@gmail.com](mailto:info.nssk@gmail.com)



## **Appendix A**

*See next page.*



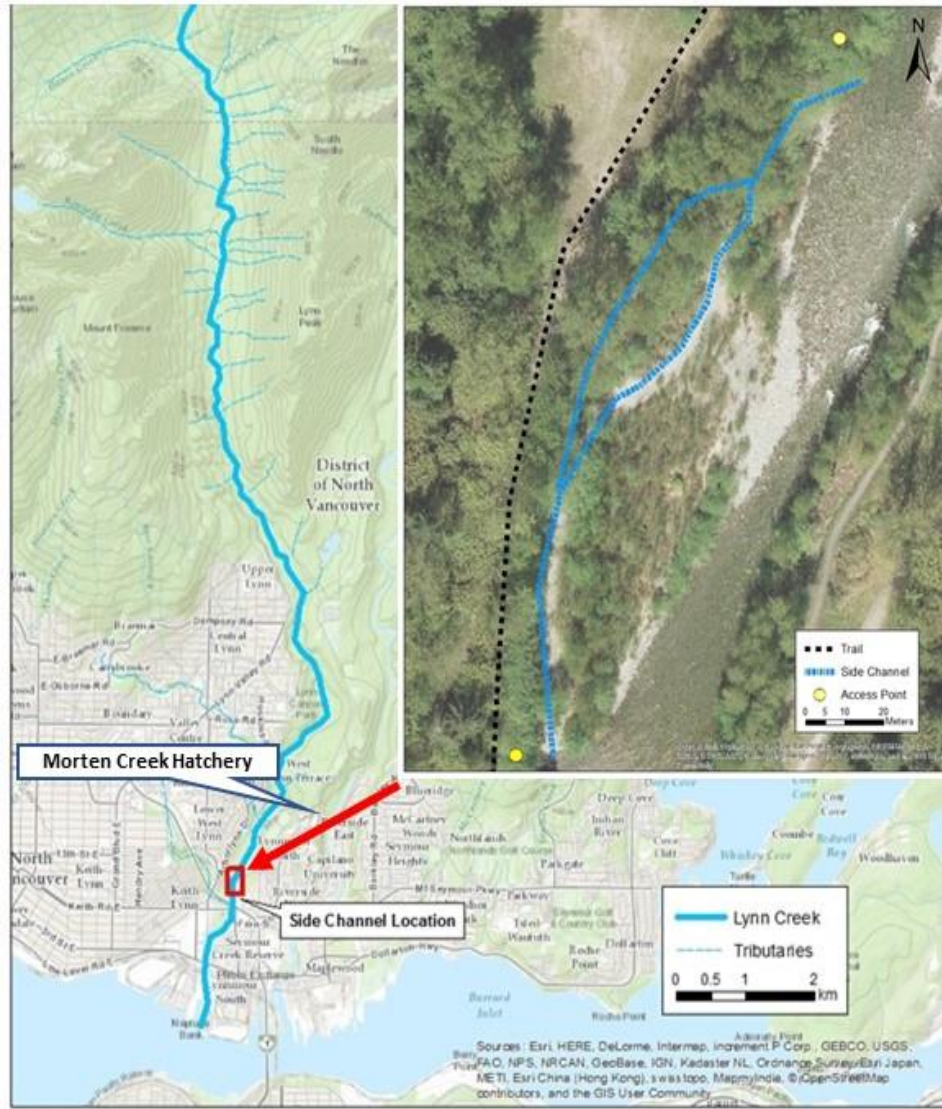
# North Shore Streamkeepers Society

Lynn Creek Ephemeral Channel  
Overview and Project Plan

Active since 1993

[www.nssk.ca](http://www.nssk.ca)

# Lynn Creek Ephemeral Channel Enhancement Project



- Enhance 150 metres of an existing ephemeral channel on the urbanized Lynn Creek
- In Lynn Canyon Park under the authority of the District of North Vancouver (DNV)
- Enhancing this channel will improve habitat through creation of 4 large woody debris structures to naturally scour pools, provide instream and overhead cover and retain organic matter
- These structures will follow the template provided by the natural jams that exists in the channel

# Lynn Creek Ephemeral Channel Enhancement Project

Natural jam in the channel



*The project is a collaborative effort between the BCIT Rivers Institute and the North Shore Streamkeepers with key involvement by the DNV and DFO*

- Identified for enhancement in a study for Ministry of Water, Land and Air Protection
- Planning & engineering in 2017 (\$21,400)
- Field work in 2018 (estimate: \$78,849)
- BCIT, NSSK and DNV have confirmed their support
- DNV will provide significant in-kind support managing the required permits, providing native planting materials and monitoring.
- BCIT will engage students as part of the Ecological Restoration Program

# NHC Design for Permits



HYDRAULIC DESIGN DATA	
DISCHARGE, Q (50-YR)	334 m <sup>3</sup> /s
VELOCITY, V (M/S)	2.5 m/s
WATER DEPTH (M)	2.5 m


BALLAST REQUIREMENTS		
LWD LENGTH (M)	BOULDER DIA. (W/ROOTWAD)	BOULDER DIA. (W/O ROOTWAD)
4	1490 mm	960 mm
6	1510 mm	980 mm
8	1530 mm	1070 mm
10	1550 mm	1150 mm



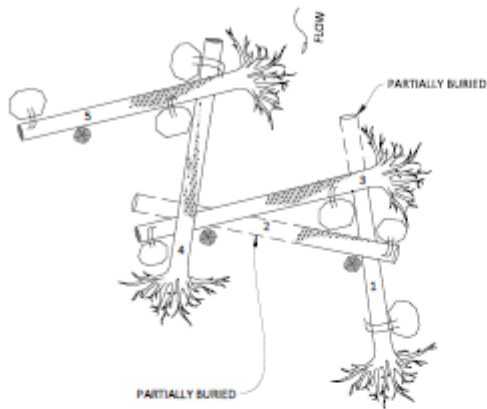
KEYMAP  
SCALE: 1:10,000

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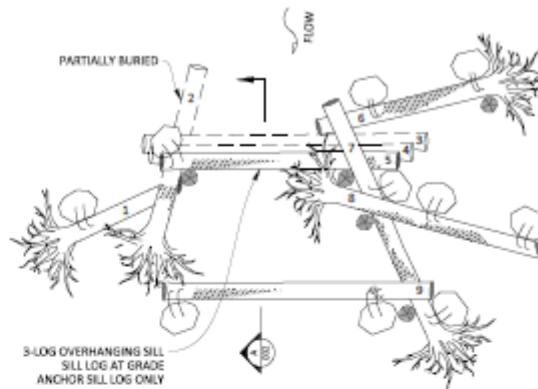
1. PREFERRED LWD SPECIES IS CONIFEROUS RED OR YELLOW CEDAR. DOUGLAS FIR SITKA SPRUCE OR WESTERN HEMLOCK MAY BE ACCEPTED.
2. ROOTWAD WIDTH TO BE MIN. 2.5 m; STEM DIAMETER = 0.6 m
3. PLACEMENT AND ARRANGEMENT OF LWD COMPLEXES MAY VARY FROM DRAWINGS. FIELD ENGINEER TO BE PRESENT DURING CONSTRUCTION TO CONFIRM LAYOUT.
4. USE REDHEAD C-6 EPOXY OR APPROVED EQUIVALENT.
5. METHODS FOR SECURING CABLE TO ANCHOR ROCKS AND LWD:
  - a. DRILL 250 MM DEEP HOLES THROUGH BOULDER. 4 HOLES PER ANCHOR BOULDER; 2 CABLES PER END (4 TOTAL PER LWD)
  - b. FLUSH HOLES WITH WATER A MINIMUM 3 TIMES OR UNTIL WATER CLEAR FREE OF DUST.
  - c. DRILL HOLES THROUGH LWD. MAINTAIN 75% CORE WIDTH
  - d. RUN CABLE THROUGH DRILL HOLES TO "HORSESHOE" CABLE AROUND THE LWD.
  - e. ENSURE CABLE IS APPROPRIATE LENGTH SO ROCK AND LWD SIT SNUG WITH ONE ANOTHER AND SLACK IS MINIMAL.
  - f. FILL DRILL HOLES WITH EPOXY AS RECOMMENDED BY THE MANUFACTURER.
  - g. PLACE ENDS OF CABLE IN EPOXIED HOLES.
  - h. LET DRY AND TEST BOND BY LIFTING THE LWD AND ROCK ASSEMBLY WITH THE EXCAVATOR.
  - i. IF CABLE PULLS OUT, RE-TRY.

