

Pemberton Valley Dyking District 2014 Annual General Meeting Report

Pemberton Valley Dyking District – Who are we and what do we do?

The Pemberton Valley Dyking District is a local government agency incorporated by Letters Patent under the Local Government Act.

The PVDD's Letters Patent is dated January 31, 1947 making it the first government agency established in Pemberton. The PVDD letters patent states " The object of the said improvement district shall be the acquisition, maintenance, repair, replacement, improvement, and operation of works for the reclamation and development of the lands in the improvement district by dyking, draining, pumping, and incidental matters thereto".

Improvement districts finance their operations and services through taxes and/or tolls collected directly from landowners in their boundaries. With the challenging geography, many water ways and large dyking infrastructure that exist within the PVDD boundaries combined with the small tax base it is only possible for the PVDD to fund the maintenance of the existing dyke infrastructure. When large capital projects are identified as a high priority the PVDD has been very successful in locating and securing funding from the provincial and federal governments to complete these projects.

Although improvement districts are independent, public corporations, they are also subject to supervision by the provincial Ministry of Community Sport and Cultural Development. The PVDD boundary as identified in the letters patent was amended in March 2014 to remove all IR lands.

In 1947 the Prairie Farm Rehabilitation Administration (a branch of the Agriculture and Agri-Food Canada) began construction of the dyke system, realignment of the Lillooet River and lowering of Lillooet Lake. The PVDD took over responsibility for maintaining the infrastructure that was built and with the help of outside government funding developed the system to what exist today.



The PVDD also reports to the provincial Inspector of Dykes, the provincial agency responsible for regulating all dykes in the province.

Board of Trustees

The PVDD is administered by an elected Board of Trustees that consists of 5 Board members. To date there has been no remuneration for the Board positions.

Staff

Staff positions are equivalent to 2 ½ fulltime positions and include:

- Administration – Job shared by Kathie and Pia – Equivalent to 1 ¼ full time position due to extra work load during tax time.
- Operations and Maintenance Manager – Equivalent to 1 full time position
- Equipment Operator – Equivalent to ¼ of a full time position (depending on year).

Assets

- Office building and shed
- Fenced and gated lot with secure container located in the industrial park
- 2008 Hitachi 225 excavator
- 2007 JD6615 Tractor with side and rear mower
- 2011 Chevy Pickup Truck
- Small Jet boat
- Various tools
- 2 Quarries (Green River and Valleau) material to be used for dyking purposes only

Rivers and Creeks

- Lillooet River
- Ryan River
- Miller Creek
- Pemberton Creek



- Green River
- Birkenhead River

PVDD Dyking Infrastructure

- 44 kms of dykes
- 25 kms of ditches
- 25 kms of rip rap bank protection
- 20+ culverts with flap gates

Annual Maintenance

- Inspections – All dykes and associated infrastructure are inspected twice annually, in the spring before the freshet and in the fall after the freshet.
- Mowing – 44 kms of dykes are mowed annually. It takes a minimum of 4 passes to complete the mowing that is the equivalent of mowing 352 kms if a single pass was required. Takes about 6 weeks.
- Rip Rap Repair – The rip rap has stood up well over the years however there are areas that need maintenance on an annual basis.
- Tree Removal – In the Dike Maintenance Act it is prohibited to allow trees or vegetation other than grass to grow in the dyke. The PVDD conducts vegetation control annually in order to comply with this Act.
- Ditch Maintenance – The ditches under the PVDD's jurisdiction are required to drain the land that is located on the land side of the dykes. The ditches require cleaning once every 3 years in order to efficiently convey water and drain the land. The PVDD cleans approximately 8 kms of ditches annually.
- Gravel Removal – Gravel removal is required in:
 - Lillooet River – 15,000 m³ every 3 years
 - Ryan River – Volumes and timing will be identified in the Gravel Management Plan to be developed in 2014
 - Miller Creek – 1500 m³ every 2 years



- Pemberton Creek – Approx. 2000 m³ once every 5 years
- Birkenhead River - Volumes and timing will be identified in the Gravel Management Plan to be developed in 2014
- Culverts/flap gates – Culverts need to be inspected and relined when they become corroded as replacing culverts buried deep within the dyke is very expensive. All flap gates are serviced and maintained.
- Beavers - I'm always chasing beavers! The beaver population in the valley has increased dramatically in the last few years and unplugging culverts and dealing with dams is a regular occurrence.
- Quarries – It is important to keep material on hand and ready to go for upcoming projects and emergency works if required. The PVDD annually conducts quarry development to ensure this material is available.

