



File: 3000362, 0370764 and 0078766

September 11, 2015

RE: Nicola Lake Dam Operations – Status of Engineer’s Order of 1948 (amended 1983)

I have read, considered and support the attached memorandum dated June 4, 2015 from Jephtha Ball, P.Eng in relation to the Engineer’s Order of 1948 (amended 1983) against Conditional Water Licence 013594 (held by Nicola Lake Stock Farms Ltd.).

As Conditional Water Licence 013594 was cancelled in 1984, the above mentioned Engineer’s Order became **null and void**.

To conclude, the Engineer’s Order of 1948 (amended 1983) against Conditional Water Licence 013594 no longer exists.

Signed this 10 day of September, 2015.

Yours truly,

Dave Horne
Assistant Regional Water Manager
Resource Manager
Cascades Forest District

Attachment(s): Memorandum dated June 4, 2015

cc: Jephtha Ball, Jephtha.Ball@gov.bc.ca, Hydrotechnical Engineer, Thompson Okanagan Region, Ministry of Forests, Lands and Natural Resource Operations

G:\!Workgrp\Tenures\Water Authorizations\!Working Water Files\Nicola Dam Letter 150909.docx/cw



**Ministry of
Forests, Lands and
Natural Resource
Operations**

**Water Stewardship
Thompson Okanagan Region**
1259 Dalhousie Drive
Kamloops BC V2C 5Z5

Phone: (250) 371-6200
Fax: (250) 828-4000

MEMORANDUM

To: File

**File: 44800-20/Nicola
Dam/General**
Date: 4 June 2015

From: Jeptha Ball, P. Eng.

**RE: NICOLA LAKE DAM OPERATIONS
STATUS OF ENGINEER'S ORDER OF 1948 (AMMENDED 1983)**

Nicola Lake Stock Farms (now known as Nicola Ranch Limited) constructed a control dam at the outlet of Nicola Lake in 1927. The dam was operated by the ranch to provide storage in support of Conditional Water Licences C013593 and C013594 which were for power and storage respectively. For the purposes of this report, except when quoted from other documents, Nicola Lake Stock Farms and Nicola Lake Ranch Limited will be noted as **NRL**.

Licence C013593 was issued to NRL in February 1938 (Priority date 15 November 1927) and was for a quantity of 2.03 m³/s (72 cfs) for the purposes of power generation throughout the full year. Licence C013594 was also issued to NRL in February 1938 (Priority date 15 November 1927) and was for storage of 3,453,749 m³ (28,000 acre feet) to be used to support licence C013593.

Starting shortly after the first dam was installed in 1927, there was concerns expressed (copies of correspondence are on file 44800-20/Nicola Dam/General in Kamloops office) with regards to flooding of both private lands and the First Nations reserves along the lakeshore (letters on file 44800-20/Nicola Dam/General in Kamloops office). In 1948, as a result of concerns from lakeshore landowners with respect to seasonal flooding and impacts to agriculture on portions of Lots 108 and 110 KDYD, the following order was issued by the Engineer for the Kamloops Water District against licence C013594 (see attached scan of document):

It having been established by survey that certain Crown Lands are flooded by the raising of the Nicola Lake water level above a certain elevation, and the crops on these said lands suffer if not drained by a certain date, and as the flooding of these lands has been aggravated in the past by the control exercised by the dam at the Nicola Lake outlet constructed under Conditional Water Licence 13594 and held by the Nicola Lake Stock Farms Ltd:

THEREFORE I ORDER YOU, the Nicola Lake Stock Farms Ltd. to control, as closely as your operations allow, the water level of the Nicola Lake by adjusting the gates in the dam and canal so that the water level of the said lake is not above the 3.00' mark on the gauge established by the Water Rights Branch on the north shore of the said lake immediately East of the dam, and up to this 3.00' mark is allowed between April 1st and July 31st in any year.

