

First Nations Information Gathering on Kokanee, Bull Trout and Arctic Grayling

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TSAY KEH DENE NATION

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Statement of Consultation for Sensitive Data

Traditional ecological knowledge (TEK) refers specifically to all types of knowledge about the environment derived from the experience and traditions of a particular group of people. The TEK documented in this report is the intellectual property of the knowledge holders who shared it.

The contents of the interviews are complimented with site specific information for kokanee, bull trout and arctic grayling, which could potentially cause harm to individuals, families and First Nations if released to the public. This information is private and belongs to the knowledge holders; therefore, site-specific information is not available in this report, and further use of the information beyond this study requires permission from the particular First Nation that owns it.

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Executive Summary

The goal of this project was to record First Nations knowledge, concerns and priorities related to kokanee (*Oncorhynchus nerka*), bull trout (*Salvelinus confluentus*) and arctic grayling (*Thymallus arcticus*) in the tributaries of the Williston Reservoir to guide priorities for future Fish and Wildlife Compensation Program (FWCP) projects, monitoring, conservation and enhancement actions. The project responds to a high priority research need identified by the First Nations Working Group and aligns with FWCP Action: 2a-1 in the Reservoirs Action Plan: "undertake a kokanee assessment study to summarize status, trends, and aquatic and terrestrial ecosystem impacts and potential risks of kokanee introductions and develop appropriate recommendations for actions, as needed." In addition to kokanee, the FWCP is also interested in gathering First Nation people's knowledge, concerns and priorities related to bull trout and arctic grayling and their habitat in the region to inform the bull trout directed project (Action: 1c-1 in the Streams Action Plan). **This report focuses on the knowledge, concerns and priorities of members of the Tsay Keh Dene Nation.** The main findings from this study are:

- Kokanee are now present in most accessible rivers and tributaries from the Williston reservoir.
- Tsay Keh Dene is concerned about the presence of kokanee in their waterways. Kokanee are a source of food for bull trout but there is concern that kokanee are affecting other fish species, notably arctic grayling spawning habitat. There is concern that kokanee might be affecting terrestrial ecology, such as riparian area growth, and are now being relied upon as a food source in the fall by animals including bears and eagles.
- It is of great importance to Tsay Keh Dene to understand the current status of kokanee in their territory, including how the population is changing and how it is affecting other species of fish and wildlife. Having up-to-date information on the kokanee population and where they are spawning is of great interest.
- Tsay Keh Dene is concerned about the dramatic decrease in arctic grayling numbers, size and distribution.
- The bull trout (Dolly Varden) population is believed to be stable and the fish appear healthy but they have decreased in size and there is concern about the levels of mercury in fish. It is important to Tsay Keh Dene to have ongoing monitoring of mercury levels in fish and waterways and the findings reported back to them.
- Every lake, river and stream in Tsay Keh Dene territory is important. Tsay Keh Dene would like to see all lakes, rivers and streams in their territory protected.

Taken together with ongoing input and involvement from Tsay Keh Dene, these insights could guide priorities for future FWCP projects, monitoring, conservation and enhancement actions on Tsay Keh Dene territory.

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1.0 Background

The Fish and Wildlife Compensation Program (FWCP) is a partnership between BC Hydro, the Province of B.C., Fisheries and Oceans Canada, First Nations and Public Stakeholders to conserve and enhance fish and wildlife in watersheds impacted by BC Hydro dams. FWCP's vision is to have thriving fish and wildlife populations in watersheds that are functioning and sustainable. Their objectives are: **conservation** - maintain or improve the status of species or ecosystems of concern. Maintain or improve the integrity and productivity of ecosystems and habitats; **sustainable use** - maintain or improve opportunities for sustainable use, including harvesting and other uses. Harvesting includes First Nations, recreational, sport and commercial harvests. Other uses may include cultural, medicinal, or non-consumptive uses; and **community engagement** - build and maintain relationships with stakeholders and aboriginal communities. The objective stems from BC Hydro's social responsibility policy and the Province of B.C. shared stewardship objective.

The W.A.C. Bennett Dam is a large hydroelectric dam built by BC Hydro and completed in 1968 on the Peace River in northern B.C. The dam blocks the Finlay, Parsnip and Peace Rivers, feeding them into Williston reservoir, which runs 250km north-south, 150km east-west and flooded approximately 350,000 acres of former forest land (Stanley 2010). The flooding of the reservoir was done with little, if any, consultation with local First Nations and resulted in the loss of traditional lands including plants and wildlife biodiversity and social displacement (Loo 2007). Indeed, a BC Hydro consultant admitted in 1977 that the "isolation imposed by the reservoir had severe impacts on Ingenika society and culture" (Mitchell 1994).

