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MEMORANDUM

TO:	**Nechako Water Engagement Initiative**
FROM:	**Rachel Chudnow, Ph.D., R.P.Bio., Heidi Regehr, Ph.D., R.P.Bio., and Jayson Kurtz, B.Sc., R.P.Bio., P.Biol., Ecofish Research Ltd.**
DATE:	**September 18, 2023**
FILE:	**1316-10**
RE:	**Cheslatta Watershed 2022 Fall Reconnaissance Survey – V2**

1. INTRODUCTION

During Nechako Water Engagement Initiative (WEI) Main Table and Technical Working Group (TWG) meetings, concerns were raised regarding potential effects of Rio Tinto (formerly Alcan) operations on environmental valued components in the Cheslatta watershed, including fish, wildlife, and their habitats. The TWG asked Ecofish Research Ltd. (Ecofish) to develop a series of technical memos identifying issues of concern, assessing potential effects of Rio Tinto operations on environmental valued components in the Cheslatta watershed, and making recommendations for WEI consideration ("issue scoping memos", e.g., Johnson *et al.* 2023[1]; Regehr and Kurtz 2022[2]). Ecofish conducted reconnaissance field surveys of the Nechako Reservoir, Nechako River, and Cheslatta watershed in 2022 to verify assumptions in various issue scoping memos and to familiarize the team with WEI issues by providing hands-on experience in the watershed. This memo summarizes the results of the Cheslatta watershed field survey and relates survey findings to existing assessments and previously identified data gaps.

DISCLAIMER: The information presented in this memo is the result of opportunistic observations only. The observations were not randomized, stratified, or otherwise part of a detail study design and hence the information is incomplete. Therefore, due care must be applied when interpreting this information.

[1] Johnson, S., R. Chudnow, I. Girard, and J. Kurtz. 2023. Fish Access to Nechako Reservoir Tributaries and Side Channels – Draft V1. Consultant's memorandum prepared for the Nechako Water Engagement Initiative by Ecofish Research Ltd., June 29, 2023.

[2] Regehr, H. and J. Kurtz. 2022. Review of Effects on Nechako River on Wildlife. Consultant's memorandum prepared for the Nechako Water Engagement Initiative by Ecofish Research Ltd., December 7, 2022.

2. BACKGROUND AND METHODS

The field survey was intended to provide a general overview of habitats within the Cheslatta watershed (i.e., primarily in Cheslatta and Murray lakes and tributaries, but not specifically the Cheslatta River), as well as to address specific issues and data gaps identified through the WEI process to date (many of these issues are summarized in the Nechako Reservoir field survey memo (Section 2 Background, Regehr *et al.* 2023[3]), and are described in full in various issue scoping memos and meeting minutes available through the WEI library[4].

General survey methods and key issues considered during the field survey, including any specific methodology applied to investigate WEI-identified issues of concern, are summarized below.

2.1. General Field Survey Methods

The field survey was conducted on October 4, 2022, during relatively low water levels (i.e., Skins Lake discharge ~40 to 60 cm/s; Figure 3). The survey crew included Jayson Kurtz, Heidi Regehr, and Rachel Chudnow (Ecofish) and vessel operator Cody Reid (Cheslatta Nation Lands and Natural Resources). The north shore of Cheslatta Lake was accessed by vehicle at Cheslatta IR #7 via Hwy 35, the Francois Lake ferry, and several forest service roads; from here, the vessel-based survey fully circumnavigated Cheslatta and Murray lakes (see Map 1, Figure 1, and Figure 2). Most observations were made from the vessel; however, several tributaries, wetlands, and other areas were further investigated from shore. Data collection was primarily qualitative and descriptive (i.e., notes and photos), although some tallies were made (e.g., number of beaver dens). In addition, a single water sample was collected in each lake (Figure 2).

At both sites, replicate water samples (i.e., two samples) were collected by hand at the surface (~30 cm below the surface to avoid surface film) and at depth using a Van Dorn water sampler (i.e., below the thermocline at a depth of 13 – 20 m, where a thermocline was observed). All samples were sent on ice to ALS Laboratories for analysis of a standard suite of physicochemical parameters, and concentrations of carbon fractions, anions, nutrients, organic parameters, planktonic chlorophyll *a*, and total metals. Water temperature and dissolved oxygen measurements were collected at each site to a depth of one metre using a YSI Professional Plus multiparameter instrument. Water clarity was measured using a Secchi disk.

