Rich McCleary, PhD, RP Bio., **Regional Drought Response Coordinator**
Patrick Farmer, RPF, P Ag., **Senior Authorizations Specialist**
Ministry of Forests, Lands, Natural Resource Operations and Rural Development

Outline

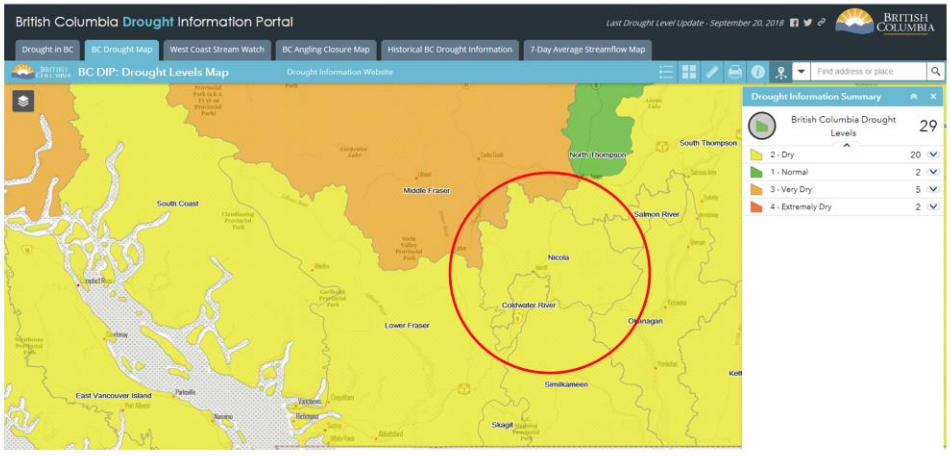
1. **Present:** Collaborative management to achieve EFNs during drought:
   I. Working with First Nations on the dam releases at Nicola Lake and Mamit Lake (Rich).
   II. Working with agricultural sector on Upper Nicola and Coldwater (Patrick).
2. **Future:** Nicola Pilot (Patrick)

As drought levels elevate, how do we respond?

2018 DROUGHT LEVELS AT A GLANCE

Drought Levels:	1	Normal	2	Dry	3	Very Dry	4	Extremely Dry

BASINS	14-Jun	28-Jun	12-Jul	26-Jul	09-Aug	14-Aug	17-Aug	21-Aug	23-Aug	06-Sep	20-Sep
Nicola	2	1	1	2	2	2	2	3	3	3	2
- Coldwater River Basin	2	2	2	2	2	2	2	3	3	3	2



The Nicola watershed and its tributary stream the Coldwater are located in the Merritt area, approximately 1 hour west of Kelowna. The watershed is located in the lee of the Coast Mountains and as a result of being in the rain shadow, has a very hot and dry climate. The watershed supports sizable populations of 4 anadromous fish species including chinook salmon (Red Status – Wild Salmon Policy), coho salmon (COSEWIC-Threatened), steelhead (COSEWIC – Endangered) and pink salmon, the first three of which are of varying levels of conservation concern.

Problem 1: During drought, flow conditions are bad everywhere, including in streams with no water users

This is the Upper Nicola River, upstream from Douglas Lake. There are no water users or storage reservoirs upstream from this location. Identifying opportunities to release surplus water from storage is an important action for minimizing fish mortality during these periods. The Province holds limited conservation storage licences in the Nicola watershed and in many cases relies on good will of ranchers who may have surplus water in their storage reservoirs that they wish to release.

Goal: avoid making a bad situation worse or lethal for fish, provide relief wherever possible

Problem 2: Communication

Example - July 2015, Coldwater River

First Nations were disappointed with FLRNORD communications and their lack of involvement in drought response.

Irrigators also expressed concerns regarding communication.