In 1990, the B.C. Ministry of Environment with funding from Peace/Williston Fish & Wildlife Compensation Program, began a kokanee stocking program for Williston Reservoir in an effort to create a self-sustaining kokanee, gerrard trout and lake trout recreational fishery; however, gerrard trout were never introduced as planned. Two native kokanee populations occur in headwater lakes in the Finlay (Thutade Lake) and Parsnip (Arctic Lake) drainages (Langston and Zemplak 1998). Stream-spawning kokanee from Arrow Reservoir (Hill Creek) and Kootenay Lake (Meadow Creek) were stocked extensively in tributaries of Williston Reservoir from 1990 to 2005 (2005 cumulative total of 1.7 million in tributaries to the Peace reach; 2.1 million in tributaries of the Parsnip reach; and 75,000 in the Finlay reach) (Langston and Murphy 2008). Reservoir creation has favoured kokanee populations as they are a pelagic lake-dwelling species (Euchner 2011).

Since their introduction in the mid-1990s, kokanee have been gradually increasing in abundance, and they have recently overtaken Lake Whitefish as the most abundant species in Williston Reservoir. It has been predicted that kokanee numbers would continue to increase due to favourable conditions in the reservoir (Sebastian *et al.* 2009). In 2000, it was estimated that kokanee comprised up to 14% of the

pelagic fish abundance in Williston Reservoir. Captures from the Peace reach in 2008 revealed that kokanee may comprise up to 90% of all pelagic species in this region of the reservoir. In 2000 the estimated Williston Reservoir kokanee population was 0.8- 1.3 million fish, and more recent estimates (2008) have been as high as 9 million (Sebastian *et al.* 2009).

Understanding the influence of non-native kokanee has been identified as a high priority for First Nations, and the FWCP has identified the need for a kokanee assessment study that will “*summarize status, trends, and aquatic and terrestrial ecosystem impacts and potential ecological risks associated with kokanee introductions. This study would also develop appropriate recommendations for actions, as needed*” (Action: 2a-1 in the Reservoirs Action Plan)¹. In addition to kokanee, the FWCP is also interested in gathering First Nation people’s knowledge, concerns and priorities related to bull trout (*Salvelinus confluentus*) and Arctic Grayling (*Thymallus arcticus*) and their habitat in the region to inform the bull trout directed project (Action: 1c-1 in the Streams Action Plan).² First Nations people are recognized as key knowledge holders and this knowledge, along with concerns and priorities related to kokanee and bull trout is necessary for the success of the projects and a core objective of the FWCP. It is important to ensure First Nations people’s concerns and priorities are addressed, especially when making recommendations for future actions.

1.1 Goal

To record Tsay Keh Dene First Nations knowledge, concerns and priorities related to kokanee, bull trout and arctic grayling in the tributaries of the Williston Reservoir to guide priorities for future FWCP projects, monitoring, conservation and enhancement actions.

¹ <http://fwcp.ca/app/uploads/2015/07/fwcp-peace-reservoirs-action-plan-march-31-2014.pdf>

² <http://fwcp.ca/app/uploads/2015/07/fwcp-peace-streams-action-plan-march-31-2014.pdf>

1.2 Study Area

The project focuses on the tributaries to the Williston Reservoir and surrounding habitat. This includes the territories of the Sekani people represented by Tsay Keh Dene Nation, Tse'khene (McLeod Lake) and Kwadacha Nation as well as parts of non-Sekani peoples including the Nak'azdli Whut'en, Saulteau and West Moberly.