The Cheslatta River was accessed by vehicle and foot on October 4, 2022 at two locations (~7 km upstream of Cheslatta Lake and ~3 km further upstream at the "Cheslatta Rapids picnic area"). The crew made visual observations and took photographs at these two sites; no other data or measurements were collected.

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[3] Regehr, H., R. Chudnow, and J. Kurtz. 2023. Nechako Reservoir 2022 Spring and Summer Reconnaissance Surveys. Consultant's memorandum prepared for Nechako Water Engagement Initiative by Ecofish Research Ltd., September 19, 2023.

[4] https://www.getinvolvednechako.ca/water-engagement-initiative.

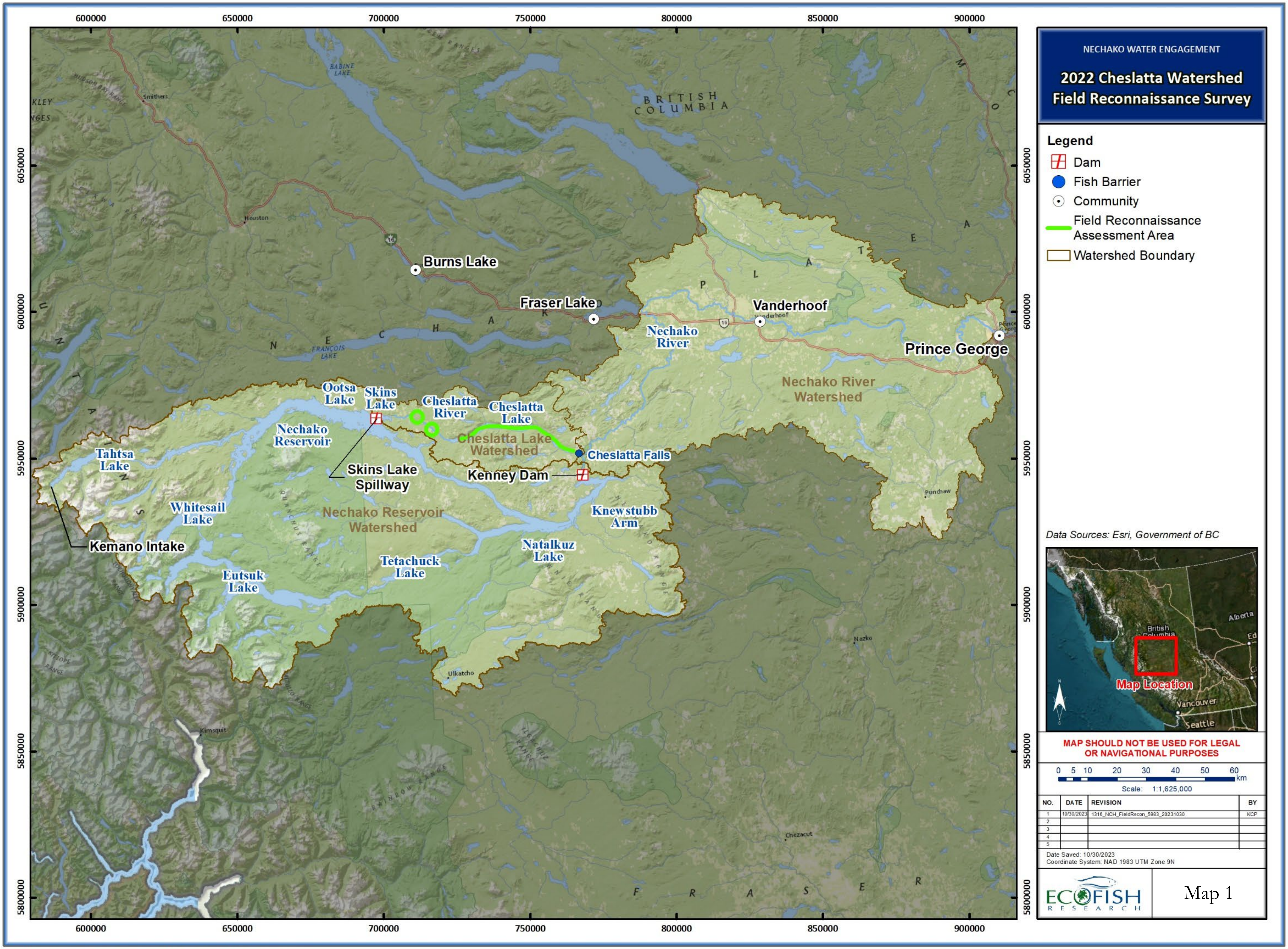

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Figure 1. Cheslatta Lake reconnaissance field survey track.