<b>BCIT RIVERS INSTITUTE</b> 3700 WILLINGDON AVENUE BURNABY, BRITISH COLUMBIA		 30 Gostick Place North Vancouver, BC Canada V7M 3G3 Office: 604.980.9011 Fax: 604.980.9264 www.nhcweb.com	
<b>REVISIONS</b>		<b>DRAWING INFORMATION</b>	
0	2018-02-15	ISSUED FOR PERMITTING	DATE 14 Feb 2018
			DESIGNED BY AMB
			DRAWN BY AMB
			CHECKED BY BMC
			SHEET SIZE B (11" x 17")
<b>LYNN CREEK SIDE CHANNEL ENHANCEMENTS                  LARGE WOODY DEBRIS COMPLEXES</b>		PROJECT NUMBER DRAWING NUMBER G0003651-001 SHEET NUMBER <b>001</b>	
LARGE WOODY DEBRIS DETAILS PLAN VIEW		REVISION	

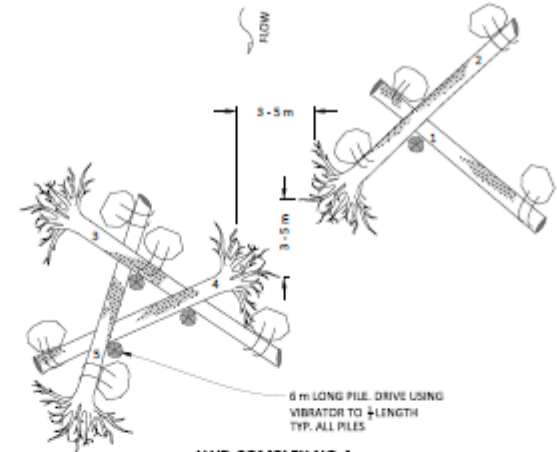
# NHC Design for Permits



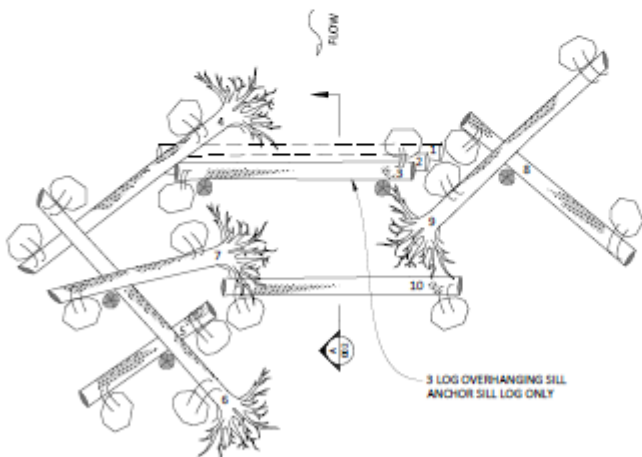
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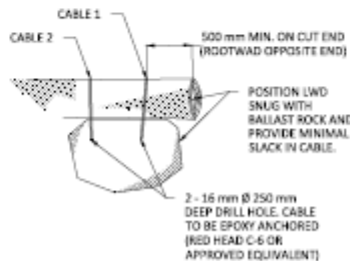
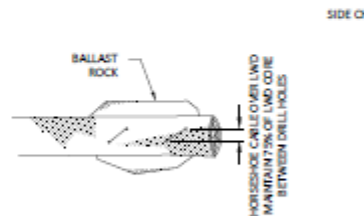
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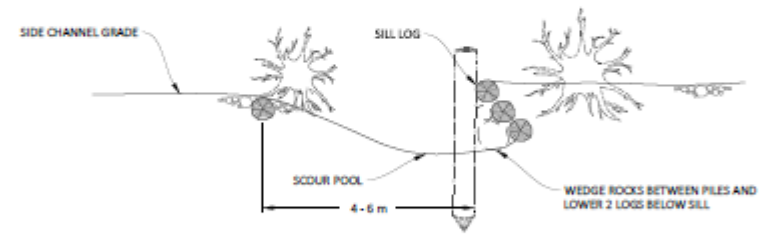
**LWD COMPLEX NO.4**  
SCALE: 1:150



**LWD COMPLEX NO.3**  
SCALE: 1:150



**BALLAST DETAIL**  
SCALE: 1:30



**SECTION A (TYP.)**  
SCALE: 1:300

<b>BCIT RIVERS INSTITUTE</b> 3700 WILLINGDON AVENUE BURNABY, BRITISH COLUMBIA		30 Gostick Place North Vancouver, BC Canada V7M 3G3 Office: 604.980.6011 Fax: 604.980.9264 www.nhowb.com	
REVISIONS		DRAWING INFORMATION	
0	2018-02-19 ISSUED FOR PERMITTING	DATE	14 Feb 2018
		DESIGNED BY	AMB
		DRAWN BY	AMB
		CHECKED BY	BMC
		SHEET SIZE	B (11" x 17")
<b>LYNN CREEK SIDE CHANNEL ENHANCEMENTS          LARGE WOODY DEBRIS COMPLEXES</b>  LARGE WOODY DEBRIS DETAILS PLAN VIEW		PROJECT NUMBER	
		DRAWING NUMBER	DB009651-002
		SHEET NUMBER	002
		REVISION	

# Log and Boulder Estimates (Final design may vary)

<b>Lynn Channel: Estimate of Root Wads/Logs</b>						
	Root Wad (2.1 to 3.0 M)	Root Wad (2.1 to 3.0 M)	Log	Log	Pile	
	Stem (0.31 to 0.45 M)	Stem (0.31 to 0.45 M)	Stem (0.31 to 0.45 M)	Stem (0.31 to 0.45 M)	Stem (0.31 to 0.45 M)	
	Length (4-5.9 M)	Length (6-8 M)	Length (4-5.9 M)	Length (6-8 M)	Length (4-6 M)	<b>Total</b>
LWD Complex No. 1	4	0	0	1	0	5
LWD Complex No. 2	5	0	3	1	2	11
LWD Complex No. 3	3	1	6	0	2	12
LWD Complex No. 4	4	1	1	0	0	6
<b>Total LWD</b>	<b>16</b>	<b>2</b>	<b>10</b>	<b>2</b>	<b>4</b>	<b>34</b>
<b>Lynn Channel: Estimate Boulders</b>						
<b>4 Boulders/Element</b>	Root Wad (2.1 to 3.0 M)	Root Wad (2.1 to 3.0 M)	Log	Log	Pile	
	Stem (0.31 to 0.45 M)	Stem (0.31 to 0.45 M)	Stem (0.31 to 0.45 M)	Stem (0.31 to 0.45 M)	Stem (0.31 to 0.45 M)	
	Length (4-5.9 M)	Length (6-8 M)	Length (4-5.9 M)	Length (6-8 M)	Length (4-6 M)	
<b>Boulder Diameter (M)</b>	<b>0.84</b>	<b>0.88</b>	<b>0.65</b>	<b>0.72</b>	<b>n/a</b>	<b>Total</b>
LWD Complex No. 1	16	0	0	4	n/a	20
LWD Complex No. 2	20	0	12	4	n/a	36
LWD Complex No. 3	12	4	24	0	n/a	40
LWD Complex No. 4	16	4	4	0	n/a	24
<b>Total Boulders</b>	<b>64</b>	<b>8</b>	<b>40</b>	<b>8</b>	<b>n/a</b>	<b>120</b>