2013/14 Summary:

2013/14 was a very busy and productive time for the PVDD. Projects that were undertaken and completed and will be completed in 2014 are:

Lillooet River Gravel Removal – After 17 years of effort to gain approvals for sediment removal from the Lillooet River the 2011 Lillooet River Survey compared against previous surveys that were conducted in 1969, 1971, 1978, 1985, 1993, 2000, proved that a level of sediment deposition was occurring in the river that justified a substantial sediment removal project due to the negative effects on flood protection/dyke elevations. The project consisted of removing 36,800m³ of sediment from the Lillooet River in three locations, Voyageur, Beem and Belkin Bars was started on February 5th, 2013 after the RFP was awarded and was completed by March 15th, 2013. The engineering recommendation is to remove 15,000 m³ every three years to address sediment deposition concerns from this point in time forward. This means the next removal from the Lillooet River will be 15,000 m³ in 2016.

Birkenhead River



During 2011 and 2012 the drainage issues associated with Grandmother Slough were addressed by:

- Replacement of 4 culverts fitted with new flap gates – PVDD and MOTI.
- Removal of grass and vegetation in the slough to improve flow – PVDD.
- Piping of beaver dams – PVDD.

This work had an immediate positive effect on draining the local areas and property after the freshet and drastically reduced the mosquito problem from the industrial park to the lake road.

On April 9th, 2013, a multi-stakeholder group met in Pemberton to discuss urgent works in the Birkenhead River to alleviate the imminent risk and annual flooding to local communities and infrastructure caused by containment breaches along the south bank adjacent to Mt. Currie, the Continental Pole Yard, and HWY 99. Represented at the meeting were the following provincial ministries, federal departments and local authorities, creating the newly established Birkenhead River Technical Steering Committee:

- Pemberton Valley Dyking District
- Squamish-Lillooet Regional District (SLRD)
- Lil'wat Nation
- Village of Pemberton (VoP)
- Ministry of Forests, Lands, and Natural Resource Operations (MFLNRO) Water Section
- Inspector of Dikes
- Emergency Management BC (EMBC)
- Ministry of Transportation and Infrastructure (MoTI)
- Aboriginal Affairs and Northern Development Canada (AANDC)

An approach to address the imminent threat was agreed upon by the group at an estimated cost of \$50,000 and included:



1. \$12,000 - A risk assessment and mitigation plan to be completed by an engineering firm to provide direction for near and mid to long-term mitigation priorities on the Birkenhead;
2. \$38,000 - Concurrently, clear channels of large woody debris (LWD) on the north bank, using this LWD removed to reinforce the south bank of the channel and begin to train the river towards the north side of the Pemberton Valley. The PVDD agreed to act as project manager and act as the proponent in the permit application process. This approach was supported by Provincial Waters Section as the provincial regulator, as well as technical experts from MFLNRO. Funding for the project was provided by the stakeholders at an agreed upon ratio based on finalization of financial commitments derived from a conference call on 11 April 2013. With approval of the SLRD Board of Directors and appropriate assurances/legal documentation, bridge financing for the project was provided as necessary by the SLRD, with the understanding that reimbursement to the SLRD for any bridge financing came from members of the stakeholder group as required. Funding was provided by:
 - EMBC
 - MOTI
 - AANDC
 - SLRD
 - PVDD
 - VOP
3. Permits were applied for with the Province of BC and DFO and took 3 days to attain and the work to remove the large woody debris took place the next day.
 - Removal of Large Woody Debris – This work took 7 hours and was very successful in directing water into the North Channel.
 - Northwest Hydraulics was commissioned to complete the risk assessment and mitigation plan that was completed in June 2013.