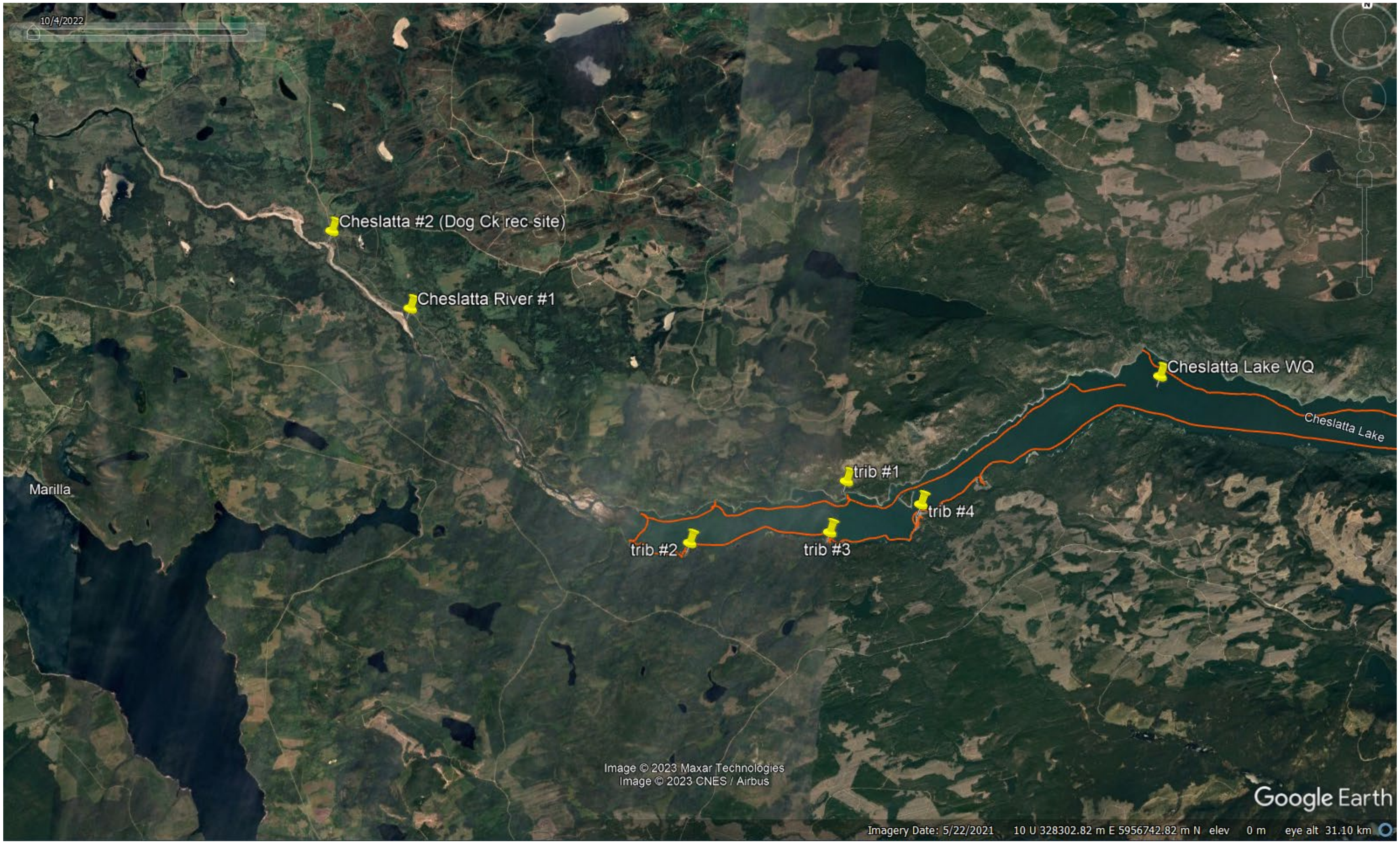
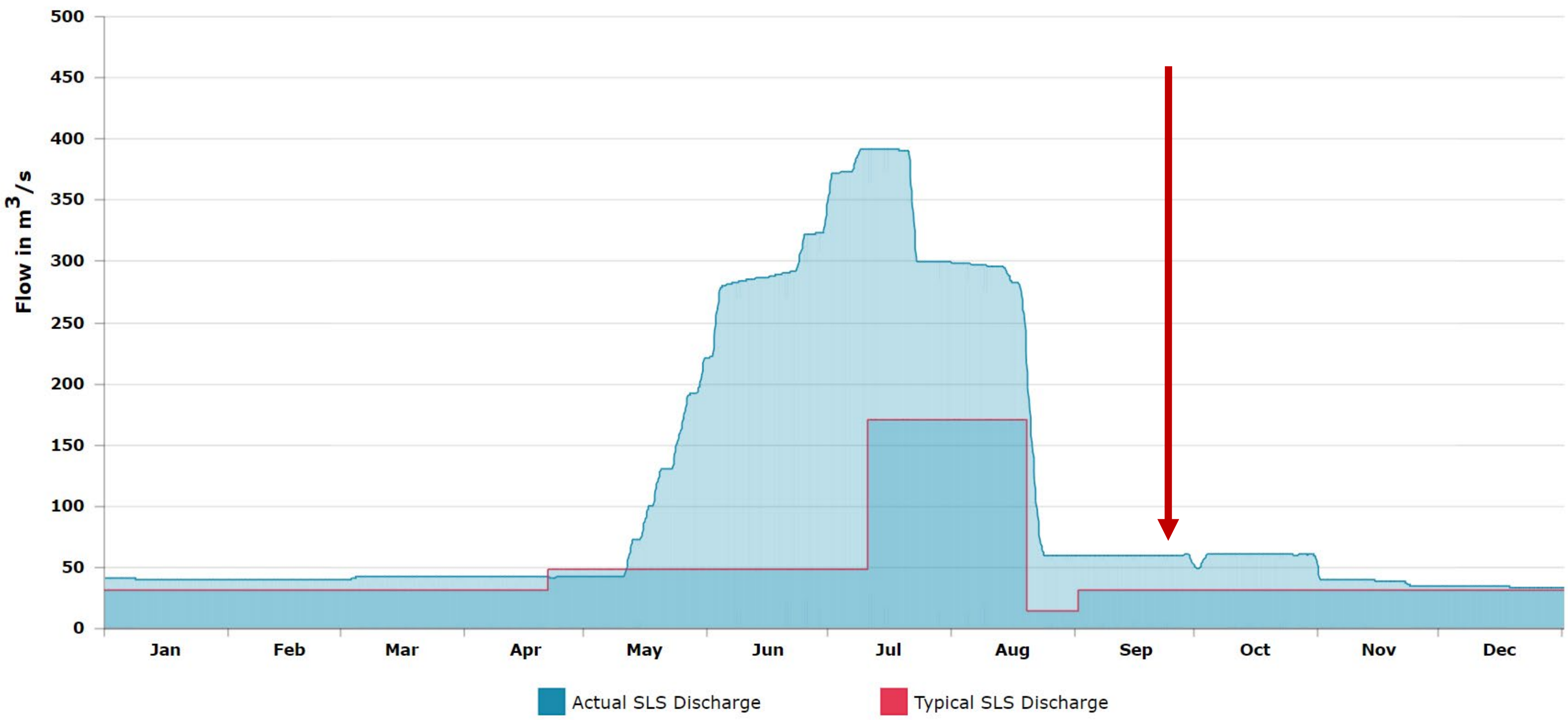


Figure 2. Cheslatta and Murray lakes reconnaissance field survey track.

Figure 3. Documented and typical Skins Lake Spillway discharge from January through December 2022 with approximate field survey timing shown by red arrow. Modified from Rio Tinto (2023[5]).