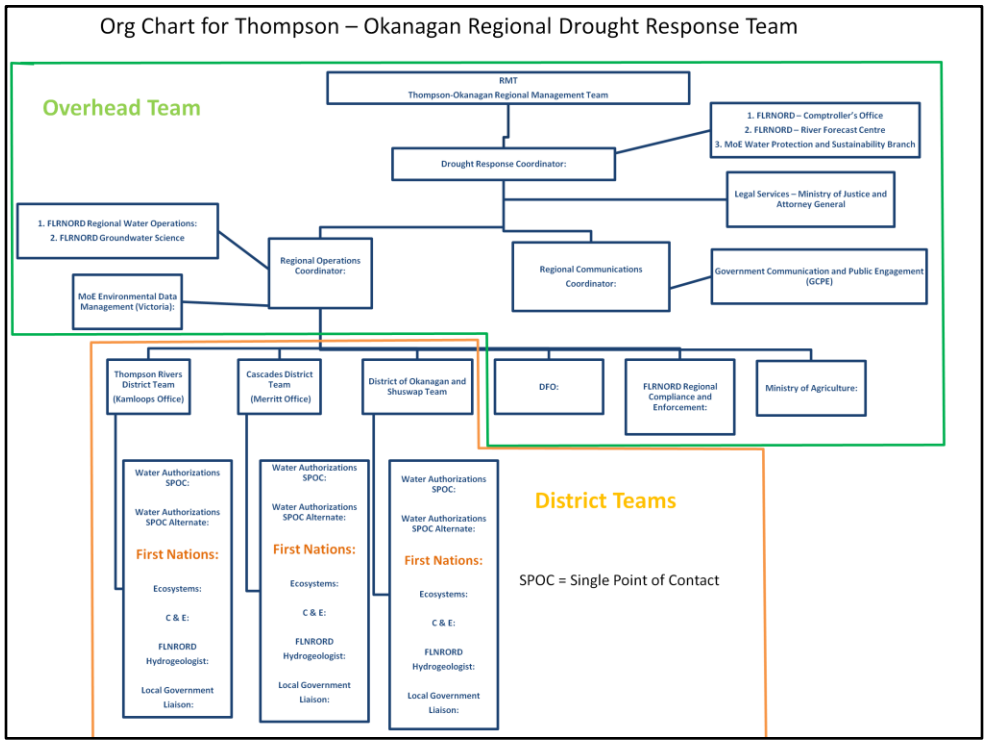
Shared Interests Between Governments and Water Users:

Control and Security for water users and the environment

Since 2015, FLRNORD have Increased Communication and Collaboration

1. Expanded drought response team to include local governments and First Nations.
2. Expanded reservoir operations advisory groups to include First Nations.
3. Improved communication systems with irrigators

DFO, Nicola Tribal Association, Lower Nicola Indian Band – Public Works and Infrastructure, Regional Water Operations – Dam Safety Division, Regional Ecosystems



This is Thompson – Okanagan Regional Drought Response Team Org Chart based on Incident Command Structure. During drought season we hold bi-weekly calls where all participants provide updates on observations and issues. Team works together to set preliminary drought levels for all basins which are then brought forward to Provincial Drought Response Team for discussion and final determination of drought level. We have achieved improved involvement of First Nations at the technical level but have heard from First Nations that they want more meaningful involvement with governance and decision making.

Roster for 2018 Thompson – Okanagan Regional Drought Response Team

Overhead Team

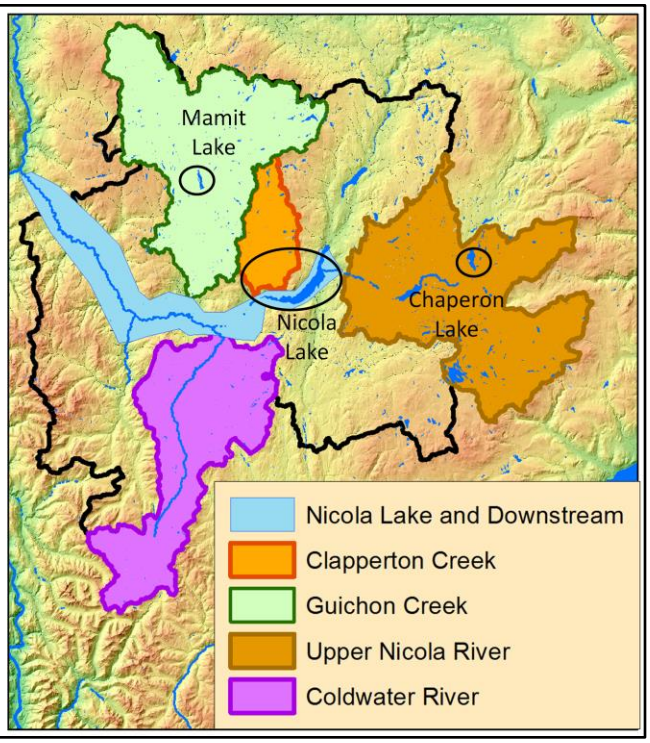
Position	Org	Location	Person
Drought Response Coordinator	FLRNORD	Kamloops	Lora Neild
Comptroller's Office	FLRNORD	Victoria	Valerie Cameron
Comptroller's Office Alternate	FLRNORD	Victoria	Dante Fiocco
River Forecast Centre	FLRNORD	Victoria	Jonathan Boyd
Water Protection and Sustainability Branch	MoE	Victoria	Brady MacCarl
Legal Services Contact	MoJAG	Victoria	(as needed)
Regional Operations Coordinator	FLRNORD	Kamloops	Rich McCleary
Regional Operation Coordinator Alternate	FLRNORD	Kamloops	Christian St-Pierre
Resource Manager	FLRNORD	Okanagan	Bob Warner
Environmental Data Mgmt Lead	MoE	Victoria	Rob Williams
Environmental Data Mgmt. Technical	MoE	Victoria	Jeremy Krogh
Victoria Communications (GCPE)			Jeremy Uppenborn
Regional Water Ops	FLRNORD	Kamloops	Trevor Bohay
Regional Groundwater Science	FLRNORD	Penticton	Skye Thomson
DFO	DFO	Kamloops	Doug Edwards
Conservation and Enforcement (C & E) Lead	FLRNORD	Vernon	Brad Faucett
Water Survey of Canada	WSC	Cranbrook	Ryan Seibel
Ministry of Agriculture	MoAg	Kamloops	Andrew Petersen