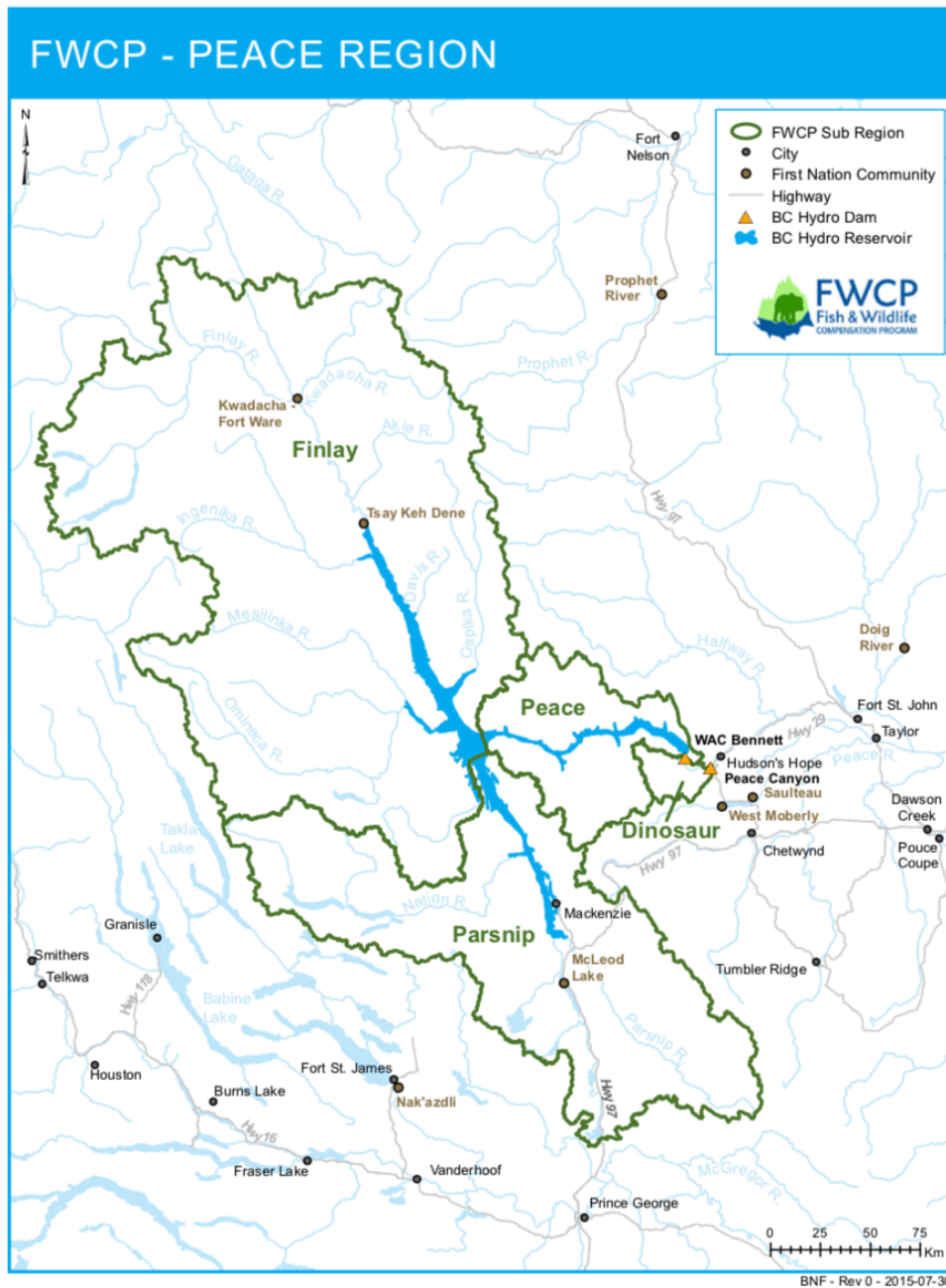


Figure 1. Map showing the Williston Reservoir, surrounding tributaries and lands, BC Hydro dams, the location of First Nations communities and cities, and the FWCP sub-region, in B.C., Canada.

2.0 Methods

2.1 Research Approach

A key objective of the Fish and Wildlife Compensation Program (FWCP) is “build and maintain relationships with stakeholders and aboriginal communities.” Accomplishing the project aim necessitates working closely with Tsay Keh Dene and the involvement of knowledge holders. This project was guided by Luke Gleeson, Director of Land, Resources & Treaty Operations for the Tsay Keh Dene First Nation. LRTO Manager Sina Abadzadesahraei led the recruitment of participants and collection of data; project researcher Dr. Tristan Pearce drafted an initial report; and Tsay Keh Dene reviewed and edited the report before submitting to FWCP.

2.2 Data Collection

This report draws on semi-structured interviews with 12 Tsay Keh Dene members to document their knowledge, concerns and priorities related to kokanee, bull trout and arctic grayling in the tributaries of the Williston Reservoir and the reservoir itself (see Appendix I: interview guide). Interviews were conducted in English by Sina Abadzadesahraei at the Lands, Resources and Treaty office in Tsay Keh and responses were recorded in writing. Participants were sought who are knowledgeable of the Tsay Keh territory and have experience fishing in the tributaries of the Williston Reservoir.

Table 1: Tsay Keh Dene participants

- | | | |
|-----------------|----------------------|-------------------------|
| 1. Albert Poole | 6. Violet Messenger | 11. Simon Seymour Isaac |
| 2. Bill Poole | 7. Michael Massettoe | 12. Tamara Isaac |
| 3. Bob Pierre | 8. Robert Tomah | |
| 4. Jean Isaac | 9. Sara Pierre | |
| 5. Ken Warren | 10. Susan Smaaset | |

2.3 Data Analysis

Interview data were analyzed using latent content analysis. Information shared was coded based on common and recurring themes related to the project goal: kokanee, bull trout, arctic grayling, concerns, and management priorities.

