

Abstracts - Summer Water Temperature and Flow Management

1988 Summer Water Temperature and Flow Management Project (RM88-5)

Prepared by Triton Environmental Consultants Ltd. April 1995

The 1988 Nechako River Summer Water Temperature and Flow Management Project was undertaken to attempt to prevent mean daily water temperatures in the Nechako River above Stuart River (at Finmoore) from exceeding 20.0° C (68.0° F), and to control flows in the Nechako River below Cheslatta Falls and at Vanderhoof during the water temperature control period (July 20 to August 20). In 1988, very mild temperatures were experienced within the area and mean daily water temperatures in the Nechako River above Stuart River did not exceed the temperature criterion throughout the water temperature control period.

Over the duration of the 1988 Summer Water Temperature and Flow Management Project, the total volume of water released was 6,681.4 m³/s-d (235,954 cfs-d). The volume released for cooling purposes was 4,652.8 m³/s-d (164,314 cfs-d). The average flow over the operational period (July 10 to August 20) was 159.1 m³/s (5,619 cfs).

The 1989 Summer Water Temperature and Flow Management Project (RM89-2)

Prepared by Triton Environmental Consultants Ltd. May 1995

The 1989 Nechako River Summer Water Temperature and Flow Management Project was undertaken to attempt to prevent mean daily water temperatures in the Nechako River above Stuart River (at Finmoore) from exceeding 20.0° C (68.0° F), and to control flows in the Nechako River below Cheslatta Falls and at Vanderhoof during the water temperature control period (July 20 to August 20).

In 1989, mean daily water temperatures in the Nechako River above Stuart River exceeded the temperature criterion on six days (July 28 - August 1, and August 7) during the water temperature control period (July 20 to August 20), with a maximum mean daily temperature of 21.2° C (70.2° F), recorded on July 31. Prior to, and including July 28 the meteorological forecasts predicted cool conditions thus the Skins Lake Spillway release was maintained at 170 m³/s (6,000 cfs). On July 29 the predicted water temperatures showed a substantial increase due to the meteorological forecast for the period. However, the temperature trends showed no potential to exceed 19.4°C (67.0° F). In recognition of the current instability in meteorological conditions, the Skins Lake Spillway release was increased to 453m³/s (16,000 cfs) as a conservative measure. The following day's forecast, July 30, predicted a cooling trend and in response to this forecast, the spillway release was reduced from 453 m³/s (16,000 cfs) to 14.2 m³/s (500 cfs). The forecasted conditions for July 31 predicted a warming trend to occur, and the spillway release was increased to 453 m³/s (16,000 cfs) where it was maintained until

August 2. On August 7 flow in the Nechako River below Cheslatta Falls was at or near the maximum allowable level of 283 m³/s (10,000 cfs), and thus no further action could be taken.

Over the duration of the 1989 Summer Water Temperature and Flow Management Project, the total volume of water released was 8,255.2 m³/s-d (291,532 cfs-d). The volume released for cooling purposes was 6,251.8 m³/s-d (220,782 cfs-d). The average flow over the operational period (July 10 to August 20) was 196.6 m³/s (6,943 cfs).

The 1990 Summer Water Temperature and Flow Management Project (RM90-2)
Prepared by Triton Environmental Consultants Ltd. May 1995

The 1990 Nechako River Summer Water Temperature and Flow Management Project was undertaken to attempt to prevent mean daily water temperatures in the Nechako River above Stuart River (at Finmoore) from exceeding 20.0° C (68.0° F), and to control flows in the Nechako River below Cheslatta Falls and at Vanderhoof during the water temperature control period (July 20 to August 20). In 1990, mean daily water temperatures in the Nechako River above Stuart River exceeded the temperature criterion on thirteen days (July 22-26, July 29-31, August 11-14 and August 20) during the water control period (July 20 to August 20), with a maximum mean daily temperature of 21.0° C (69.8° F), recorded on August 12.