# Budget & Confirmed Funding

Phase One (2017)	Budget Estimate	Contractor	Current Estimate (Cash)	Current Estimate (In-kind)	Final Cost (Cash)	Final Cost (In-kind)	Notes
Engineering Investigation, Report, Project Plan	\$9,000	NHC			\$9,000		Complete
Level Surveys and assit NHC	\$9,000	NSSK				\$5,000	Complete
Ground Water Monitoring	\$5,000	NSSK				\$1,000	Complete
Project Manager	\$2,000	NSSK				\$1,000	Complete
DFO Professional	\$800	DFO				\$800	Complete
DNV Supervision, Permit Applications	\$3,000	DNV				\$3,000	Complete
Project Supervision	\$300	NSSK				\$300	Complete
Stream Monitoring	\$600	NSSK				\$1,000	Complete
Project Reporting	\$300	NSSK				\$300	Complete
<b>Total</b>	<b>\$30,000</b>		<b>\$0</b>	<b>\$0</b>	<b>\$9,000</b>	<b>\$12,400</b>	<b>\$21,400</b>
Phase Two (2018/2019)	Budget Estimate	Contractor	Current Estimate (Cash)	Current Estimate (In-kind)	Final Cost (Cash)	Final Cost (In-kind)	Notes
Field Engineer	\$2,500	NHC	\$2,500				Dave to execute contract with NHC
Field Biologist	\$2,000	TBD	\$1,000				
Fish Removal Permit and Removal	\$500	BCIT		\$500			Dave to apply for fish removal permit - propose to use Electro Fisher prior to field work starting.
Excavator	\$8,000	M. Coers	\$8,000				Dave to confirm cost, availability and equipment capacity for 10,000 pound boulders - preferred dates are August 21-22, 2018
Cabling	\$3,000	BCIT	\$3,000				Dave to purchase and arrange labour Cabling material cost \$1000 plus 40 hours paid BCIT workers
Epoxy	\$1,500	BCIT	\$1,500				Epoxy material cost \$1200 plus 12 hours paid BCIT workers
Rock Drill and Accessories	\$1,500	BCIT	\$1,500				Drill & Accessories cost \$800 plus 28 hours paid BCIT workers
Logs and Boulders	\$25,000	TBD		\$25,000			Looking for: Root Wads (11@6 m, 1@8 m, 5@4m); Logs (28@6m); Boulders (28@0.8m dia., 56@1.2m dia.)
Boulders Transportation	\$3,000	TBD	\$3,000				Cash budget is for hauling only. Laydown areas and access identified by DNV. Two NSSK volunteers to be on side to ensure no invasives and materials are placed in designated areas
Large Wood Debris Transportation	\$5,000	TBD	\$5,000				Looking for source budget is for hauling only. Laydown areas and access identified by DNV. Two NSSK volunteers to be on side to ensure no invasives and materials are placed in designated areas
Construction Signage	\$250	BCIT	\$250				Dave to prepare and submit to DNV for approval using Lower Lynn templates
Permanent Signage	\$750	BCIT	\$750				Dave to prepare and submit to DNV for approval using Lower Lynn templates
Fencing	\$10,500	TBD	\$10,500				Consider use of 5 rail cedar fence as BCIT has materials - consult with DNV
Plants	\$5,000	DNV	\$5,000				Consider planting after fence installed and in the spring of 2018
Project Manager	\$2,000	BCIT		\$2,000			
DFO Professional	\$1,200	DFO		\$1,200			
DNV Supervision	\$1,200	DNV		\$1,200			
Project Supervision	\$600	NSSK		\$600			
Project Reporting	\$240	NSSK		\$240			
Stream Monitoring	\$600	NSSK		\$600			
Hand labour for stream complexing and planting	\$3,000	BCIT		\$3,000			
Hand labour for stream complexing and planting	\$1,500	NSSK		\$1,500			
<b>Total</b>	<b>\$78,840</b>		<b>\$42,000</b>	<b>\$35,840</b>	<b>\$0</b>	<b>\$0</b>	