This portion of the Birkenhead River flood mitigation plan was achieved well under the \$50,000 budget at a total cost of \$17,000.

On the evening of May 6th, 2013 the Birkenhead River was observed at an elevation that was less than 20 cms from overtopping the pole yard berm. The PVDD had previously positioned our excavator to the pole yard as a precautionary measure and using the PVDD excavator and Drew Oberson's excavator with Stu Donald as the operator the pole yard berm was reinforced during the night with the little material that was available on site to keep the river from breaching the berm. The SLRD and PVDD initiated an emergency response that night with the assistance of EMBC to build an emergency berm at the pole yard to protect the pole yard, highway 99 and the Mount Currie reserve. The funding approval came in at approximately 11:30 pm on May 6th.

The Funding from EMBC went to the SLRD. The SLRD and PVDD partnered up on the project with the SLRD providing administration expertise and the PVDD managing the construction of the berm. Construction of the berm began on the morning of May 7th, 2013 utilizing material from the PVDD Green River Quarry and took 9,000 m³ of material, 6 days and \$120,000 as funded by EMBC to complete. With the combination of removing the LWD and building the emergency berm flooding was avoided.

In June 2013 NHC completed the risk assessment and mitigation plan with the key points indicating:

1. The flood problems would increase and eventually take out the Pole Yard, Highway 99 and have a serious negative impact on the Mount Currie Old Reserve if nothing was done to elevate the problem.
2. The dry Channel was biggest single issue and needed to be excavated to convey water again and reestablish fish habitat.