District Teams

Position	Org	Location	Person
Cascades – First Nations	NWFSA	Merritt	Sara Martin
Cascades – First Nations	NTA	Merritt	Tracy Wimbush
Cascades – Water Authorizations SPOC	FLRNORD	Merritt	Kim DeRose
Cascades – Water Authorizations alternate	FLRNORD	Merritt	Adam Courtney
Cascades - C & E	FLRNORD	Merritt	TBA
Cascades – Groundwater Science	FLRNORD	Vernon	David Thomson
Thompson Rivers – Water Authorizations SPOC	FLRNORD	Kamloops	Christa Perszon
Thompson Rivers – Water Auth. alternate	FLRNORD	Kamloops	Taylor Shantz
Thompson Rivers – First Nations	Splatsin	Enderby	Robyn Laubman
Thompson Rivers – First Nations	SFC	Kamloops	Aaron Gillespie
Thompson Rivers – C & E	FLRNORD	Kamloops	TBA
Thompson Rivers – Hydrogeologist	FLRNORD	Vernon	David Thomson
DOS – Water Authorizations SPOC	FLRNORD	Vernon	Mike Epp
DOS – Water Auth. alternate	FLRNORD	Penticton	Jeff Nitychoruk
DOS – First Nations	ONA	Penticton	Karilyn Alex
DOS – First Nations	Splatsin	Enderby	Robyn Laubman
DOS - C & E	FLRNORD	Kamloops	TBA
DOS - Hydrogeologist	FLRNORD	Penticton	Nicole Payette
Local Government Liaison	KRWA	Grand Forks	Nicole McCallum
Local Government Liaison	OBWB	Kelowna	Kellie Garcia
Local Government Liaison	OBWB	Kelowna	Corrine Jackson
Local Government Liaison	RNDO	Vernon	Jennifer Miles

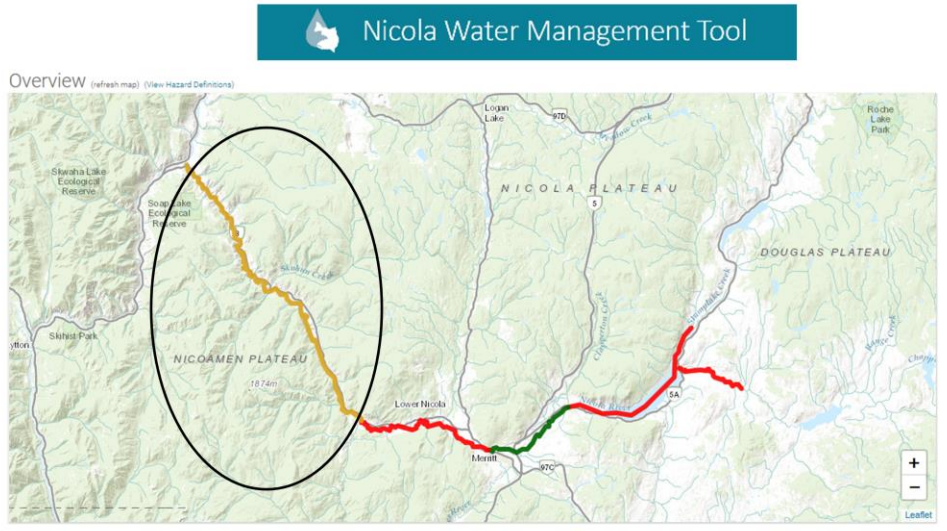
First Nations are now active on District Teams for Drought Response. The representatives communicate back to communities.

In the Nicola, the approach is to work collaboratively within each five sub- basins



Mamit Lake within Guichon Creek and Nicola Lake and the Nicola River downstream to the Thompson confluence are the two areas with a specific team assigned to set the release schedule.