3.0 Results and Discussion

The findings presented here are preliminary insights into Tsay Keh Dene knowledge, concerns and priorities related to kokanee, bull trout and arctic grayling in the tributaries of the Williston Reservoir. The interpretation and use of these findings to guide priorities for future FWCP projects, monitoring, conservation and enhancement actions should be done together with Tsay Keh Dene. The numbers included with some river and creek names correspond with the table in Appendix II, which also corresponds with FWCP's database.

3.1 General Findings

Traditional practices

- Traditionally, Sekani would harvest fish in the springtime as this is known as a "time of re-growth." Out of respect for the other animals, usual animals that Sekani relied on would not be harvested in the spring so that these animals could raise their young. Sekani would therefore eat fish during the spring or sustain themselves on cached foods. This is an example of a Sekani cultural practice that demonstrates respect for all living beings and fosters sustainable management and conservation of resources. – Tsay Keh Dene Elder Robert Tomah
- Sekani did not traditionally eat fish often, but would hunt large game, caribou (previously), moose, deer, groundhog, etc. It was believed that people that ate fish carried the smell of fish and as Sekani are in grizzly bear country this would not have been wise. Not eating fish often was also because Sekani were always moving around on the land. Sekani did dry and cache whitefish in the winter when they were abundant. – Tsay Keh Dene Elder Robert Tomah

Current fishing

- Every lake, river and stream in Tsay Keh Dene territory is important. Tsay Keh Dene would like to see all lakes, rivers and streams in their territory protected.
- Several fish species are important to Tsay Keh Dene for subsistence including: arctic grayling (*Thymallus arcticus*), whitefish (*Thymallus arcticus*), bull trout (dolly varden) (*Salvelinus confluentus*), lake trout (char) (*Salvelinus namaycush*), rainbow trout (*Oncorhynchus mykiss*) and burbot (ling fish or ling cod) (*Lota lota*). Arctic grayling, whitefish and burbot are favoured because of the taste of their meat.
- There has been a dramatic decrease in arctic grayling, whitefish and burbot numbers since the flooding of the Williston reservoir.
- Some Tsay Keh Dene do not eat fish anymore because they are concerned about mercury and other contaminant levels in fish. Participants said that they had been told by Health Canada about 15 years ago that due to high levels of mercury in the fish, it was not good to eat more than one fish per month; however, even though recent updates from FWCP studies have alleviated some of these concerns, there is still a large interest in further studies and continued monitoring.

3.2 Kokanee (*Oncorhynchus nerka*)

Kokanee are now present in most accessible rivers and tributaries from the Williston reservoir and are believed to be non-native to the Peace River basin. Most Tsay Keh Dene do not actively fish for kokanee and consider kokanee an invasive species. Kokanee have been observed spawning in almost every stream in the territory including, up the Finlay River (23) and Ingenika River (98), and especially in Davis River (106) and Collins Creek (108) (Table 2).

The best time to catch kokanee is from August to September. Kokanee have been caught in many rivers and creeks in the territory. In particular, participants report catching kokanee in the Ospika River (110), Akie River (43), Pelly Creek (Ingenika trib.) (100), Whitewash Creek, 8-Mile Creek and Hydro Creek. They are a small fish, between 1 to 2 pounds and 6 to 9 inches in length. People usually do not catch them because they are too small. All participants shared that the kokanee population has increased since their introduction in 1990, with more kokanee spawning each year.

Tsay Keh Dene is concerned about the presence of kokanee in their waterways. Kokanee are a source of food for bull trout but there is concern that kokanee are affecting other fish species, notably arctic grayling spawning habitat. There is concern that kokanee might be affecting terrestrial ecology, such as riparian area growth, and are now being relied upon as a food source in the fall by animals including bears and eagles. It is of great importance to Tsay Keh Dene to understand the current status of kokanee in their territory, including how the population is changing and how it is affecting other species of fish. Having up-to-date information on the kokanee population and where they are spawning is of great interest.

3.3 Bull Trout, *Chaba* (*Salvelinus confluentus*)

The fish that Tsay Keh Dene call "dolly," "dollies" or "dolly varden" are actually bull trout (*Salvelinus confluentus*). Elder Robert Tomah explains that bull trout have coarser meat and a bigger head and stomach than other fish. The brain and stomach are high in nutrients and traditionally his family would boil these parts in a soup or would cook it on the rocks. The fish broth was especially good for pregnant women or sick children.