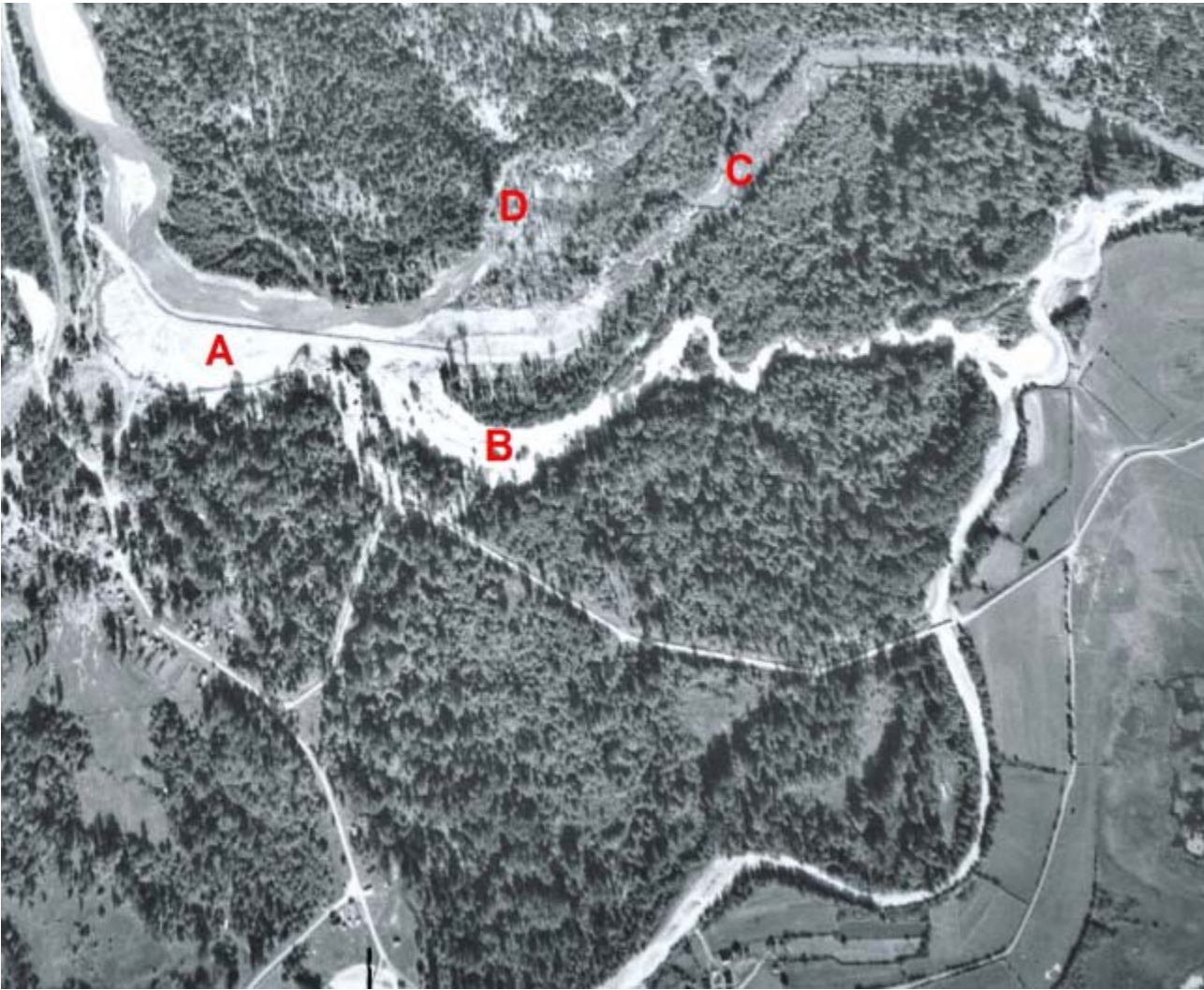
Birkenhead River 1946



PO BOX 235 1381 Aster St, Pemberton, BC V0N 2L0

phone: (604) 894-6632 fax: (604) 894-5271 www.pvdd.ca

PEMBERTON VALLEY DYKING DISTRICT



Birkenhead River 1950



PO BOX 235 1381 Aster St, Pemberton, BC V0N 2L0

phone: (604) 894-6632 fax: (604) 894-5271 www.pvdd.ca

PEMBERTON VALLEY DYKING DISTRICT



Birkenhead River 2002



PO BOX 235 1381 Aster St, Pemberton, BC VoN 2L0

phone: (604) 894-6632 fax: (604) 894-5271 www.pvdd.ca

PEMBERTON VALLEY DYKING DISTRICT



Birkenhead River 2009



PO BOX 235 1381 Aster St, Pemberton, BC VoN 2L0

phone: (604) 894-6632 fax: (604) 894-5271 www.pvdd.ca

PEMBERTON VALLEY DYKING DISTRICT



Birkenhead River March 26th, 2014



PO BOX 235 1381 Aster St, Pemberton, BC V0N 2L0

phone: (604) 894-6632 fax: (604) 894-5271 www.pvdd.ca

PEMBERTON VALLEY DYKING DISTRICT

3. Berm should be extended by approximately 150m to tie into the main back channel.



4. The water survey gauge that was deactivated in the 1970s should be reactivated to help forecast river behavior and predict flood events.

In October 2013 a Birkenhead technical steering committee meeting was held to discuss a plan of action to move forward with the mitigation plan. At the meeting the mitigation measures as recommended by NHC were prioritized in this order

1. Reestablish the dry channel
2. Extend Berm
3. Reactivate Water Survey Gauge



Funding options were discussed in further meetings and AANDC agreed to fund the majority of the channel re-establishment as it was identified as the highest priority.

Final funding approval came in mid January 2014 from:

- AANDC - \$322,000
- PVDD – Approx. \$17,000 of in kind contributions for permits and project management.
- Lil'wat Nation – Approx \$17,000 of in kind contributions for project management and environmental monitoring.

Once the final funding approvals were received a partnership was immediately formed between the Lil'wat Nation and the PVDD. The responsibilities of the partners were:

- Lil'wat – Administration/finance, environmental monitoring and project oversight.
- PVDD – Permits & authorizations from the province of BC & DFO and project management.

The most critical documentation required for the permits and authorizations to be approved was the excavation design and environmental assessment that could not be started until funding was approved, this put the project in an almost, but not quite impossible position timing wise as it was critical that the work took place during the lowest possible water conditions and prior to the spring freshet. Northwest Hydraulics Consulting and EcoFish Environmental Consulting worked very hard to create these documents as soon as possible in order for the approving agencies to have them for consideration to approve the project in time to start and complete the project before the freshet began.