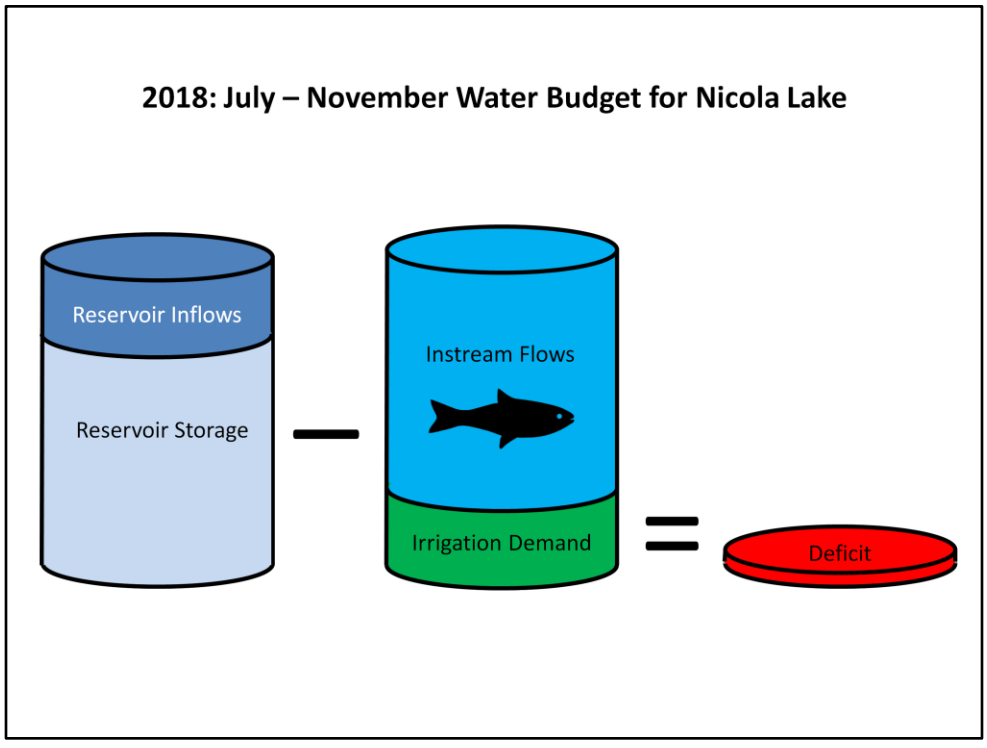
Meeting EFN targets in all sub-basins is important for meeting EFNs in the lower reaches of the Nicola River at confluence with Thompson River



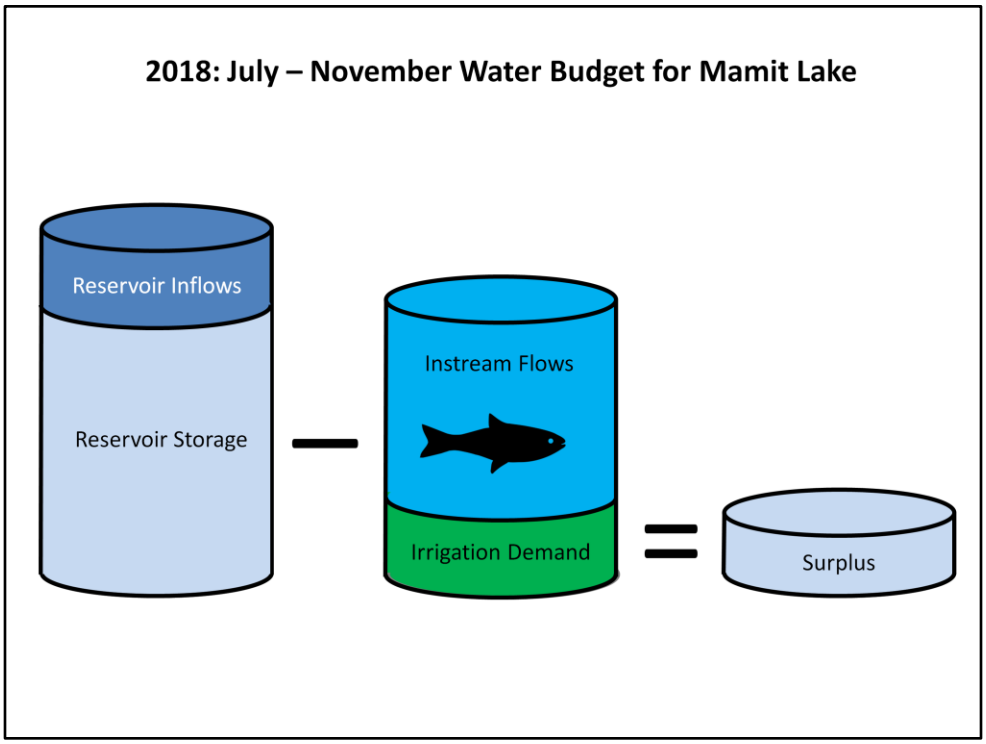
Although there are five different sub-zones, they all must be managed simultaneously in order to achieve the downstream flow targets including providing adequate flows for chinook salmon migration during last half of August especially into the reaches downstream of Merritt. This map shows whether the flows are poor, OK, or good over the entire year. NWMT is a work in progress.