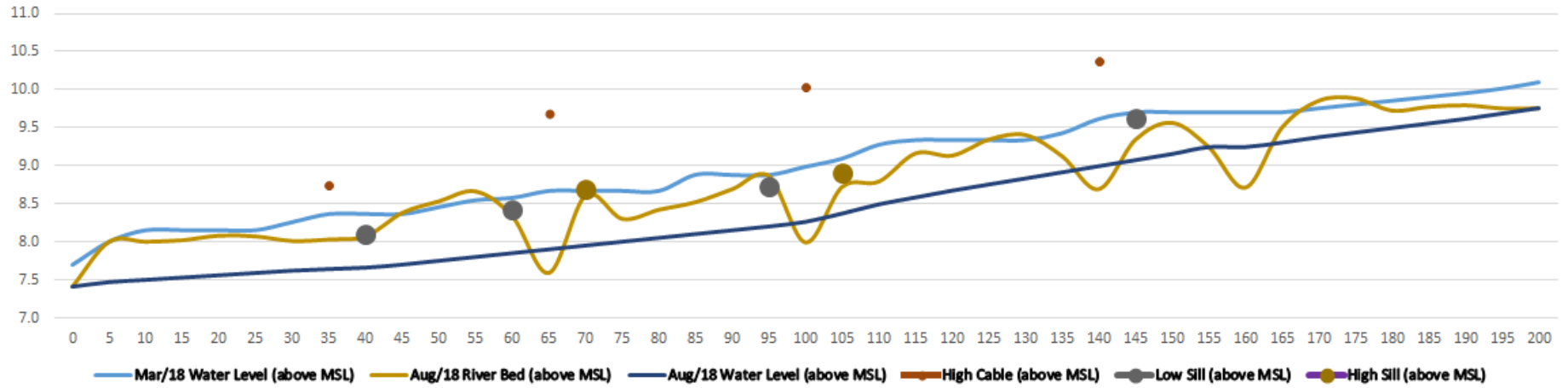


# Water & Steam Bed Elevations – As Built & Historical

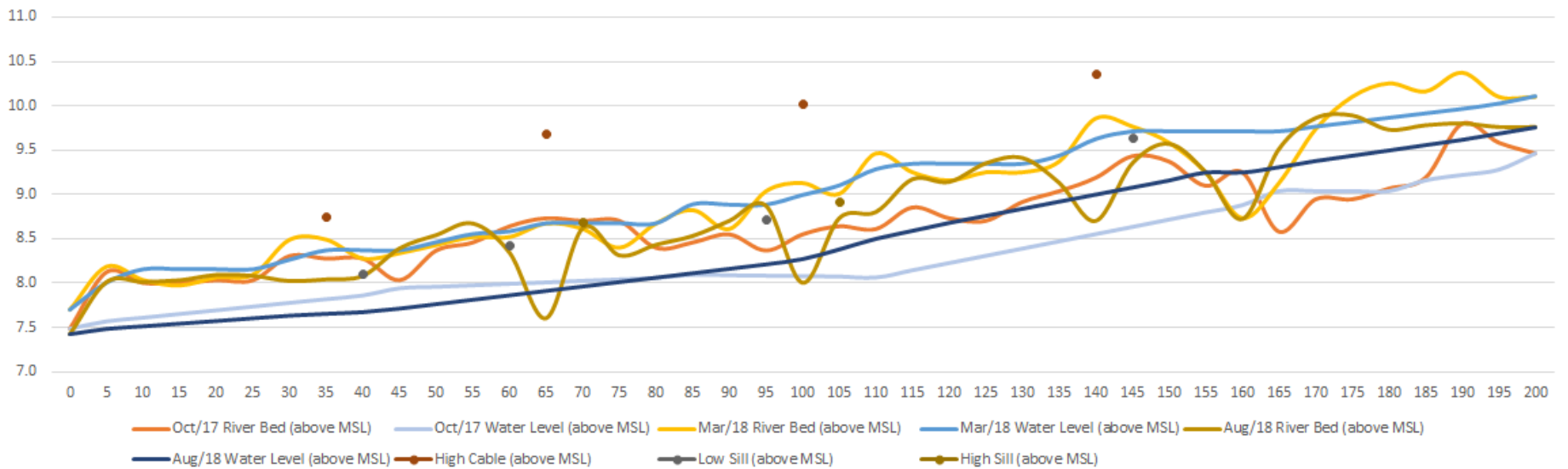
## Lynn Ephemeral Channel

River Bed: August 30, 2018

Water Level: Mar & Aug 2018



## Lynn Channel Data



# Staging Area at Seymour River Spit (TWN Lease)



# Off Loading on Site



# Installing Boulders and Logs



# Anchoring and Cabling



# Completed Structures – Natural Structure



# September 11, 2018 - Natural Structure



# Completed Structures – Complex #1





# September 11, 2018 – Complex #1



# Completed Structures – Complex # 2



# September 11, 2018 – Complex # 2



# Completed Structures – Complex # 3



# September 11, 2018 – Complex # 3









Questions:



## Appendix B

### A Salmon's Garden in Lynn Creek – Lyrics by Jane Paddon & Dolores Parker, NS Streamkeepers

(C) I'd like to be...(Am) a salmon in Lynn Creek  
In a (F) coho salmon's garden in the (G7) shade  
(C) He'd let us in...(Am) knows where we've been  
From the (F) Morten Hatchery we've got it (G7) made

(Am) I'd ask my frie-e-ends to come and seeeeeeee...  
(F) A coho salmon's (G7) garden with me !  
(C) I'd like to be...(Am) a salmon in Lynn Creek  
In a (F) coho salmon's (G7) garden in the (C) shade

(C) We would be cool...(Am) in our new pool  
In our (F) root wad hideaway beneath the (G7) waves  
(C) Resting our head... (Am) on Lynn Creek's stream bed  
In a (F) pink salmon's garden near a (G7) cave

(Am) We would sing and dance aroooooound  
(F) Because we know...we (G7) can't be found !  
(C) I'd like to be ... (Am) a salmon in Lynn Creek  
In a (F) chum salmon's (G7) garden... in the (C) shade

(C) We would shout... (Am) and swim about  
The (F) pools... that lie beneath the (G7) waves  
(C) Oh what luck... (Am) for every hen and buck  
(F) Knowing... they're happy and they're (G7) safe

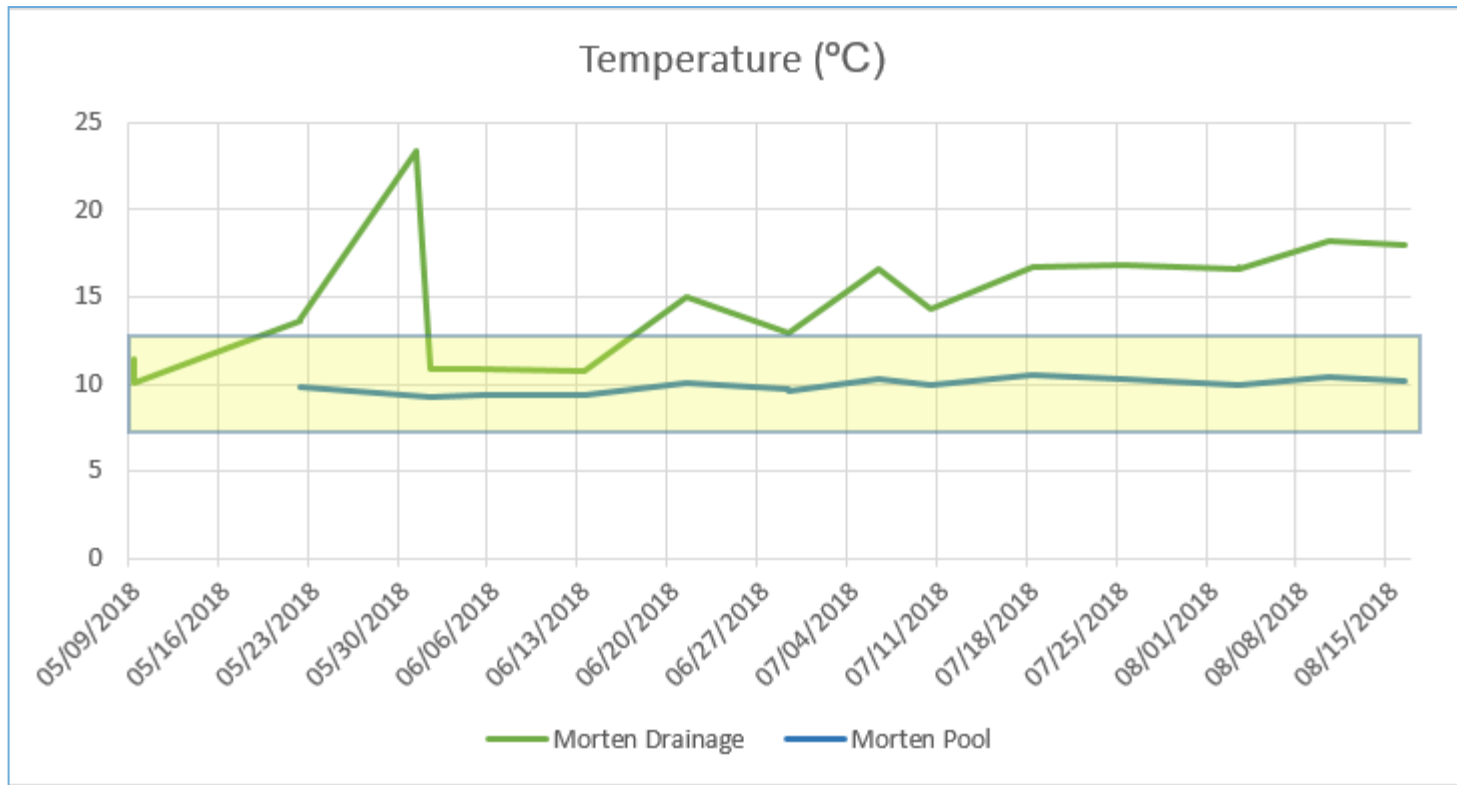
(Am) We would be so happy, you and meeee !  
(F) No one there to tell us (G7) what to do...  
(C) I'd like to be... (Am) a salmon in Lynn Creek  
In a (F) coho salmon's (G7) garden... In Lynn (C) Creek!  
In a (F) pink salmon's (G7) garden... In Lynn (C) Creek !  
In a (F) chum salmon's (G7) garden...in Lynn (C) Creek !