AND I FURTHER ORDER YOU, on the 1st August of each year to fully open the said gates until the water level of the said lake reaches the 2.00' mark on the said gauge and up to this mark is allowed until Sept. 30th of any year

By the late 1970's, NRL had stopped generating power at this site and licence C013593 was designated as abandoned on April 4, 1979. Licence C013594 was kept active so as to legalize the control structure. In 1983, the following amending order (see attached scan of order) was issued by the Engineer for the Kamloops Water District against licence C013594:

Whereas: A study of water supply and demand in the Nicola River basin has shown a need for improved water management in the operation of the Nicola Lake dam constructed under Conditional Water Licence #13594 and held by Nicola Ranch Ltd and

Whereas: the Engineer's Order of April 21st, 1948 is hereby rescinded and replaced by this Order of the Engineer for the Kamloops Water District.

I Order you: Nicola Ranch Ltd.

To: ensure that all gates on the Nicola Lake dam are left fully open whenever the lake level is greater than 625.82 metres G.S.C. (3.5 feet local gauge)

To: adjust the gates on the said dam whenever the lake level is less than 625.82 m G.S.C. (3.5 feet local gauge) so as to provide flows in the Nicola River measured at the Water Survey of Canada gauge just downstream of the dam (08LG065), which, are between 2 and 3 cubic metres per second (71 cfs - 106 cfs) for the period of August 1 to September 30 inclusive, unless storage has been depleted.

A stage discharge curve is currently being prepared by Water Survey of Canada for the newly installed gauging station 08LG065 "located on the Nicola River at the outlet of Nicola Lake" or about 100 metres downstream of the dam. The river stage (or discharges between 2 and 3m³/s will be provided when the rating curve

becomes available. Until that time, Water Management, Kamloops will provide technical advice required to determine discharge relative to gate openings and head.

Water licence C013594 was maintained on active status until it was cancelled by the Comptroller of Water Rights on October 10, 1986.

In 1985, a new storage licence (C062961) on Nicola Lake was issued to the Ministry of the Environment for the total quantity of 54,026,500 m³ (43,800 acre-feet) to “*be used in licences to be issued by the Comptroller of Water Rights or the Regional Water Manager*”. This licence was superseded in 1986 by Conditional Water Licences C064716 and C064717 held by the Province of British Columbia (the Ministry of Forest, Lands and Natural Resource Operations (FLNRO)) and Government of Canada (Ministry of Environment, Department of Fisheries and Oceans (DFO)) respectively.

Nicola Lake Dam and the storage in Nicola Lake are currently operated by Ministry of Forest, Lands and Natural Resource Operations (FLNRO) staff under an operation plan entitled *Nicola Lake Operating Plan* prepared and issued in May 1987 by staff with the Hydrology Section of the Ministry Environment and Parks, Water Management Branch. This plan outlines the lake level and outflow targets throughout the year. Although not specifically stated in the Operating Plan, it was assumed that the operation (lake levels and outflow rates) during the period between mid-July and September 1 could be dictated by the Engineer’s Order initially issued against licence C013594 in 1948 and amended in 1983.

Consequence of the Engineer’s Orders

- **1948 Order**

It is the understanding of current FLNRO Regional Staff that the intent of the 1948 Engineer’s Order was to lower levels and reduce the limitation placed on agriculture adjacent to the shoreline. This may be an inefficient use of a significant volume of water that could be otherwise retained in storage for a subsequent beneficial use under current and/or future licenses issued on the stored water in Nicola Lake.

Based on information contained in files retained at the Kamloops office of FLNRO, the lands that were assumed to be impacted by high lake levels are parts of District lots 108 KDYD, 110 KDYD and 111 KDYD. The location of these lots and current landowners are present on the attached Figure 1.

- **1983 Amendment to the 1948 Order**

This document effectively cancelled the conditions of the 1948 Engineers Order and therefore there is no longer a requirement that the conditions in the cancelled order need to be followed.

The amended order stipulates that NLR must follow the conditions specified in the document. However, since October 10, 1986, NLR no longer held any storage rights on Nicola Lake and therefore has no legal requirement for any operational duties associated with the operation of Nicola Lake Dam.

After the reconstruction of Nicola Lake Dam in 1986, all storage rights were assigned to the Province of BC and the Government of Canada. Until the storage rights assigned to Conditional Water Licences C064716 have been assigned to other parties, operational responsibility is assumed to lie with these government agencies.