Nicola and Mamit Lake Dams Advisory Teams

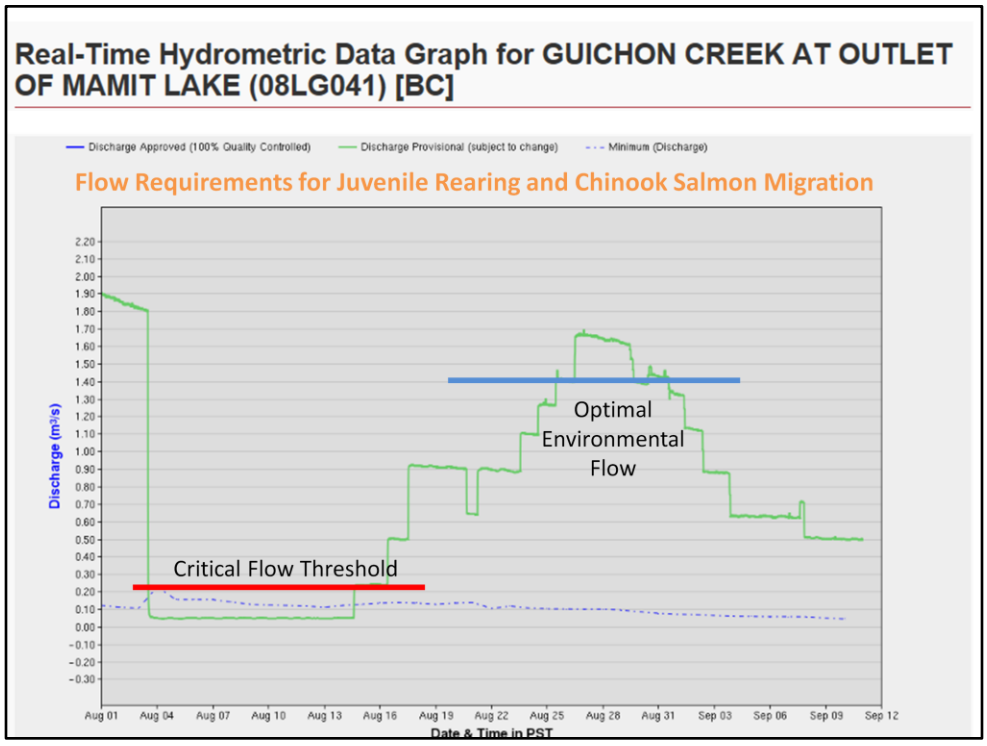
DFO, Nicola Tribal Association, Lower Nicola Indian Band – Public Works and Infrastructure, Regional Water Operations – Dam Safety Division, Regional Ecosystems



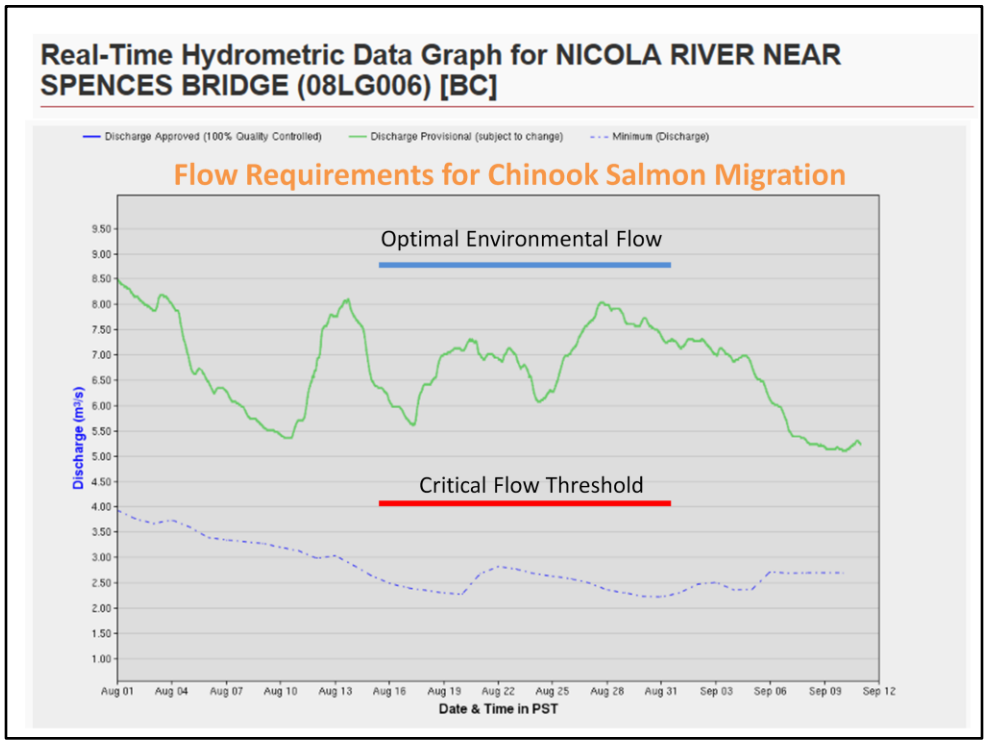
Due to very low inflows into Nicola Lake during July and August 2018, a water supply deficit was forecast contingent upon precipitation.