[5] Rio Tinto. 2023. Nechako Reservoir Flow Facts. Available online at: https://riotinto-nechakofacts.herokuapp.com. Accessed on July 10, 2023.

3. RESULTS

3.1. American Beaver (*Castor canadensis*)

Dens were observed along the shorelines of both Cheslatta and Murray lakes (approximately 15 conical lodges and 36 bank dens observed across the surveyed locations). Den activity varied from inactive to recent/current activity. Vegetation cuttings, trails from riparian habitat to the water edge, and abundant food stored underwater (Figure 4) were observed, as were beavers in several locations.

Den size, construction, and elevation above lake water level varied. Several bank dens were vertically oriented, extending up the bank, presumably to accommodate changing water levels (Figure 5). In other cases, dens observed at low elevations along lake shorelines (i.e., that would become inundated at low water levels) appeared to be paired with higher elevation lodges (i.e., that were out of water at the time of survey) or other bank dens (Figure 6). Given the proximity of these dens, it is possible they allow for movement between dens as water levels change.

Results indicate that there is a substantial American Beaver population within Cheslatta and Murray lakes and that beavers appear to demonstrate at least some adaptability to fluctuating water levels.

One muskrat (*Ondatra zibethicus*) was observed. The individual swam into an active beaver den (based on fresh cuttings) located on the north shore of Murray Lake, carrying a mouthful of aquatic vegetation.

Figure 4. American Beaver food stored under the water adjacent to bank den on the shoreline of Murray Lake. Photographed on October 4, 2022.

Figure 5. **American Beaver bank den extending vertically up the bank of Cheslatta Lake. Photographed on October 4, 2022.**

Figure 6. **Low and high water American Beaver conical lodges on the north shore of Murray Lake. Photographed on October 4, 2022.**

3.2. Amphibians

Specific amphibian habitat was not observed during the field survey, although there were wetlands observed (see Section 3.9) that may provide breeding habitat for these animals.

3.3. Erosion

Shoreline erosion was observed throughout both Cheslatta and Murray lakes (Figure 7, Figure 8, Figure 9). Erosion was primarily between high and low water levels (Figure 7), but higher bank erosion was also intermittently present, and more prevalent along the eastern end of Murray Lake (Figure 8, Figure 9). Extensive erosion was observed along the visited portions of Cheslatta River including bank erosion (Figure 10) and channel bar erosion/deposition (Figure 11).

Figure 7. Erosion along the shoreline of Cheslatta Lake. Photographed on October 4, 2022.

Figure 8. **Erosion along the eastern shoreline of Murray Lake. Photographed October 4, 2022.**

Figure 9. **Erosion along the eastern shoreline of Murray Lake. Photographed October 4, 2022.**

Figure 10. **Eroded banks of the Cheslatta River. Photographed on October 4, 2022.**

Figure 11. **Wide and shallow channel of the Cheslatta River. Photographed on October 4, 2022.**

3.4. Tributary Connectivity

The field crew visited six tributaries to assess connectivity (i.e., fish passage) with Cheslatta and Murray lakes (Table 1, see Figure 1 and Figure 2 for map of tributary locations). No fish access issues, as the result of water regulation (i.e., due to exposed barriers, woody debris, or vegetation encroachment in the foreshore) were observed. However, fish access was restricted (and in some cases completely prevented) at the time of survey due to low (see Figure 12) or no tributary flow (Figure 13). Additional tributary confluence photos are provided in Appendix A.

Table 1. Cheslatta Lake and Murray Lake tributaries observed on October 4, 2022.

Stream Name	Watershed Code	Location
unnamed #1	No WSC	10.332173.5954995
unnamed #2	No WSC	10.328279.5953233
unnamed #3	180-545300-56300	10.331829.5953742
unnamed #4	180-545300-53500	10.334277.5954484
unnamed #5	180-545300-21800	10 358399.5954279
Knapp Creek	180-545300-24800	10.356481.5955934

Figure 12. Low flow at the mouth of Knapp Creek. Photographed on October 4, 2022.

Figure 13. No flow at the mouth of unnamed tributary #5. Photographed on October 4, 2022.