Bull trout like clean and clear water and spawn upstream mostly in the Finlay River (23), Ingenika River (98), Manson River (5) and all tributaries, unless beavers have dammed them. In particular, bull trout used to spawn at 8-Mile Creek but beavers have dammed the Creek. It is of importance to Tsay Keh Dene to understand the current status of bull trout in their territory, and Tsay Keh Dene is open to discuss potential areas for surveying.

Specific rivers and creeks identified by participants as especially important for bull trout spawning include (Table 2):

Ingenika R (98) - very important for spawning

- Ravenal C (Swannell R trib.) (104)
- Chowika C (105)
- Davis R (106) – down to the Ospika R
- Collins C (108)
- Lafferty C (109)

Finlay R (23)

- Akie R (Finlay R trib.) (43)
- Pesika C (Finlay R trib.) (44)

Manson R (5)

Ospika R (110)

Omineca R (9)

Mesilinka R (47)

The average size of bull trout caught is usually between 6-8 pounds and 15 inches or bigger with some weighing as much as 12 pounds. Elder Robert Tomah explains that in the past, around the early 1960s when he was a child, bull trout could be huge. He shared a story of when he was a child at Grassy Bluff just above where there is an old log jam and the waters are aqua in color. Robert's mother carried one bull trout home with the tail dragging on the ground; his mother was around 5 feet 3 inches tall. Today, some participants said that bull trout are smaller, especially in the mountain areas. Robert shared that if a river is deep, the fish can grow bigger, but if the water level fluctuates, the fish are not able to grow as large.

The bull trout population is believed to be stable, have plenty of kokanee to feed on, and the fish appear healthy but there is concern about the levels of mercury in fish. Some participants said that they would not eat bull trout because they believed that they are contaminated with mercury. It is important to Tsay Keh Dene to have ongoing monitoring of mercury levels in bull trout and other fish species and the findings reported back to them.

Participants are also concerned that bull trout can become stuck in woody debris and become easy prey for bear, wolf and lynx. One participant said that bull trout are now lighter in colour compared to the past, especially in the creeks. Overall, the flooding of the Williston reservoir has had devastating impacts on all species, including bull trout, and has blocked the natural migration routes of many species that used to travel west to eat and vice versa.

Table 2. Watershed names and stream sections where kokanee and/or bull trout are spawning, concerns and priorities (numbers correspond with Appendix II)

Watershed name	Stream section	First Nations Name	Kokanee spawning	Bull Trout spawning	Concerns	Priorities
Finlay R (23)						
	Akie R (43)		✓	✓	kokanee spawning and effect on other species of fish	kokanee and bull trout spawning survey
	Pesika C (Finlay R trib.) (44)			✓		bull trout spawning survey
Ingenika (98)	Ravenal C (Swannel R trib.) (104)			✓		bull trout spawning survey
	Chowika C (105)			✓		bull trout spawning survey
	Davis R (106) - up to the Ospika R		✓	✓	kokanee spawning and effect on other species of fish	kokanee and bull trout spawning survey
	Collins C (108)		✓	✓	kokanee spawning and effect on other species of fish	kokanee and bull trout spawning survey
	Lafferty C (109)			✓		bull trout spawning survey
Manson R (5)				✓		bull trout spawning survey
Ospika R (110)				✓		bull trout spawning survey
Omineca R (9)				✓		bull trout spawning survey
Mesilinka R (47)				✓		bull trout spawning survey

3.4 Arctic Grayling, *Wuhtsizi or Wuhchizih (Thymallus arcticus)*

Participants explained that arctic grayling like cold, clear water like in the Ingenika River (98). Arctic grayling used to be found up the Finlay and Ingenika Rivers but are rarely caught now by Tsay Keh Dene. Specific rivers and creeks that were, and could still be, important for arctic grayling spawning include:

Ingenika R (98) - very important for spawning

- Pelly Creek (Ingenika trib.) (100)
- Davis R (106)

Finlay R (23)

Omineca R (9)

Thutade Lake [56.8793, -126.9974]

- Porcupine Creek
- Flood Creek
- 8-Mile Creek
- the Old Man Fell Down Creek

The arctic grayling caught are usually between 9-11 inches in length, smaller than in the past. All participants are concerned about the dramatic decrease in arctic grayling numbers. It is of timely importance to understand the current status of the arctic grayling population in Tsay Keh Dene territory and options for recovery. Participants caution that arctic grayling use habitat areas at different times of the year and for different life stages, which are not fully known or understood. It is important to consider this when planning when and where to conduct arctic grayling surveys.