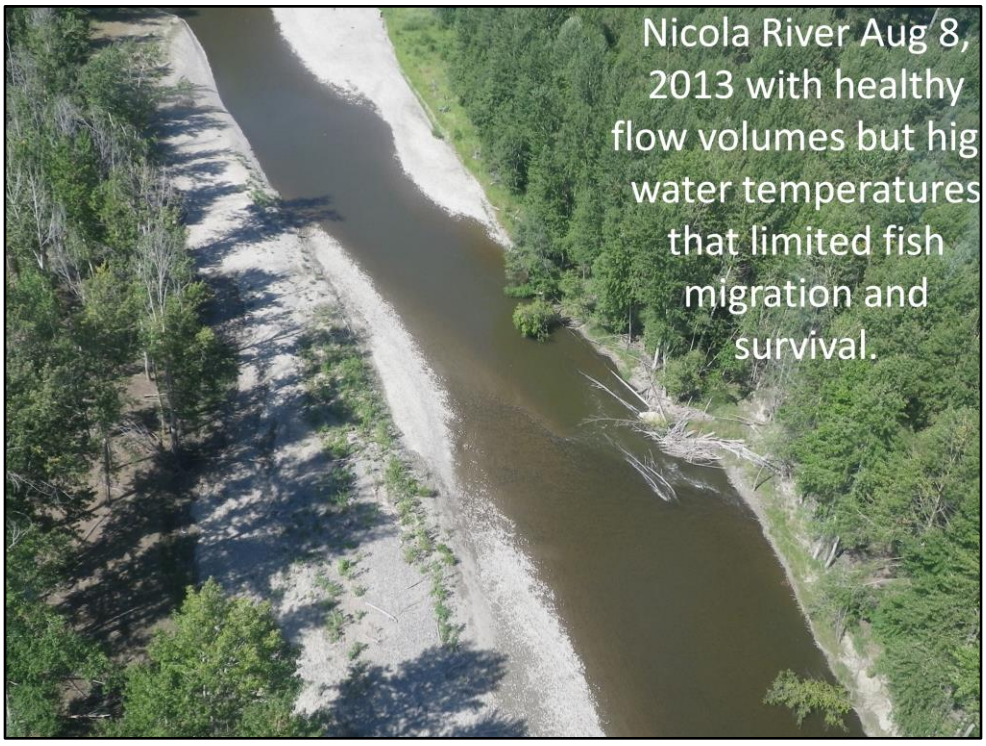
During 2018, surplus storage was held in Mamit Lake. We work to ensure that any surplus water in Mamit Lake is released when it is needed most and not carried over into next year.



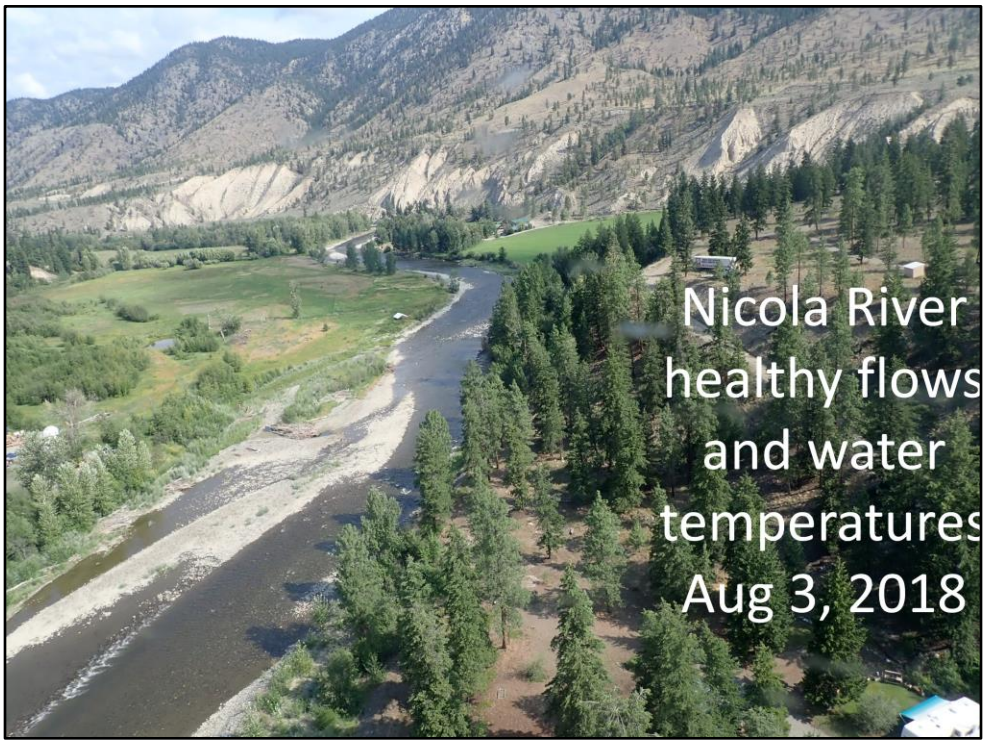
During 2018, dam operations resulted in a sudden drop to below critical flows, then when operator began working collaboratively, flows were adjusted to meet EFNs in Guichon and contribute towards meeting flow targets in the Nicola. Staff turnover, training, difficulties with implementation of reservoir operations plans all contributed to early August problem.