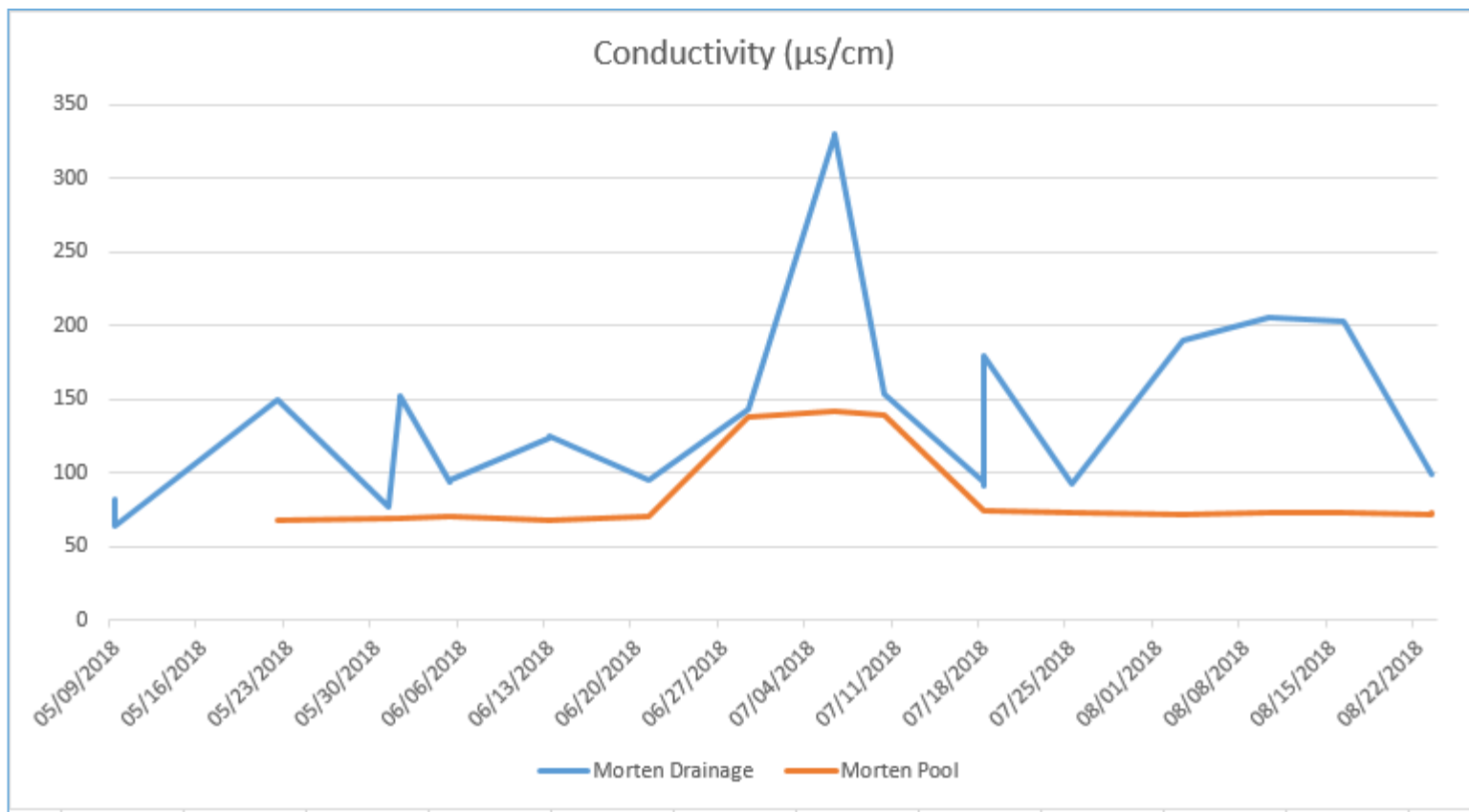
## **Appendix C**

*Slides from DNV on Morten Creek drainage proposal water sampling. See next page.*