Some identified drivers of change in the arctic grayling population include: the impact of the Williston reservoir - increased water temperatures, altered flow rates and water levels, and disruption of migration routes; hunting by migratory birds; and the impact of introduced kokanee.

3.5 Concerns

Main concerns identified by participants that are affecting fish and their habitat in Tsay Keh Dene territory include (Table 3):

1. Mercury levels in fish: concern that bull trout and other fish species are contaminated with mercury and not suitable to eat.
2. Concern that kokanee are affecting other fish species, and possibly eating arctic grayling and bull trout eggs during spawning. There is concern that kokanee might be affecting terrestrial ecology, such as riparian area growth, and are now being relied upon as a food source in the fall by animals including bears and eagles.
3. Williston Reservoir: flooding of the reservoir had a huge impact on fish and fish habitat and there is concern about the impact of warmer water temperatures, altered flow rates and water levels³, and disruption of migration routes on fish.
4. Sedimentation and woody debris in streams and rivers from the reservoir debris as well as logging, mining and oil and gas activities blocking access to fish spawning habitat.
5. Garbage and pollution left by individuals and industry on the land and in the water and concern about the impact on fish habitat.
6. Warmer water temperatures, the possible northward migration of Squawfish (northern pikeminnow (*Ptychocheilus oregonensis*)) and impact on other fish species. Squawfish eat the eggs of other fish.
7. Dramatic decrease in burbot (ling fish) (*Lota lota*); was a preferred fish to eat.

3.6 Management priorities – Recommendations

Recommendations suggested by Tsay Keh Dene for addressing concerns affecting fish and fish habitat in their territory include:

1. Regular and ongoing monitoring of mercury levels in fish and waterways and the findings reported back to Tsay Keh Dene.
2. Research to understand the current status of kokanee in the Tsay Keh Dene territory, including how the population is changing and how it is affecting other species of fish and wildlife. Having up-to-date information on the kokanee population and where they are spawning is of great interest.
3. Research that involves Tsay Keh Dene to assess fish populations (bull trout, arctic grayling, burbot) and habitat conditions in all lakes, rivers and streams in the territory. Tsay Keh Dene are

³ Elder Robert Tomah explains that fish are less healthy when the waters remain stagnant or they become landlocked (e.g. as a result of beaver dams or changes associated with the reservoir). Their meat is less healthy as a result of the changes in their activity levels. When fish are able to swim against the current and be more active they are more fit. Some fish used to thrive in the backwaters (e.g. Teeth Creek).

interested in having up-to-date information on how the reservoir is effecting fish in the territory and what can be done to mitigate impacts.

4. Timing windows could be imposed on industry to protect fish. For example, avoiding road-building or logging during critical spawning periods, which would be different for each species. Greater protection for small streams, such as machine-free zones in areas being logged. Clear debris from creeks so that fish can reach spawning grounds further upstream.
5. Community involvement by helping to clean up garbage and woody debris from rivers and streams. In addition, companies could train their employees to be proactive when it comes to cleaning up their garbage (i.e. oil cans, oil filters).
6. Conduct a study to see if Squawfish (*Ptychocheilus oregonensis*) are becoming established further north and impacts on other fish species.

Participants would like the findings of this report shared with the wider Tsay Keh Dene membership. Taken together with ongoing input and involvement from Tsay Keh Dene, these insights could guide priorities for future FWCP projects, monitoring, conservation and enhancement actions on Tsay Keh Dene territory.

Table 3. Summary of concerns, observed effects and management priorities identified by Tsay Keh Dene that are within and outside the FWCP's mandate