This hydrograph shows flows at a location in the Nicola River near its confluence with the Thompson River. Flows at this location influence the ability of the Red Status chinook salmon population to enter the Nicola River and complete their migration to the spawning areas. This chart shows that during a drought year, upstream releases were important for achieving adequate flows for the chinook salmon migration period during August 2018.



Healthy flows with channel wetted for 2/3 width. Despite the volume, high temperatures can cause fish mortality. In 2017 and 2018, forest fire smoke helped to maintain cool water temperatures during drought.



Healthy flows with channel wetted for 2/3 width. Cool water temperatures due to releases from Mamit Lake and smoke.

Drought Response Involvement with Agriculture Sector

- Town Hall meetings after drought to discuss opportunities for improvement

The people that you see in this room suffered financial impacts to their businesses as a result of the Fish Protection Act Order that was issued for the Coldwater River during the 2015 drought. This meeting was held in the fall after the drought season in an effort to improve communications and discuss opportunities when implementing water conservation measures when required in the future.

Working Collaboratively with Douglas Lake Ranch to achieve EFN targets in Upper Nicola for kokanee

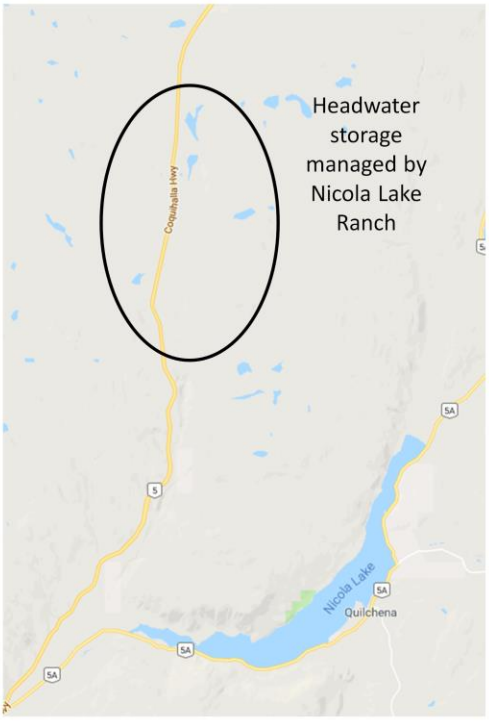




Photos from https://www.douglaslake.com/operations-farming

FLRNORD has long-standing relationship with **Nicola Ranch** to optimize use of surplus storage for steelhead and chinook salmon.

Extensive flood damage to water storage and diversion infrastructure is major constraint to continued use of headwater storage.

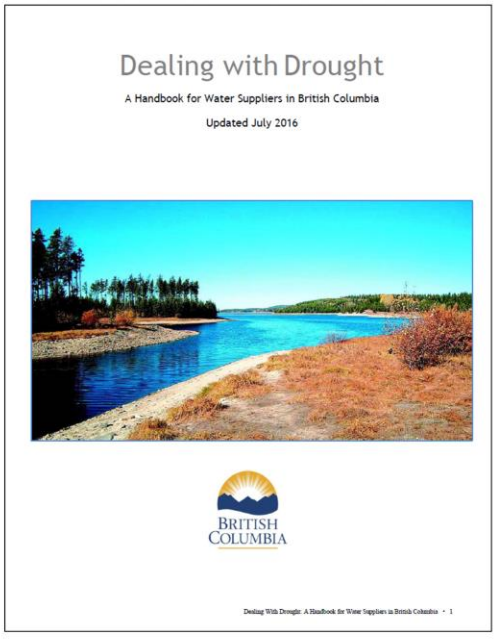


Opportunities

1. **Reservoir Operating Plans:** Supply and demand analysis, drought threshold levels and response
2. **Information:** hydrometric stations and network. Reservoir water level monitoring is cheap compared to natural channel flow monitoring.
3. **Communication:** identify the target audience and best ways to reach them
4. **Human resources:** properly trained staff, turn-over of technical staff can present problems
5. **Infrastructure upgrades:** severe floods and age have destroyed or limited functionality
6. **BMPs** (Best Management Practices) for water conservation for irrigation including equipment, crop selection, etc.