Part one of the 1983 order amendment, implies that whenever the lake level elevation exceeds 625.82m (less than the current full supply elevation of 625.83m), the control gates should be fully open. This paragraph of the order was intended to address the gate configuration of the original dam that was removed during the reconstruction of the new dam in 1986. Given that the gates in the reconstructed dam have a much larger fully open capacity, to follow the directions of the order would create the potential for significant flooding and public safety hazard downstream of the dam within the City of Merritt. This would be counter to one of the intents of the storage dam, which was to provide flood protection for the City by utilization of the available flood storage above the full supply elevation of 625.83m.

The amended order also stipulates that the release rates during the period of August 1 through September 30 be held within the range between 2 and 3m³/s which is in conflict with the rates stipulated in the 1987 Nicola lake Operating Plan (August: 2.89 m³/s and September: 1.78m³/s)

Conclusions

Based on the preceding discussion, the following conclusions can be made:

1. The 1948 Engineer's Order was rescinded in 1983 and therefore is no longer applicable, and;
2. The 1983 Engineer's Order provides operational requirements to an incorrect licensee, and;
3. The 1983 Engineer's Order specifies operational conditions that were applicable to the storage dam that existed prior to the reconstruction of Nicola Lake Dam in 1986, and;

4. The 1983 Engineer's Order specifies operation conditions that create the possibility for excessive flooding and risk to public safety in areas downstream of the existing dam.
5. The 1983 Engineer's Order would dictate the spilling of a significant amount of stored water that could otherwise be beneficially utilized by future downstream licensees (if future licences are issued) and to support yet to be determined Environmental Flow Needs (EFN).
6. The 1983 Engineer's order would dictate release flows that would be in conflict with the 1987 Nicola Lake Operating Plan.

Recommendations

1. The 1983 Engineer's Order be **revoked and not replaced or amended** at this time.
2. The Nicola Lake Operation Plan (1987) be reviewed and revised as needed.

Attachments

- Scanned copies of the 1948 Order and the 1983 Amendment to the order
- Scanned copies of the relevant Water Licences and associated documentation
- Figure 1, Nicola Lake, 1948/1983 Engineer's Orders Under the Water Act, Associated Land Parcels

Copy for the information of the Comptroller of Water Rights.

DEPARTMENT FILE NO. 078766

LOCAL FILE NO. 489B



OFFICE OF ENGINEER

515 Columbia Street, B.C.
Kamloops, B.C.
April 21st, 1948

DEPARTMENT OF LANDS AND FORESTS
WATER RIGHTS BRANCH

Re

(Do not write on more than one subject on one page.)

WATER ACT 1939

(SEC. 34)



It having been established by survey that certain Crown Lands are flooded by the raising of the Nicola Lake water level above a certain elevation, and the crops on these said lands suffer if not drained by a certain date, and as the flooding of these lands has been aggravated in the past by the control exercised by the dam at the Nicola Lake outlet constructed under Conditional Water Licence 13594 and held by the Nicola Lake Stock Farms Ltd:

THEREFORE I ORDER YOU, the Nicola Lake Stock Farms Ltd. to control, as closely as your operations allow, the water level of the Nicola Lake by adjusting the gates in the dam and canal so that the water level of the said lake is not above the 3.00' mark on the gauge established by the Water Rights Branch on the north shore of the said lake immediately East of the dam, and up to this 3.00' mark is allowed between April 1st and July 31st in any year.

AND I FURTHER ORDER YOU, on the 1st August of each year to fully open the said gates until the water level of the said lake reaches the 2.00' mark on the said gauge and up to this mark is allowed until Sept. 30th of any year.

DATED AT KAMLOOPS this 21st day of April 1948.

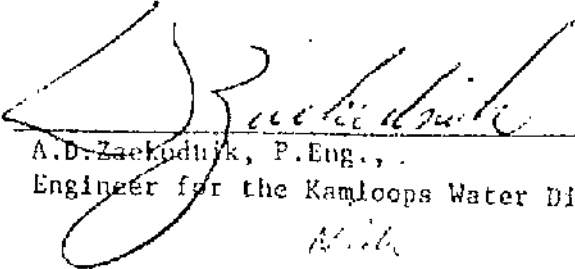
Arthur R. Patton
.....
Engineer for the
Nicola Water District

1259 Dalhousie Drive, Kamloops, B.C. V2C 5Z5 (374-9717)

ORDER
Water Act
Section 37 (1)