Final permits were received on March 13th, 2014 with a great amount of effort from all the staff at FrontCounter BC, Provincial Water Section and DFO. Construction was started on March 14th, and completed on March 26th. Construction consisted of:

- 3 days of access construction.
- 7 days of gravel excavation (12,000 m³), installation of bed stabilization system and large wood debris.



- 2 days of access removal and remediation work including planting 40 trees and many plugs.

The project was completed ahead of schedule and under budget. The gravel was sold by ANNDC and the value of this material was used by ANNDC to put against the cost of the project.

It will be necessary in the future to monitor the river behavior in order to ensure that the engineered plans work as expected and that there are no negative environmental impacts to fish and fish habitat. This monitoring will be undertaken by the Lil'wat Nation and PVDD.

The completion and success of this project was an impressive example of how effective partnerships and many stakeholders working together and all believing in the end goal is so important and highly effective.

The PVDD and the Birkenhead Technical Steering Committee will continue to seek funding for the Berm extension and water gauge installation and these projects will be completed as funding is found.

Gravel Management Plan – In 2014 the PVDD will begin the process of creating a gravel management plan that will include all major river and creek systems that exist within our jurisdiction. This project will take 1 year to complete and will include:

- Lillooet River
- Ryan River
- Miller Creek
- Pemberton Creek
- Birkenhead River

The gravel management plan is required in order to:

- Control bed load in these water ways for flood protection purposes. As the river bed come up due to gravel deposition the dykes get lower.
- Forecast and budget for future removals.



- Streamline the approval process.

The process will include:

- Engineered Plan that will address forecasted bed load elevations as determined from previous river surveys. This plan will also identify removal locations as well as timing and volumes for removals based on:
 - Main areas of concern for each water coarse.
 - Environmental impacts
 - Access
- Environmental Plan that will ensure environmental responsibility and sustainability.
- Referral process with all stake holders including:
 - Lil'wat First Nations
 - SLRD
 - VOP
 - Province – FLNRO, Inspector of Dykes and Provincial Water Section.
 - DFO

Once the plan is approved and in place future removals will simply require a notification to the appropriate government agencies that the removals are taking place as per the gravel management plan and will not require the onerous, lengthy and time consuming approval and authorization process that has been used to date. This project is expected to take 1 year to complete which will coincide with the next scheduled removal beyond 2014 that will be the removal of 15,000 m³ from the Lillooet River in 2016.

Miller Creek Gravel Removal

In August 2014 the PVDD will be removing 1500 m³ of gravel from the sediment trap/weir located on Miller Creek. The project will take 3 days. DFO approval has been received and provincial approvals are expected any day.



Pemberton Creek Rip Rap Repair

In August of 2014 (if permits are granted) the PVDD will be repairing rip rap on Pemberton Creek about 100 ms downstream of the railway bridge on the left bank. This work must take place during the August fish window and if permits are not received in time for the August 2014 fish window the project will have to wait a year and be completed in August 2015.

Ayers Dyke Upgrade

The Ayers Dyke upgrade has been identified as the highest priority for funded projects within the PVDD boundary. In the flood of 2003 the Ayers dyke was overtopped by the Lillooet River and caused wide spread flooding from the highway bridge, through the industrial park and past Mount Currie. In 2011 the PVDD applied for funding from the Building Canada Fund. The building Canada Fund is a partnership funding model that includes funding from the federal, provincial and local governments with a 1/3rd, 1/3rd, 1/3rd contribution coming from each government. This funding source is extremely oversubscribed. Unfortunately the funding application was not approved in 2011. In March 2013 the next intake for the Building Canada Fund was announced and the process to apply started by submitting an expression of interest for funding. The PVDD submitted an expression of interest that was accepted. The next step in the funding application process required that the PVDD submit a very detailed business case in order for the merits of the project to be considered against all other applicants. Further requirements such as filing documents and questionnaires required by the federal government followed. The total costs of the project is \$611,000 divided 3 ways. The latest information I have is that the application has been considered favorably and I am expecting official notification that the funding application has been approved very soon.