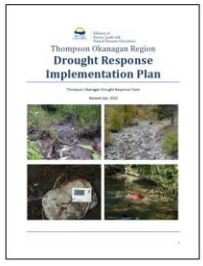
Conclusions

1. The Province of BC is committed to working together with other governments, agencies and stakeholders to manage drought and optimize EFNs.
2. Province's prime role include setting drought levels at the basin scale and communication.
3. When agricultural needs and EFNs are both considered, there can be stronger rationale for investing in operating plans and infrastructure.



Other Resources

- https://www2.gov.bc.ca/assets/gov/environment/air-land-water/water/drought-info/suppliers_drought_handbook_2009.pdf



Nicola Watershed Pilot & MOU with Nicola Chiefs

Presentation for Okanagan EFN Conference

Introductions:

Government to Government Partnership

March 2018: Nicola Pilot – Recognizes Aboriginal Rights and Title

Chief Sumexheltza	Chief Joe	Minister	Chief McLeod	Chief Shackelly	Chief Spahan
Lower Nicola	Shackan	Fraser	Upper Nicola	Nooaitch	Coldwater

Background

- The provincial government is committed to true and lasting reconciliation with Indigenous Peoples and through the Nicola Watershed Governance Project, will work respectfully with First Nations governments to implement a new approach to watershed governance
- Funding from the BC Freshwater Legacy Initiative and the Province will help to ensure that First Nations governments and communities can meaningfully and equitably participate in this partnership.
- The signing of the MOU is the first step to building a partnership that can help us identify priorities together, learn together, and work together.

MOU between Province and First Nat collaboratively manage water reso

- Five First Nations
  - Lower Nicola
  - Upper Nicola
  - Coldwater
  - Nooaitch
  - Shackan
- Province
  - FLNR/ENV/MIRR

- MOU signed March 23, 2018
- Defines the relationship between the Province and First Nations
- Sets in motion a process to work, learn, solve problems and engage stakeholders together
- The Nicola Project has also been accepted as a collaborative stewardship framework forum

The goal of this MOU is to establish a government to government partnership to develop and recommend a governance approach to sustainably manage water resources within the Nicola Watershed, informed by Nlaka'pamux and Syilx law, and the relevant legislative framework, including the Water Sustainability Act. Legislative tools under the Water Sustainability Act that may inform the development and recommendation of a governance approach for the Nicola Watershed

The MOU is about the relationship of working together between the Province and the First Nations governments. As a result The G2G Nicola Forum established through the MOU provides a platform to invite broad community, public and stakeholder engagement and work towards resolving priority watershed issues.

The Nicola Watershed was chosen because of a history of collaboration on water issues between First Nations, the Province, stakeholders and the public in the watershed.

As part of the MOU both parties recognized our relationship building would be one of the keys to success and finance support for First Nations to equally engage would be another. As a result the Nicola Project was accepted as CSF Forum. This provides appropriate funding to ensure First Nations engagement.

Nicola Watershed: Key Project Drivers

- Water Concerns
  - Quality – turbidity, temperature
  - Quantity – flooding, drought
  - Aquatic ecosystem – fish habitat
  - Major land base modification
- Water use impairments
  - Infrastructure – Nicola, Mamit dams
- Shared interests
  - Healthier watershed
- History of good collaboration

As per provincial regulations and legislation, the Province will continue to address water issues in the Nicola River Watershed.

Moving forward, as priority issues are identified through community, public, and stakeholder engagement processes, the Province and five Nicola First Nations governments will jointly explore possibilities to achieve sustainable watershed outcomes.

Living Goal

The Parties' shared vision of collaborative water governance is one that embodies a government-to-government relationship between them, supports the implementation of UNDRIP, and draws on the strengths of their respective laws and governance systems and respects both Indigenous knowledge and best available science in planning and decision-making about water.

The Nicola Forum has not yet made any decisions about how to move forward on priority issues within the watershed.

Approach

- Centered on collaboration rather than adversarial or positional approach
- Co-developing a G2G governance framework for water management with all water users
- Water Users /Stakeholders will be invited to share their interests, idea's and concerns

Meeting this goal means working towards having a similar understanding of the state of the watershed and addressing outstanding key water issues through a collaborative approach

The government to government relationship with the five Nicola First Nations was formed to collaboratively lead and decide on how a new collaborative watershed governance model could work in the Nicola Watershed.

What about broad engagemen

- Government(local & Federal)
- Agricultural/ Water Users
- Other land tenure users that affect water resources
- Interested Stakeholders

- Continuous communication/ participation with stakeholders
- Ensure sufficient resourcing is built into planning, engagement and implementation
- Recognize upfront potential limitations of existing frameworks

Under the **leadership of the Province and the five Nicola Chiefs, a committee** *will be established to lead a process that engages broad watershed interests in exploring the priority issues and identifying possible solutions in the Nicola Watershed.*

Big fish, small river. Chinook salmon spawning in small river in the Thompson River watershed. Water use during the late summer and early fall overlap the fall spawning season to create a deficit that can occur even during years of average flow supply.