- WHEREAS A study of water supply and demand in the Nicola River basin has shown a need for improved water management in the operation of the Nicola Lake dam constructed under Conditional Water Licence #13594 and held by Nicola Ranch Ltd and
- WHEREAS the Engineer's Order of April 21st, 1948 is hereby rescinded and replaced by this Order of the Engineer for the Kamloops Water District.
- I ORDER YOU Nicola Ranch Ltd.
- TO ensure that all gates on the Nicola Lake dam are left fully open whenever the lake level is greater than 625.82 metres G.S.C. (3.5 feet local gauge)
- TO adjust the gates on the said dam whenever the lake level is less than 625.82 m G.S.C. (3.5 feet local gauge) so as to provide flows in the Nicola River measured at the Water Survey of Canada gauge just downstream of the dam (08LG065), which are between 2 and 3 cubic metres per second (71 cfs - 106 cfs) for the period of August 1 to September 30 inclusive, unless storage has been depleted.
- A stage discharge curve is currently being prepared by Water Survey of Canada for the newly installed gauging station "08LG065" located on the Nicola River at the outlet of Nicola Lake" or about 100 metres downstream of the dam. The river stage for discharges between 2 and 3 m³/s will be provided when the rating curve becomes available. Until that time, Water Management, Kamloops will provide technical advice required to determine discharge relative to gate openings and head.

Dated at Kamloops, B.C.
this 29th day of June, 1983.


A.D. Zaekodnyk, P.Eng.,
Engineer for the Kamloops Water District

CONDITIONAL WATER LICENCE.

The Nicola Lake Stock Farm Ltd. of Nicola, B.C., is

hereby authorized to divert and use water as follows:—

- (a.) The source of the water-supply is Nicola river.
- (b.) The point of diversion is located as shown on the attached plan.
- (c.) The date from which this licence shall have precedence is 15th November, 1927.
- (d.) The purpose for which the water is to be used is power.
- (e.) The maximum quantity of water which may be diverted is 72 c.f.s.
- (f.) and such additional quantity as the District Engineer may from time to time determine should be allowed for losses.
- (f.) The period of the year during which the water may be used is the whole year.
- (g.) The land upon which the water is to be used and to which this licence is appurtenant is a Power House site on Lot 117, Kamloops Division of Yale District
- (h.) as shown on the attached plan. The works for the diversion and carriage of the water are dam, ditch, flume and pipe

and have been ~~shall be commenced on or before the~~
~~day of~~ ~~19~~ and shall be completed and the water
 beneficially used on or before the 31st day of December 19 42.

(i)

Superseded by 18393/07576

LICENSED ON
 Map No. 6400
 By B.V.

ABANDONED

4.4.79

Robertson
1927

Macdonald
Comptroller of Water Rights

PROVINCE OF
BRITISH COLUMBIA.

WATER RIGHTS BRANCH.

DEPARTMENT OF
LANDS.

CONDITIONAL WATER LICENCE.

Nicola Lake Stock Farm Ltd., of Nicola, B. C., is

hereby authorized to store water as follows:—

- (a.) The source of the water-supply is Nicola lake.
- (b.) The point of storage is located as shown on the attached plan.
- (c.) The date from which this licence shall have precedence is 15th November, 1927.
- (d.) The purpose for which the water is to be used is as set out in Conditional Water Licence No. 13593
- (e.) The maximum quantity of water which may be stored is 28,000 acre feet per annum
and such additional quantity as the District Engineer may from time to time determine should be allowed for losses.
- (f.) The period of the year during which the water may be stored is the whole year.
- (g.) The land upon which the water is to be used and to which this licence is appurtenant is as set out in Conditional Water Licence No. 13593
- (h.) The works for the storage of the water are reinforced concrete dam, as shown on Plan No. 3204 F,
as shown on the attached plan.
- (i.) and have been ~~shall be commenced on or before the~~ day of 19- and shall be completed and the water beneficially used on or before the 31st day of December 19 42.

RECORDED
Map No. 4000
By B. J. [Signature]

CANCELLED

J. Macdonald
Comptroller of Water Rights.

File No. C78766

Date issued

February 10, 1938.

Licence No.