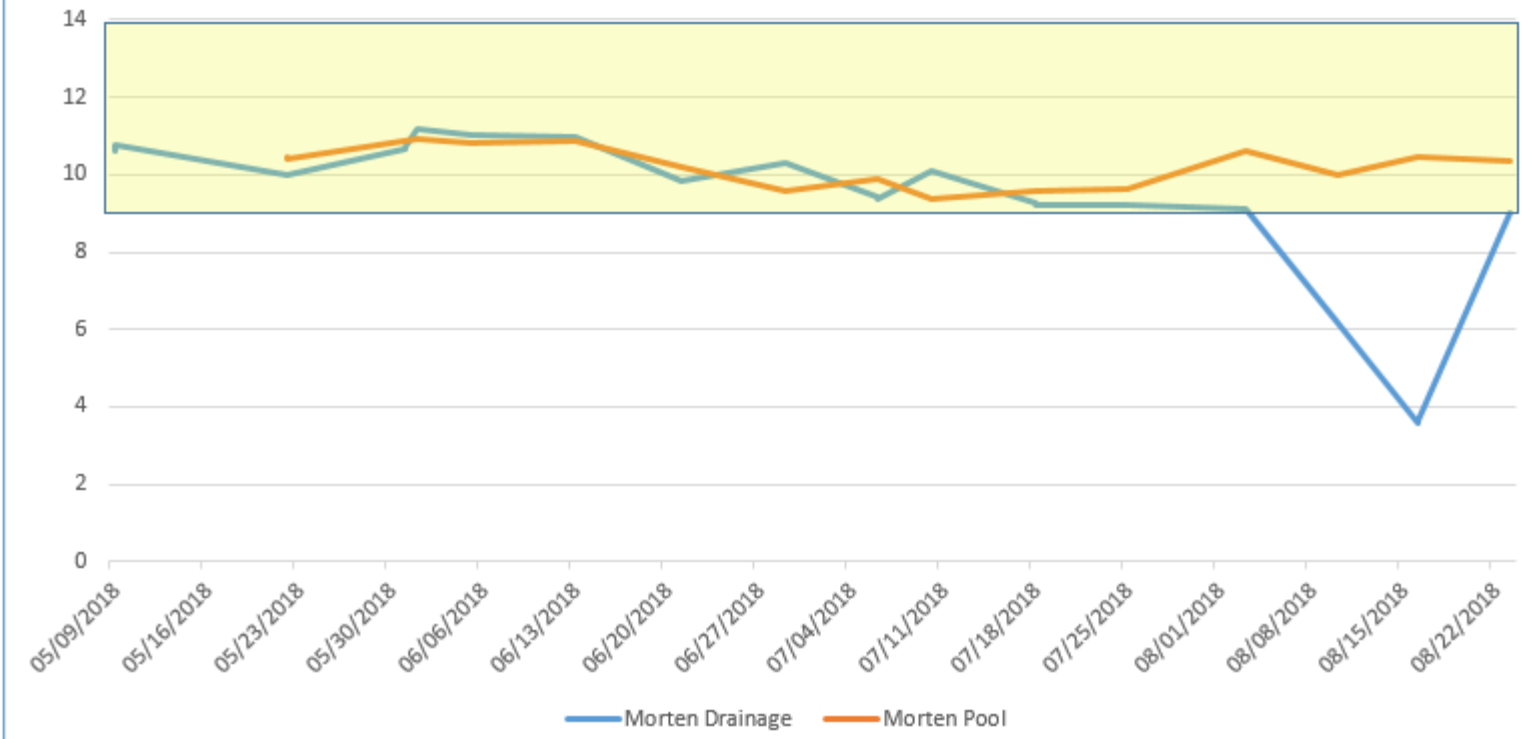
# Morten Creek Sampling Results



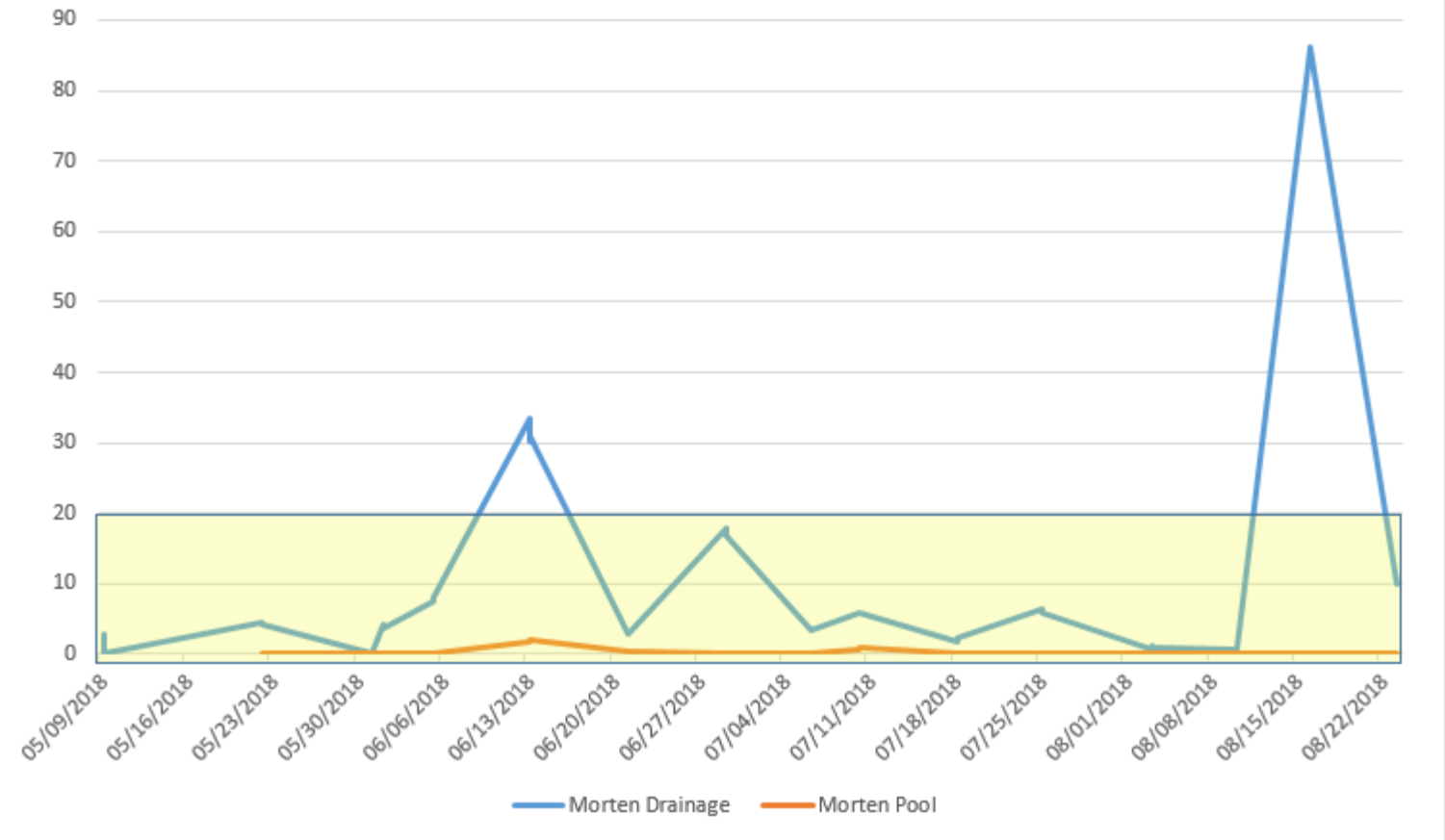


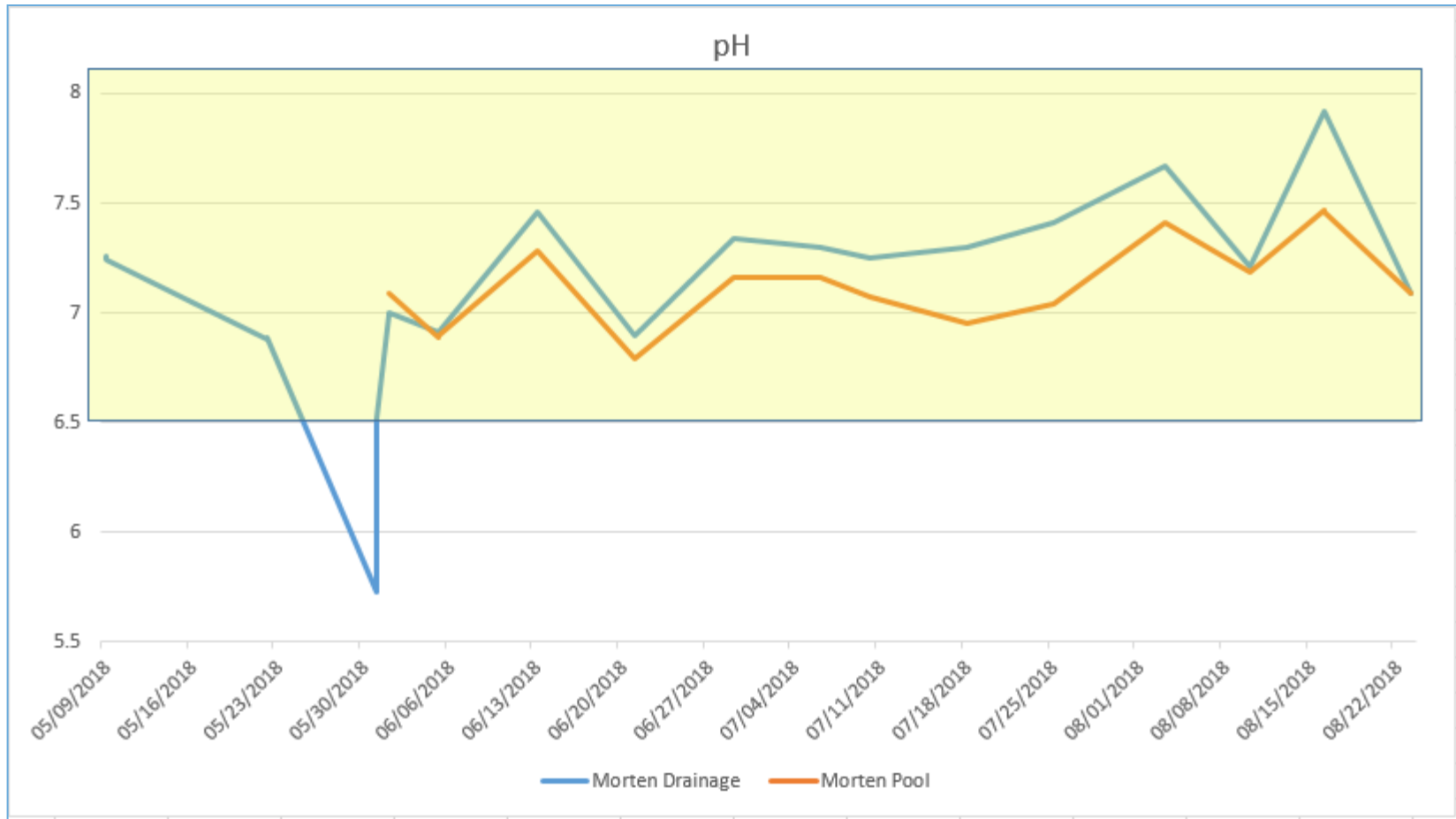


ODO (mg/L)



Turbidity (NTU)







Opening drainage into pool will be okay during winter months, but summer water quality parameters indicate it is not suitable to connect the drainage to the pool over summer.

## **Appendix D**

*Notes from DFO Community advisor:*

We hosted the Community Involvement Program Volunteer Recognition event on June 23rd, the weather held and the lovely A Rocha site was an amazing place for guests to visit and connect with other Salmonid Enhancement Program volunteers from the Lower Mainland. Thanks to everyone who attended and made this event a success.

On June 28, the Seymour Salmonid Society hosted an opening event on the river, to mark the beginning of the third season of rock breaking to restore fish passage in Seymour River.

Morten Creek Hatchery saw the installation of their new water distribution tank on July 20.

On July 21, North Shore Streamkeepers gathered to celebrate 25 years of amazing watershed stewardship work.

The first seine to collect adult salmon on the Seymour River was on August 30th.

The Coho Festival was on September 9th this year. Despite the less than perfect weather, many visitors attended and enjoyed the Stewardship Zone. Thanks to all NSSK volunteers who came out and made the day a success.

Seymour River hatchery held their open House on September 16th and officially unveiled artist Ron den Daas's new mural installation.

Carried out creek walks on Mackay and Mosquito Creeks September 18.