The first exceedance of the temperature criterion occurred from July 22 to July 26, inclusive. On July 20, in response to a predicted warming trend the Skins Lake Spillway release was increased from 170 m³/s (6,000 cfs) to 453 m³/s (16,000 cfs). The spillway release was maintained at 453 m³/s (16,000 cfs) until July 22 when a predicted cooling trend prompted the spillway release to be decreased to 14.2 m³/s (500 cfs). However, a warming trend was predicted the following day, July 23 and the spillway release was increased to 453 m³/s (16,000 cfs). On July 24 the spillway release was reduced to 283 m³/s (10,000 cfs) to avoid exceeding the maximum allowable flow in the Nechako River below Cheslatta Falls.

The second exceedance of the temperature criterion occurred from July 29 to July 31, inclusive. During this period, flow in the Nechako River below Cheslatta Falls was at the maximum allowable level of 283 m³/s (10,000 cfs), and thus no further action could be taken.

The third exceedance of temperature criterion occurred from August 11 to August 14, inclusive. On August 9, the Skins Lake Spillway release was increased from 170 m³/s (6,000 cfs) to 453 m³/s (16,000 cfs) in response to a predicted warming trend. On August 10 the spillway release was reduced to 283 m³/s (10,000 cfs) to avoid exceeding the maximum allowable flow in the Nechako River below Cheslatta Falls. The spillway release was maintained at 283 m³/s (10,000 cfs) until August 12 when a predicted cooling trend prompted the spillway release to be decreased to 14.2 m³/s (500 cfs) where it was maintained through to August 15.

The fourth exceedance of the temperature criterion occurred on August 20. A strong upward observed trend was predicted on August 19. However, no downstream benefit would be realized on August 20, and the spillway release was maintained at 14.2 m³/s (500 cfs).

Over the duration of the 1990 Summer Water Temperature and Flow Management Project, the total volume of water released was 8,219.2 m³/s-d (290,261 cfs-d). The volume released for cooling purposes was 6,161.2 m³/s-d (217,583 cfs-d). The average flow over the operational period (July 10 to August 20) was 195.7 m³/s (6,911 cfs).

The 1991 Summer Water Temperature and Flow Management Project (RM91-2)
Prepared by Triton Environmental Consultants Ltd. May 1995

The 1991 Nechako River Summer Water Temperature and Flow Management Project was undertaken to attempt to prevent mean daily water temperatures in the Nechako River above Stuart River (at Finmoore) from exceeding 20.0° C (68.0° F), and to control flows in the Nechako River below Cheslatta Falls and at Vanderhoof during the water temperature control period (July 20 to August 20). In 1991, mean daily water temperatures in the Nechako River above Stuart River exceeded the temperature criterion on two consecutive days, August 15 and August 16, with a maximum mean daily temperature of 20.2 ° C (68.4° F), recorded on August 16. During this period, flow in the Nechako River below Cheslatta Falls was at the maximum allowable level of 283 m³/s (10,000 cfs), and thus no further action could be taken.

Over the duration of the 1991 Summer Water Temperature and Flow Management Project, the total volume of water released was 8,360.5 m³/s-d (295,251 cfs-d). The volume released for cooling purposes was 6,302.5 m³/s-d (222,573 cfs-d). The average flow over the operational period (July 10 to August 20) was 199.1 m³/s (7,031 cfs).

The 1992 Summer Water Temperature and Flow Management Project (RM92-2)
Prepared by Triton Environmental Consultants Ltd. May 1995

The 1992 Nechako River Summer Water Temperature and Flow Management Project was undertaken to attempt to prevent mean daily water temperatures in the Nechako River above Stuart River (at Finmoore) from exceeding 20.0° C (68.0° F), and to control flows in the Nechako River below Cheslatta Falls and at Vanderhoof during the water temperature control period (July 20 to August 20). In 1992, forced spilling from Skins Lake Spillway took place between July 11 to July 31. During this time Skins Lake Spillway releases were held constant at 283 m³/s (10,000 cfs), the maximum allowable level permitted in the Nechako River below Cheslatta Falls. Mean daily water temperatures in the Nechako River above Stuart River exceeded the temperature criterion on four days (August 2 and August 12-14) during the water control period (July 20 to August 20), with a maximum mean daily temperature of 20.6 ° C (69.1° F) recorded

on August 13. During these periods, flow in the Nechako River below Cheslatta Falls was at or near the maximum allowable level of 283 m³/s (10,000 cfs), and in either case no further action could be taken.