13594



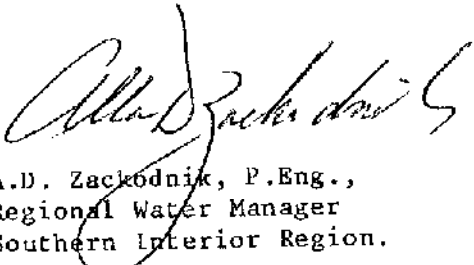
Licencing Section
Water Management Branch
Ministry of Environment
Victoria

Date: December 5, 1984
File: 0078766

RE: C.W.L. 13594 and Your Memo of November 22, 1984

The above licence was intended as backup storage for C.W.L. 13593, which authorized power generation. As C.W.L. 13593 was long ago abandoned, and C.W.L. 13594 has been retained only to legalize the existing structure on Nicola Lake, C.W.L. 13594 should be cancelled as it provides storage for a use that no longer exists.

Therefore this office recommends C.W.L. 13594 be cancelled under Sec. 20(2)(a) of the Water Act, subject to the Ministry of Environment being granted a licence under application 3-362 and therefore accepting responsibility for the structure and/or its replacement.


A.D. Zachodnik, P.Eng.,
Regional Water Manager
Southern Interior Region.

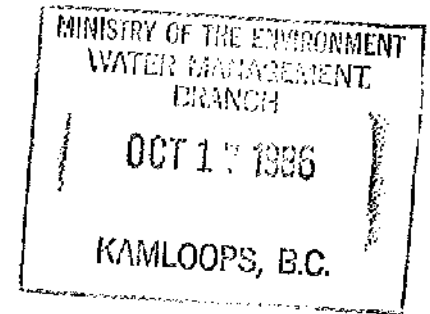
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Province of
British Columbia

Ministry of
Environment & Parks

C.C. Kamloops
Water Management Branch



WATER ACT

Section 20

ORDER OF CANCELLATION

File No. 0078766

In accordance with the Notice of Proposed Cancellation, dated the 19th day of June, 1986, Conditional Water Licence No. 13594, Nicola Lake, is hereby cancelled.

Dated at Victoria, B. C., this 10th day of October, 1986.

P. M. Brady
P. M. Brady
Comptroller of Water Rights.

THE PROVINCE OF BRITISH COLUMBIA—WATER ACT
CONDITIONAL WATER LICENCE

The Honourable Minister of Environment, (Water Management Branch), Parliament
Buildings, Victoria, B. C. V8V 1X5

is hereby authorized to store water as follows:

- (a) The source of the water supply is Nicola River and the reservoir is Nicola Lake.
- (b) The point of storage is located as shown on the attached plan.
- (c) The date from which this licence shall have precedence is 14th July, 1983.
- (d) The purpose for which this licence is issued is storage, and the water shall be used as set out in licences to be issued by the Comptroller of Water Rights or the Regional Water Manager.
- (e) The maximum quantity of water which may be stored is 43,800 acre feet per annum.
- (f) The period of the year during which the water may be stored is the whole year.
- (g) This licence is appurtenant is to the Ministry of Environment undertaking within the Nicola River watershed and the lands upon which the water is to be used shall be set out in licences to be issued by the Comptroller of Water Rights or the Regional Water Manager.
- (h) The works authorized to be constructed are outlet channel and dam, which shall be located approximately as shown on the attached plan.
- (i) The construction of the dam authorized under clause (h) hereof, shall not be commenced until plans of same have been submitted to and approved by the Comptroller of Water Rights. The construction is to be completed by the 31st day of December, 1988.
- (j) The level of the reservoir is to be controlled within a range of -3.23 feet to 3.5 feet, local datum.

SUPERCEDED BY

LICENCE NO. 64716/17


J. E. Farrell,

Deputy Comptroller of Water Rights.