*Sandie Hollick-Kenyon*

*Fisheries and Oceans Canada / Pêches et Océans Canada*

*Community Advisor / Conseillère Communautaire*

## **Appendix E**

*See next page.*

The background of the slide is a light gray gradient with several realistic water droplets of various sizes scattered across it. The droplets have highlights and shadows, giving them a three-dimensional appearance. The main title is centered in the upper half of the slide.

# **MT SEYMOUR PKW CULVERT BAFFLE INSTALLATION**

DNV & NSSK AUGUST 17, 2018

# THE CREW



# THE CULVERT ENTRANCE





EXISTING BAFFLES (14 +/-)



# NEW BAFFLES (5)





# ACTION SHOTS



# ACTION SHOTS



## Appendix F – Water Quality Monitoring Update

Hi All, I am hoping to get some more samples through September and at the end of the month put together some graphs to make sense of the summer data. Over the winter months, sampling can be a little more sporadic, but it would be nice to begin to talk about next spring/summer and try to have a more established sampling plan to get regularly scheduled samples at every sampling location. This will make our year-to-year comparisons more reliable and allow us to pinpoint issues that consistently appear. Tony Oak, GIT Environmental Control Technician, [Oak@dnv.org](mailto:Oak@dnv.org), 604-990-2240.

Sampling Events - NSSK 2018						
Count of Date (MM/DD/YYYY)	Colt					
Row Labels	May	Jun	Jul	Aug	Sep	Grand Total
HA1		3		3	2	8
HA10		6	3	6	2	17
HA2		2	1	2		5
HA2		1				1
HA3		6	1	3		10
HA4		6		8		14
HA5		6				6
HA6		6		4	2	12
HA7		6		5	2	13
HA8		6		5	2	13
HA9		6	2	7	2	17
LM1		9				9
LM2		9				9
LM3		7		3		10
LM4		8		3		11
LM5		2				2
LM6		1				1
Morten	12	12	9	10		43
Morten		3	3			6
Morten P	3	15	12	12		42
S1		6				6
S2		10		6		16
S3		6		3		9
S5		6		3		9
S7		6		3		9
S8		6		3		9
<b>Grand Total</b>	<b>15</b>	<b>160</b>	<b>31</b>	<b>89</b>	<b>12</b>	<b>307</b>

Station ID	Location Notes	Volunteer(s)	Monitoring Notes
HA1	Access from parking lot at bottom of Hoskins Rd. Sample main stem of creek, at 5m upstream of pedestrian footbridge on the left (east) bank		
HA2	Sample Hoskins Ck main stem at least 5m upstream of trail crossing		
HA3	Sample Hastings Ck main stem left bank at 5m upstream of confluence with Hoskins Ck		
HA4	Sample Pierard Ck main stem above Ross Rd just before culvert under Allan Rd at 5m upstream of confluence with Coleman Ck I've gone out 2*, and done ha 1-6. There might be a double sample or two in there. Lyle	Rhiannon & Lyle	
HA5	Sample Coleman Ck main stem above Ross Rd. at 5m upstream of confluence with Pierard Ck.	Rhiannon & Lyle	
HA6	Sample Hastings Ck main stem at least 5m upstream of Ross Rd	Rhiannon & Lyle	
HA7	Sample Hastings Ck main stem in Pioneer Park downstream of Mtn. Hwy culvert right bank at 5m downstream of storm outfalls August 17 training August 19 first tests: HA7, HA8, HA9 and HA10. September 9 testing at HA7, HA8, HA9 and HA10, HA1 plus I took samples from Hastings Creek in Princess Park, and also at the Lynn Valley Town Centre storm outflow just before it enters Hastings Creek (right beside Barbara Frisken's house) and also a short distance upstream from where that outflow enters Hastings Creek. I don't know who did all the checks at HA7 and HA8 in the month of June - it wasn't me! And I can only take credit for 2 of the 5 checks at HA7 and HA8 in the month of August. Tim	Tim Green	
HA8	Sample Hastings Ck main stem upstream of Mtn. Hwy culvert right bank at 5m upstream of Mtn Hwy culvert	Tim Green	
HA9	Sample Hastings Ck main stem left bank at 5m upstream of Baird Rd. pedestrian bridge crossing	Haley & Jamie	
HA10	Sample Hastings Ck main stem left bank at 5m downstream of storm outfall east end Hunter Park pedestrian bridge crossing	Haley & Jamie	
Lower McKay	Location notes to be confirmed by Tara Deanna and I have done 3, maybe 4 sampling sessions on lower Mackay/Mackay pond. There has been no water in the pond for several weeks now, so we haven't been able to get any samples from that site. We will be sampling throughout the	Tara & Roma	

	rest of September as well. Tara		
<b>S1 Mosquito</b>	Edgemont Village Storm Drain Catchment Outfall	Keegan & Jessica	
<b>S2 Mosquito</b>	Colwood/Woodbine Outfall	Keegan & Jessica	
<b>S3 Mosquito</b>	Lacrosse Box BioSwale	Keegan & Jessica	
<b>S4 Thain/Mission</b>	Westview Drive Overpass	Keegan & Jessica	
<b>S5 Mission</b>	Windsor Road Outfall	Keegan & Jessica	
<b>S6 Mission</b>	Downstream of Shannon Crescent Outfall	Keegan & Jessica	
<b>S6.5 Mission</b>	Add - Test the outfall itself	Keegan & Jessica	
<b>S7 Mission</b>	Upstream of Shannon Crescent Outfall	Keegan & Jessica	
<b>S8 Thain</b>	Downstream of Mountainside Outfall	Keegan & Jessica	
<b>S8.5 Thain</b>	Add - Test the outfall itself	Keegan & Jessica	