Over the duration of the 1992 Summer Water Temperature and Flow Management Project, the total volume of water released was 9,383.8 m³/s-d (331,389 cfs-d). The volume released for cooling purposes was 7,325.8 m³/s-d (258,711 cfs-d). The average flow over the operational period (July 10 to August 20) was 223.4 m³/s (7,889 cfs). A separate analysis was performed to estimate the volume of water released for cooling purposes without the influence of the forced spill. The total release volume without forced spill was calculated to be 8,575.0 m³/s-d (302,826 cfs-d). The volume released for cooling purposes assuming no forced spill was 6,517.0 m³/s-d (230,148 cfs-d). The average flow over the operational period (July 10 to August 20), assuming no forced spill, was calculated to be 204.2 m³/s (7,211 cfs).

The 1993 Summer Water Temperature and Flow Management Project (RM93-2)
Prepared by Triton Environmental Consultants Ltd. May 1995

The 1993 Nechako River Summer Water Temperature and Flow Management Project was undertaken to attempt to prevent mean daily water temperatures in the Nechako River above Stuart River (at Finmoore) from exceeding 20.0° C (68.0° F), and to control flows in the Nechako River below Cheslatta Falls and at Vanderhoof during the water temperature control period (July 20 to August 20). In 1993, mean daily water temperatures in the Nechako River above Stuart River exceeded the criterion on one day (August 5) during the water control period (July 20 to August 20), with a recorded maximum mean daily temperature of 20.1 ° C (68.2° F). During this period, flow in the Nechako River below Cheslatta Falls was at the maximum allowable level of 283 m³/s (10,000 cfs), and thus no further action could be taken.

Over the duration of the 1993 Summer Water Temperature and Flow Management Project, the total volume of water released was 6,669.7 m³/s-d (235,540 cfs-d). The volume released for cooling purposes was 4,611.7 m³/s-d (162,862 cfs-d). The average flow over the operational period (July 10 to August 20) was 158.8 m³/s (5,608 cfs).

The 1994 Summer Water Temperature and Flow Management Project (RM94-1)
Prepared by Triton Environmental Consultants Ltd. November 1996

The 1994 Nechako River Summer Water Temperature and Flow Management Project was undertaken to attempt to prevent mean daily water temperatures in the Nechako River above Stuart River (at Finmoore) from exceeding 20.0° C (68.0° F), and to control flows in the Nechako River below Cheslatta Falls and at Vanderhoof during the water temperature control period (July 20 to August 20). In 1994, mean daily water temperatures in the Nechako River above

Stuart River exceeded the criterion on ten days (July 21-25, July 28 - 30 and August 3-4) during the water temperature control period (July 20 to August 20), with a maximum mean daily temperature of 21.1 ° C (70° F) recorded on July 30.

From July 21 to 25, flow in the Nechako River below Cheslatta Falls was at or near the maximum allowable level of 283 m³/s (10,000 cfs), and thus no further action could be taken. Several days prior to July 28, meteorological forecasts indicated a clear cooling trend to the end of July. As a result the Skins Lake Spillway release was decreased from 283 m³/s (10,000 cfs) to reduce flow in the Nechako River below Cheslatta Falls toward 170m³/s (6,000 cfs). On July 28, the meteorological forecast showed an abrupt and dramatic change toward a clear warming trend, indicating errors in the previous days' forecasts. In response, the Skins Lake Spillway release was increased to 453 m³/s (16,000 cfs) shortly after noon on July 28, and the flow in the Nechako River below Cheslatta Falls increased to near 283 m³/s by July 31. Meteorological forecasts issued on August 2 and 3 indicated a cooling trend was to occur. Although the observed mean daily water temperature in the Nechako River above Stuart River reached 20.3° C on August 3 and 4, the observed mean daily water temperatures decreased steadily following August 4 as predicted by the meteorological forecasts issued on August 2 and 3.