File No. 3000362 Date issued: July 8, 1985

Conditional Licence 62961

THE PROVINCE OF BRITISH COLUMBIA—WATER ACT
CONDITIONAL WATER LICENCE

The Honourable Minister of Fisheries and Oceans, Canada, as represented by the Department of Fisheries and Oceans, 1090 West Pender Street, Vancouver, B. C. V6E 2P1

is hereby authorized to store and use water as follows:

- (a) The stream on which the rights are granted is Nicola River, with the reservoir being Nicola Lake.
- (b) The storage site is located as shown on the attached plan.
- (c) The date from which this licence shall have precedence is 4th July, 1983.
- (d) The purposes for which this licence is issued are storage and conservation (protection of fish).
- (e) The maximum quantity of water which may be stored is 10,000 acre feet per annum and the normal upper operating level of the reservoir shall not exceed a maximum elevation of +3.5 feet, local datum as set by the Regional Water Manager. The maximum quantity of water which may be released for conservation purpose from storage each year is 10,000 acre feet.
- (f) Water may be stored throughout the whole year and the stored water may be released for use at any time of the year.
- (g) The water is to be used within the conservation project of the licensee in the Nicola River, and the licence is appurtenant to the said project.
- (h) The works authorized are outlet channel and dam, which shall be located approximately as shown on the attached plan.
- (i) The construction of the said works has been completed and thereafter the licensee shall establish and continue to make a regular beneficial use of the water in the manner authorized herein.
- (j) This licence is issued in substitution of Conditional Water Licence 62961, in part.

AMENDED

9/10/87
J. E. Farrell

Deputy Comptroller of Water Rights

File No. 0370764 Date issued: December 4, 1986 CONDITIONAL LICENCE 64716



ORDER
WATER ACT
Section 15

File No. 0370764

In the matter of Conditional Water Licence 64716, which authorizes the storage of water from Nicola River, with the reservoir being Nicola Lake.

Having determined that the date of precedence was erroneously stated and that no person's rights will be injuriously affected, I hereby amend clause (c) of said licence to read as follows:

(c) The date from which this licence shall have precedence is 14th July, 1983.

Dated at Victoria, B.C., this 10th day of December, 1986.

W. E. Farrell,
Deputy Comptroller of Water Rights.

THE PROVINCE OF BRITISH COLUMBIA—WATER ACT

CONDITIONAL WATER LICENCE

The Honourable Minister of Environment, as represented by the Water Management Branch, Parliament Buildings, Victoria, B. C. V8V 1X5

is hereby authorized to store water as follows:

- (a) The stream on which the rights are granted is Nicola River, with the reservoir being Nicola Lake.
- (b) The storage site is located as shown on the attached plan.
- (c) The date from which this licence shall have precedence is 14th July, 1983.
- (d) The purpose for which this licence is issued is storage, and the stored water shall be used as set out in licences to be issued by the Comptroller of Water Rights or the Regional Water Manager.
- (e) The maximum quantity of water which may be stored is 31,634 acre feet per annum and the normal upper operating level of the reservoir shall not exceed a maximum elevation of +3.5 feet, local datum as set by the Regional Water Manager.
- (f) Water may be stored throughout the whole year.
- (g) This licence is appurtenant to the Ministry of Environment undertaking within the Nicola River watershed and the lands upon which the water is to be used shall be set out in licences to be issued by the Comptroller of Water Rights or the Regional Water Manager.
- (h) The works authorized are outlet channel and dam, which shall be located approximately as shown on the attached plan.
- (i) This licence is issued in substitution of Conditional Water Licence 62961, in part.

AMENDED 9/10/87


J. E. Farrell

Deputy Comptroller of Water Rights



ORDER
WATER ACT

Section 15

File No. 3000362

In the matter of Conditional Water Licence 64717, which authorizes the storage of water from Nicola River with the reservoir being Nicola Lake for storage purpose and used as set out in licences to be issued by the Comptroller of Water Rights or the Regional Water Manager.

Having determined that the works authorized were erroneously stated and that no person's rights will be injuriously affected, I hereby issue a new plan and amend clauses (b) and (h) of said licence to read as follows:

- (b) The storage site is located as shown on the attached amended plan.
- (h) The works authorized are inlet channels, outlet channel and dam which shall be located approximately as shown on the attached amended plan.

Dated at Victoria, B.C., this 9th day of October, 1987.


J. E. Farrell,
Deputy Comptroller of Water Rights.



Legend

- A: District Lot 110 KDYD, Douglas Lake Cattle Company
- B: District Lot 111 KDYD, IR2, Hamilton Creek
- C: District Lot 108 KDYD, KP81699, Eugene and Sherry Huber

Note:
 Property Boundaries are approximate and for presentation only
 Air photo base as of 2004

**Nicola Lake
 1948/1983 Engineer's Orders Under the Water Act
 Associated Land Parcels**

Figure 1