## Appendix G – Treasurer's Report

2018 Financial Records North Shore Streamkeeper Society (Incorporation # S0057268; Business # 85019 1884 BC001)											2018	2018 Blue	Lynn		Home
Date	Description	Cheque #	Cheque \$	Deposit \$	Balance \$	General	Comments	Workshop	Ecology	Channel	Education	Depot			
								NSSK \$400	NSSK \$200	PMV \$9000		Card			
15-Nov-17	<b>NSSK Meeting Financial Report</b>				\$15,569.22	\$ 4,001.12		\$ 188.10	\$ 200.00	\$ 9,000.00	\$ 2,180.00				
18-Nov-17	Cheque cleared	131	2180		\$13,389.22	\$ 4,001.12	Donation to Artists for Kids	\$ 188.10	\$ 200.00	\$ 9,000.00	\$ -	\$ 343.47			
30-Nov-17	Interest credited	-	-	\$ 1.20	\$13,390.42	\$ 4,002.32		\$ 188.10	\$ 200.00	\$ 9,000.00	\$ -	\$ 343.47			
13-Dec-17	Cheque cleared	134	50		\$13,340.42	\$ 4,002.32	Blue Ecology WS - Glen Parker	\$ 188.10	\$ 150.00	\$ 9,000.00	\$ -	\$ 343.47			
13-Dec-17	Cheque cleared	135	50		\$13,290.42	\$ 4,002.32	Blue Ecology WS - Janet Dysart	\$ 188.10	\$ 100.00	\$ 9,000.00	\$ -	\$ 343.47			
31-Dec-17	Interest credited	-	-	\$ 1.13	\$13,291.55	\$ 4,003.45		\$ 188.10	\$ 100.00	\$ 9,000.00	\$ -	\$ 343.47			
12-Jan-18	ATM deposit	-	-	\$ 20.00	\$13,311.55	\$ 4,023.45	Membership Fees	\$ 188.10	\$ 100.00	\$ 9,000.00	\$ -	\$ 343.47			
12-Jan-18	ATM deposit	-	-	\$ 200.00	\$13,511.55	\$ 4,223.45	Donation from Laurie & Don	\$ 188.10	\$ 100.00	\$ 9,000.00	\$ -	\$ 343.47			
17-Jan-18	<b>NSSK Meeting Financial Report</b>				\$13,511.55	\$ 4,223.45		\$ 188.10	\$ 100.00	\$ 9,000.00	\$ -	\$ 343.47			
18-Jan-18	ATM deposit	-	-	\$ 30.00	\$13,541.55	\$ 4,223.45	Book Sale for Education Fund	\$ 188.10	\$ 100.00	\$ 9,000.00	\$ 30.00	\$ 343.47			
18-Jan-18	ATM deposit	-	-	\$ 160.00	\$13,701.55	\$ 4,383.45	Membership Fees	\$ 188.10	\$ 100.00	\$ 9,000.00	\$ 30.00	\$ 343.47			
23-Jan-18	Cheque cleared	137	50		\$13,651.55	\$ 4,383.45	Blue Ecology WS - Deanna MacTavish	\$ 188.10	\$ 50.00	\$ 9,000.00	\$ 30.00	\$ 343.47			
31-Jan-18	Interest credited to account			\$ 1.15	\$13,652.70	\$ 4,384.60		\$ 188.10	\$ 50.00	\$ 9,000.00	\$ 30.00	\$ 343.47			
02-Feb-18	Cheque cleared	138	50		\$13,602.70	\$ 4,384.60	Blue Ecology WS - Tara Mathews	\$ 188.10	\$ -	\$ 9,000.00	\$ 30.00	\$ 343.47			
28-Feb-18	Interest credited to account			\$ 1.04	\$13,603.74	\$ 4,385.64		\$ 188.10	\$ -	\$ 9,000.00	\$ 30.00	\$ 343.47			
02-Mar-18	Cheque cleared	136	240		\$13,363.74	\$ 4,145.64	Streamkeeper Vests	\$ 188.10	\$ -	\$ 9,000.00	\$ 30.00	\$ 343.47			
18-Mar-18	<b>NSSK Meeting Financial Report</b>				\$13,363.74	\$ 4,145.64		\$ 188.10	\$ -	\$ 9,000.00	\$ 30.00	\$ 343.47			
16-Mar-18	ATM deposit			\$ 60.00	\$13,423.74	\$ 4,205.64	Membership Fees	\$ 188.10	\$ -	\$ 9,000.00	\$ 30.00	\$ 343.47			
23-Mar-18	ATM deposit			\$ 20.00	\$13,443.74	\$ 4,225.64	Membership Fees	\$ 188.10	\$ -	\$ 9,000.00	\$ 30.00	\$ 343.47			
27-Mar-18	ATM deposit			\$ 1,000.00	\$14,443.74	\$ 4,225.64	Lions Club Donation	\$ 188.10	\$ -	\$10,000.00	\$ 30.00	\$ 343.47			
31-Mar-18	Interest credited to account			\$ 1.15	\$14,444.89	\$ 4,226.79		\$ 188.10	\$ -	\$10,000.00	\$ 30.00	\$ 343.47			
21-Apr-18	Cheque deposit-branch			\$ 211.90	\$14,656.79	\$ 4,226.79	Room rental refund for 2018 Workshop	\$ 400.00	\$ -	\$10,000.00	\$ 30.00	\$ 343.47			
30-Apr-18	Interest credited to account			\$ 1.19	\$14,657.98	\$ 4,227.98		\$ 400.00	\$ -	\$10,000.00	\$ 30.00	\$ 343.47			
10-May-18	ATM deposit			\$ 75.00	\$14,732.98	\$ 4,302.98		\$ 400.00	\$ -	\$10,000.00	\$ 30.00	\$ 343.47			
10-May-18	ATM deposit			\$ 5,000.00	\$19,732.98	\$ 9,302.98	Bob Gelling Donation	\$ 400.00	\$ -	\$10,000.00	\$ 30.00	\$ 343.47			
16-May-18	ATM deposit			\$ 10.00	\$19,742.98	\$ 9,312.98	Membership Fees	\$ 400.00	\$ -	\$10,000.00	\$ 30.00	\$ 343.47			
10-May-18	Internal Transfer		\$ 30.00	\$ 30.00	\$19,742.98	\$ 9,282.98	Book Sale for gift to Bob Gelling	\$ 400.00	\$ -	\$10,000.00	\$ 60.00	\$ 343.47			
17-May-18	<b>NSSK Meeting Financial Report</b>				\$19,742.98	\$ 9,282.98		\$ 400.00	\$ -	\$10,000.00	\$ 60.00	\$ 343.47			
20-May-18	ATM deposit	1370 Main Street Var		\$ 50.00	\$19,792.98	\$ 9,332.98	Membership Fees May	\$ 400.00	\$ -	\$10,000.00	\$ 60.00	\$ 343.47			
31-May-18	Interest credited to account			\$ 1.55	\$19,794.53	\$ 9,334.53		\$ 400.00	\$ -	\$10,000.00	\$ 60.00	\$ 343.47			
05-Jun-18	Cheque cleared	139	359.35		\$19,435.18	\$ 8,975.18	PSKF Insurance Fees	\$ 400.00	\$ -	\$10,000.00	\$ 60.00	\$ 343.47			
30-Jun-18	Interest credited to account			\$ 1.60	\$19,436.78	\$ 8,976.78		\$ 400.00	\$ -	\$10,000.00	\$ 60.00	\$ 343.47			
18-Jul-18	ATM deposit	1370 Main Street Var		\$ 10.00	\$19,446.78	\$ 8,986.78	Membership Fees	\$ 400.00	\$ -	\$10,000.00	\$ 60.00	\$ 343.47			
18-Jul-18	ATM deposit	1370 Main Street Var		\$10,000.00	\$29,446.78	\$ 8,986.78	PMV grant for Lynn Channel	\$ 400.00	\$ -	\$20,000.00	\$ 60.00	\$ 343.47			
18-Jul-18	ATM deposit	1370 Main Street Var		\$ 225.00	\$29,671.78	\$ 9,211.78		\$ 400.00	\$ -	\$20,000.00	\$ 60.00	\$ 343.47			
24-Jul-18	Cheque cleared	142	75		\$29,596.78	\$ 9,136.78	Donation from Mountain Side Seconda	\$ 400.00	\$ -	\$20,000.00	\$ 60.00	\$ 343.47			
31-Jul-18	Interest credited to account			\$ 2.04	\$29,598.82	\$ 9,138.82		\$ 400.00	\$ -	\$20,000.00	\$ 60.00	\$ 343.47			
03-Aug-18	Cheque cleared	141	59.36		\$29,539.46	\$ 9,079.46	Flowers for Mike Gelling	\$ 400.00	\$ -	\$20,000.00	\$ 60.00	\$ 343.47			
20-Aug-18	ATM deposit	1370 Main Street Var		\$ 20.00	\$29,559.46	\$ 9,099.46	Membership Fees	\$ 400.00	\$ -	\$20,000.00	\$ 60.00	\$ 343.47			
20-Aug-18	ATM deposit	1370 Main Street Var		\$19,250.00	\$48,809.46	\$ 9,099.46	PSF grant for Lynn Channel	\$ 400.00	\$ -	\$39,250.00	\$ 60.00	\$ 343.47			
31-Aug-18	Interest credited to account			\$ 3.14	\$48,812.60	\$ 9,102.60		\$ 400.00	\$ -	\$39,250.00	\$ 60.00	\$ 343.47			
14-Sep-18	Cheque cleared	145	148.68		\$48,663.92	\$ 9,102.60	Epoxy for Lynn Channel	\$ 400.00	\$ -	\$39,101.32	\$ 60.00	\$ 343.47			
15-Sep-18	Cheque cleared	143	10363.5		\$38,300.42	\$ 9,102.60	Spider Excavator for Lynn Channel	\$ 400.00	\$ -	\$28,737.82	\$ 60.00	\$ 343.47			
18-Sep-18	Cheque cleared	146	5446.89		\$32,853.53	\$ 9,102.60	Log & Boulder moving for Lynn Channe	\$ 400.00	\$ -	\$23,290.93	\$ 60.00	\$ 343.47			