Concerns	Observed effects	Management Priorities within FWCP Mandate	Management Priorities outside FWCP Mandate
Mercury levels in fish	<ul style="list-style-type: none"> Concern that bull trout and other fish species are contaminated with mercury and not suitable to eat. 	<ul style="list-style-type: none"> Regular and ongoing monitoring of mercury levels in fish and waterways and the findings reported back to Tsay Keh Dene. 	
Kokanee are adversely affecting other fish species	<ul style="list-style-type: none"> Concern that kokanee are eating arctic grayling and bull trout eggs during spawning. There is concern that kokanee might be affecting terrestrial ecology, such as riparian area growth, and are now being relied upon as a food source in the fall by animals including bears and eagles. 	<ul style="list-style-type: none"> Research to understand the current status of kokanee in the Tsay Keh Dene territory, including how the population is changing and how it is affecting other species of fish and wildlife. Having up-to-date information on the kokanee population and where they are spawning is of great interest. 	<ul style="list-style-type: none">
Williston reservoir flooding and lasting impacts	<ul style="list-style-type: none"> Concern about the impact of warmer water temperatures, altered flow rates and water levels, and disruption of migration routes on fish. 	<ul style="list-style-type: none"> Research that involves Tsay Keh Dene to assess fish populations (bull trout, arctic grayling, burbot) and habitat conditions in all lakes, rivers and streams in the territory. Generate up-to-date information on how the reservoir is effecting fish in the territory and what can be done to mitigate impacts. 	<ul style="list-style-type: none">
Sedimentation and woody debris in streams and rivers from the reservoir debris as well as logging, mining and oil and gas activities	<ul style="list-style-type: none"> Damage to critical fish spawning habitat ⇒ blocking access to fish spawning habitat 	<ul style="list-style-type: none"> Clear debris from creeks so that fish can reach spawning grounds further upstream. 	<ul style="list-style-type: none"> Timing windows could be imposed on industry to protect fish. For example, avoiding road-building or logging during critical spawning periods, which would be different for each species. Greater protection for small streams, such as machine-free zones in areas being logged.

<p>Garbage and pollution left by individuals and industry on the land and in the water</p>	<ul style="list-style-type: none"> • Concern about the impact of garbage and pollution on fish habitat. 	<ul style="list-style-type: none"> • Community involvement by helping to clean up garbage and woody debris from rivers and streams. • Companies could train their employees to be proactive when it comes to cleaning up their garbage (i.e. oil cans, oil filters). 	
<p>Warmer water temperatures and the possible northward migration of Squawfish (northern pikeminnow (<i>Ptychocheilus oregonensis</i>))</p>	<ul style="list-style-type: none"> • Concern about the potential impact on other fish species. Squawfish eat the eggs of other fish. 	<ul style="list-style-type: none"> • Conduct a study to see if Squawfish (<i>Ptychocheilus oregonensis</i>) are becoming established further north and impacts on other fish species. 	
<p>Dramatic decrease in burbot (ling fish) (<i>Lota lota</i>);</p>	<ul style="list-style-type: none"> • Was a preferred fish to eat but now is very difficult, if not impossible, to find. 	<ul style="list-style-type: none"> • Conduct a study to survey burbot populations, identify reasons for decline and options for recovery. 	

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APPENDIX I

Interview Questions - First Nations Information Gathering on Kokanee and Bull Trout

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Background:

The Fish and Wildlife Compensation Program (FWCP) has identified the need for a kokanee assessment study that will summarize status, trends and ecosystem impacts, and develop recommendations for actions. The FWCP also has an ongoing bull trout directed project that will review existing information, summarize status and trends, undertake actions that lead to the development of conservation and enhancement, and develop a cost-effective monitoring program.

This project will work with First Nations in the area to record knowledge, concerns and priorities related to kokanee and bull trout in the tributaries of the Williston Reservoir to guide priorities for future FWCP projects, monitoring, conservation and enhancement actions.

Questions:

Part 1: Background

1. first and last name:
2. e-mail and phone #:
3. First Nation:
4. how long have you fished these waters?

Part 2: Fishing

5. which fish species are important to you and why?
6. do you catch all these species now? If not, why not?
7. what streams and rivers are important to you for fishing?

Part 3: Fish Species

Bull trout

8. what is the local name for Bull trout?
9. which streams are most important to Bull trout for spawning and why?
10. where is the best place to catch Bull trout and why?

11. what size are they when you catch them?
12. are the numbers of Bull trout increasing, decreasing or stable and why?
13. are Bull trout healthy? If not, why not? For how long has this been a problem?
14. what changes have you observed in the distribution and abundance of Bull trout since flooding?

Arctic Grayling

15. what is the local name for arctic grayling?
16. which streams are most important to arctic grayling for spawning and why?
17. where is the best place to catch arctic grayling and why?
18. what size are they when you catch them?
19. are the numbers of arctic grayling increasing, decreasing or stable and why?
20. are arctic grayling healthy? If not, why not? For how long has this been a problem?
21. what changes have you observed in the distribution and abundance of arctic grayling since flooding?

Kokanee

(specify if speaking about non-native stocked Kokanee from the 1990s or native Kokanee)

22. what is the local name for Kokanee?
23. which streams are most important to Kokanee for spawning and why?
24. where is the best place to catch Kokanee and why?
25. what size are they when you catch them?
26. are the numbers of Kokanee increasing, decreasing or stable and why?

Part 4: Concerns and Priorities:

27. are you concerned about the health of the fish and/or their habitat? If so, please describe these concerns and what stream, rivers and fish species are affected.
28. what could be done to address your concerns? What actions could be taken?
29. which streams would you like to see priority given to?