Over the duration of the 1994 Summer Water Temperature and Flow Management Project, the total volume of water released was 8,488.5 m³/s-d (299,771 cfs-d). The volume released for cooling purposes was 6,430.5 m³/s-d (227,093 cfs-d). The average flow over the operational period (July 10 to August 20) was 202.1 m³/s (7,137 cfs).

The 1995 Summer Water Temperature and Flow Management Project (RM95-2)
Prepared by Triton Environmental Consultants Ltd. December 1999

The 1995 Nechako River Summer Water Temperature and Flow Management Project was undertaken to attempt to prevent mean daily water temperatures in the Nechako River above Stuart River (at Finmoore) from exceeding 20.0°C (68.0°F) between July 20 to August 20, 1995. Water temperatures were managed by regulating Skins Lake Spillway releases to control flows in the Nechako River below Cheslatta Falls and at Vanderhoof. In 1995, mean daily water temperatures in the Nechako River above Stuart River exceeded 20.0 °C (68.3°F) on two days (July 20 and 21) during the project period, with a maximum mean daily temperature of 20.2°C (68.3°F) recorded on July 20. Flow in the Nechako River below Cheslatta Falls was at or near the maximum allowable level of 283 m³/s (10,000 cfs) during that time, and thus no further action could be taken.

The total volume of water released was 7,760.2 m³/s-d (274,049 cfs-d) and the average release during the Project was 184.8 m³/s (6,525 cfs) over the duration of the 1995 Summer Water Temperature and Flow Management Project (July 10 to August 20).

The 1996 Summer Water Temperature and Flow Management Project (RM96-1)
Prepared by Triton Environmental Consultants Ltd. December 1999

The 1996 Nechako River Summer Water Temperature and Flow Management Project was undertaken to attempt to prevent mean daily water temperatures in the Nechako River above Stuart River (at Finmoore) from exceeding 20.0°C (68.0°F), between July 20 and August 20, 1996. Water temperatures were managed by regulating Skins Lake Spillway releases to control flows in the Nechako River below Cheslatta Falls and at Vanderhoof. In 1996, forced spilling from Skins Lake Spillway took place prior to the start of the Project from July 10 to July 27. During this time Skins Lake Spillway releases were held constant at 255 m³/s (9,000 cfs). In 1996, mean daily water temperatures in the Nechako River above Stuart River did not exceed 20.0 °C (68.0 °C) between July 20 and August 20.

Over the duration of the 1996 Summer Water Temperature and Flow Management Project (July 10 to August 20), the total volume of water released was 7,966.5 m³/s-d (281,337 cfs-d) and average release during the Project was 189.7 m³/s (6,699 cfs). A separate analysis was performed to estimate the volume of water released for cooling purposes without the influence of the forced spill. The total volume that would have been released without forced spill was calculated to be 7,094.6 m³/s-d (250,546 cfs-d), and the average release during the Project would have been 168.9 m³/s (5,964.7 cfs).

The 1997 Summer Water Temperature and Flow Management Project (RM97-1)
Prepared by Triton Environmental Consultants Ltd. December 1999

The 1997 Nechako River Summer Water Temperature and Flow Management Project was undertaken to attempt to prevent mean daily water temperatures in the Nechako River above Stuart River (at Finmoore) from exceeding 20.0°C (68.0°F) between July 20 and August 20, 1997. Water temperatures were managed by regulating Skins Lake Spillway releases to control flows in the Nechako River below Cheslatta Falls and at Vanderhoof. In 1997, forced spilling from Skins Lake Spillway took place during the Project operation between July 10 to August 20. During this time Skins Lake Spillway releases were maintained at approximately 340 m³/s (12,000 cfs). In 1997, mean daily water temperatures in the Nechako River above Stuart River did not exceed 20.0°C (68.0°C) between July 20 and August 20.

Over the duration of the 1997 Summer Water Temperature and Flow Management Project, the total volume of water released was 14,205.6 m³/s-d (501,671 cfs-d), and the average release during the Project was 338.2 m³/s (11,945 cfs).