Once funding approval has been granted the engineered construction plans for the dyke upgrade will be commissioned by the PVDD and take 6 to 8 weeks to prepare. Once the plans are approved by the Inspector of Dikes construction will start immediately and will take 6 to 8 weeks to complete. Completion date is scheduled for end of July 2014. Materials for the project will be processed at the PVDD Green River Quarry.



Lillooet River Water Level Monitoring System

For the past 2 years all local stakeholders have been working with the provincial government to install a river monitoring gauge at the Upper Meadows Forestry Bridge. The stakeholders include:

- PVDD
- SLRD
- VOP
- Lil'wat First Nations
- EMBC
- MFLNRO – Inspector of Dikes

The main purpose of the gauge is to send out email and text notifications to local government agencies if the river suddenly drops or rises indicating a slide and/or blockage has occurred such as what happened with the 2010 Meager slide or a sudden release from a blockage. After many meetings and discussions the province has now approved the funding for this project and it will be installed at the Forestry Bridge prior to the 2014 freshet. The funding will flow through the PVDD and the PVDD will manage the installation of the system. Once the system is up and running the river data will be managed by NHC as they have the software programs required to run the system and the data will be available to the BC River Forecast, PVDD, SLRD and EMBC. The SLRD, Lil'wat and VOP will receive alerts if and when the alerts are sent out and will include this tool in their respective emergency response plans.

Website Upgrades

In 2014 the PVDD will be upgrading the website. The upgrades are required to better inform the public of what is happening at the PVDD and to answer most questions that may arise. The upgrade will include:

- Up to date list of Maintenance projects
- Meeting page that will include all meeting minutes, agendas and correspondence.



- All reports will be attached.
- Updated links

Annual Inspections and Maintenance

In April 2014 the annual inspection of the PVDD dyking infrastructure will take place and any deficiencies found will be repaired prior to the 2014 freshet. In late May the annual maintenance will start and includes:

- Ditch Maintenance
- Tree Removal
- Mowing
- Culvert and flap gate repairs
- Rip Rap repair
- Miller Creek gravel removal

Future Projects

The PVDD has created a list of project for future consideration as follows:

Over View of Potential Capital Projects – February 2014

	Project Description	Total Cost	PVDD Cost	Source of Funding
1	Ayers Dyke Upgrade	\$611,000	\$206,000	Build Canada Fund
2	Birkenhead River Sediment Removal	\$389,000	In kind Contribution	AANDC



3	Miller Creek Gravel Removal	\$ 40,000	\$ 40,000	None
4	Arn Canal - Cleaning and Brushing Above CN Culverts	\$130,000	\$130,000	None
5	Pemberton Creek – Rip Rap Repair	\$ 80,000	\$ 80,000	None
6	Develop Sediment Management Plan for All Rivers and Creeks within the PVDD Boundary	\$60,000	\$60,000	None
7	Arn Canal – Culvert Relining, Head Wall and Pump Intake Construction	\$120,000	\$120,000	Possible Building Canada Funding
8	Pemberton Creek – Reline 2 Culverts Down Stream from Arn Canal	\$50,000	\$50,000	None
9	Adventure Ranch Dyke/Airport Rd to Pemberton Creek Dyke Junction – Raise to Q200 + 0.6 m	\$1,300,000	\$217,000	PVDD 1/6 Build Canada fund 2/3 & VOP 1/6
10	Pemberton Creek Sediment Removal	\$ 70,000	\$ 70,000	Possibly MOTI
11	Arn Canal – Put back into 2 Mile Creek Channel from Top End to CN Culverts	\$1,000,000	\$333,000	Province, Feds, Pacific Salmon Foundation
12	Model the Lillooet River	\$250,000	Unknown	Unknown
13	Survey and Model the Ryan River	\$400,000	Unknown	Unknown



14	Ryan Dyke Upgrade	\$1,800,000	\$600,000	PVDD, Build Canada Fund
15	Ryan Meadows Road Upgrade	\$3,000,000	\$1,000,000	PVDD, Build Canada Fund & MOTI