Part 5: Thank you

30. is there anything that you would like to add that we haven't already discussed?

APPENDIX II

List of streams where kokanee spawning surveys were previously performed (2002 - 2010)			
#	Name	#	Name
1	Nation R	29	Spinel C (Finlay R trib.)
2	Philip C (Nation R trib.)	30	Cutoff C (Finlay R trib.)
3	Rainbow C (Nation R trib.)	31	Bower C (Finlay R trib.)
4	Sylvester C (Nation R trib.)	32	Unnnamed trib #1 (Finlay R trib.)
5	Manson R (Reservoir to Manson Lake)	33	Fox R (Finlay R trib.)
6	Ciarelli C (Manson R trib.) aka Donna	34	Kwadacha R (Finlay R trib.)
7	Gaffney C (Manson R trib.)	35	Paul R (Finlay R trib.)
8	Munro C (Manson R trib.)	36	Russel C (Finlay R trib.)
9	Omineca R	37	Stelkuz C (Russel C trib.)
10	Wolverine L outlet (Manson R trib.)	38	McGraw C (Finlay R trib.)
11	Upper Manson R (above lakes)	39	Del C (Finlay R trib.)
12	Jackfish C (Omineca R trib.)	40	Blanchard C (Finlay R trib.)
13	Porter C (Omineca R trib.)	41	Truncate C (Finlay R trib.)
14	Big (Omineca R trib.)	42	Tsaydiz C (Finlay R trib.)
15	Germansen R (Omineca R trib.)	43	Akie C (Finlay R trib.)
16	Nina/ Echo C (Omineca R trib.)	44	Pesika C (Finlay R trib.)
17	Discovery C (Omineca R trib.)	45	Rubyred C (Finlay R trib.)
18	Twenty Mile C (Omineca R trib.)	46	Hydro C (Ed Bird Lake outlet)
19	Indian Meadow Creek (Omineca trib.)	47	Mesilinka R
20	Duckling C (Omineca R trib.)	48	Gopherhole C (Mesilinka R trib.)
21	Silver C (Omineca R trib.)	49	Prospector C (Mesilinka R trib.)
22	Ogden C (Omineca R trib.)	50	Carina C (Mesilinka R trib.)
23	Finlay R	51	Lay C (Mesilinka R trib.)
24	Firesteel R (Finlay R trib.)	52	Tutizika C (Mesilinka R trib.)
25	Delta C (Finlay R trib.)	53	Osilinka R
26	Toodagone R (Finlay R trib.)	54	Thayne C (Osilinka R trib.)
27	Thudaka R (Finlay R trib.)	55	Tenakihi C (Osilinka R trib.)
28	Obo R (Finlay R trib.)	56	Wasi C (Osilinka R trib.)

57	Dead Bear C (Osilinka R trib.)	89	Crooked R
58	Clearwater R	90	Angusmac C (Crooked R. trib.)
59	Point C (Clearwater R trib.)	91	Altezega C
60	Nabesche R	92	Redrocky C (Crooked R trib.)
61	West Nabesche R	93	Weedon C (Crooked R trib.)
62	Schooler C	94	McLeod R (Crooked R trib.)
63	Aylard C	95	Mischinsinlika C
64	Dunlevy C	96	Gagnon C
65	Carbon C	97	Chichouyenily C
66	Scott C	98	Ingenika R
67	Weston C	99	Cutbank C (Ingenika R trib.)
68	Six Mile C	100	Pelly C (Ingenika trib.)
69	Lamonti C	101	Tucha C (Pelly C trib.)
70	Patsuk C	102	Wrede C (Ingenika R trib.)
71	Cut Thumb C	103	Swannell R (Ingenika R trib.)
72	Tony C	104	Ravenal C (Swannell R trib.)
73	Tutu C	105	Chowika C
74	Mugaha C	106	Davis R
75	Morfee C	107	Bruin C
76	Parsnip R	108	Collins C
77	Misinchinka R	109	Lafferty C
78	Colbourne C	110	Ospika R
79	Reynolds C	111	Gauvreau C (Ospika R trib.)
80	Anzac R	112	Stevenson C (Ospika R trib.)
81	Wooyadilinka C	113	Aley C (Ospika R trib.)
82	Tacheeda C	114	Bevel C
83	Table R	115	Nation Trib 1
84	Hominka R	116	Unnamed C #2(Omineca R trib.)
85	Missinka R	117	Unnammed Ospika Arm trib.
86	Wicheika C	118	Pack R
87	Arctic Lake outlet		
88	Arctic Lake inlet		