3.5. Lake Productivity and Water Quality

During the field survey, aquatic vegetation (*Elodea*, *Potamogeton* spp. and others) were observed at several locations (Figure 14, Figure 15). Water quality sampling results, including temperature depth profiles, Secchi disk readings, and laboratory analysis results are included in Appendix B.

Figure 14. Aquatic vegetation (*Potamogeton* spp.) observed along Cheslatta Lake and Murray Lake shorelines. Photographed on October 4, 2022.

Figure 15. Aquatic vegetation (*Elodea* and *Potamogeton* spp.) observed along Cheslatta Lake and Murray Lake shorelines. Photographed on October 4, 2022.

3.6. Submerged Aquatic Vegetation Observed Around Freshwater Mussels

Freshwater mussel shells (Western Floater, *Anodonta kennerlyi*; Figure 16) were observed along the beach at several locations in both Cheslatta and Murray lakes. No live mussels were observed.

Figure 16. Freshwater mussel shell observed on the shoreline of Cheslatta Lake near unnamed tributary #5. Photographed on October 4, 2022.

3.7. Nesting Birds

Several bird species and bird nests were observed throughout both Cheslatta and Murray Lakes. In summary:

- Bald Eagle (*Haliaeetus leucocephalus*) nests were observed at several locations on the north shore of Cheslatta Lake (Figure 17). All nests were located well above the high watermark.
- Large flocks of waterfowl were observed near the Cheslatta River fan/confluence with Cheslatta Lake, and along the shoreline/wetland area between Cheslatta and Murray lakes.
- No Osprey (*Pandion haliaetus*) nests were seen.

The foreshore of Cheslatta and Murray lakes was generally unvegetated (see Section 3.8) and riparian habitat within the foreshore where bird nests would be at risk of inundation appears minimal. However, beach-nesting species that may nest in open, exposed areas within the foreshore are potentially at risk of nest inundation (e.g., Spotted Sandpiper (*Actitis macularius*) and Killdeer (*Charadrius vociferus*)).

Figure 17. Bald Eagle nest on the north shoreline of Cheslatta Lake. Photographed on October 4, 2022.

3.8. Riparian Condition and Function

Minimal riparian vegetation was observed along the foreshore of Cheslatta and Murray lakes, which was dominated by exposed gravel/cobble beaches (Figure 18, Figure 19). Some exceptions included flat benches colonized by flood-tolerant vegetation near the reservoir/upland interface (Figure 20).

Figure 18. **Exposed gravel/cobble beach with minimal vegetation in the foreshore of the northern shoreline of Cheslatta Lake near unnamed tributary #2. Photographed on October 4, 2022.**

Figure 19. **Exposed gravel/cobble beach in the foreshore on the northern shoreline of Cheslatta Lake, with intact riparian and upland vegetation communities beyond the foreshore. Photographed on October 4, 2022.**

Figure 20. **Riparian vegetation adjacent to Cheslatta Lake. Photographed on October 4, 2022.**

3.9. Wetlands

Generally, little wetland habitat was identified within the foreshore of Cheslatta and Murray lakes. Where wetland habitat was observed (Figure 21, Figure 22, Figure 23), it was often located behind beaches or berms with exposed substrate (Figure 24). Some of these areas were not wetted at the time of the field survey but were expected to be at higher water levels. Identified wetland areas may support some amphibian breeding and bird nesting that could be directly or indirectly affected by water management.

Figure 21. Flood-tolerant wetland vegetation within the foreshore of Cheslatta Lake near unnamed tributary #5. Photographed on October 4, 2022.

Figure 22. Wetland area surrounding unnamed tributary #2, located on the northern shore of Cheslatta Lake. Photographed on October 4, 2022.

Figure 23. Wetland observed along the south shore of Cheslatta Lake at unnamed tributary #4. Photographed on October 4, 2022.

Figure 24. Wetland vegetation located behind a gravel beach berm along the shoreline of Cheslatta Lake, just west of unnamed tributary #5. Photographed on October 4, 2022.

3.10. Wildlife and Shoreline Accessibility for Ungulates

Wildlife use of the foreshore and immediate upland area was evident; an adult female black bear and single cub were observed on the north shore of Murray Lake, and numerous bear, ungulate, small mammal, and bird tracks were observed along both lake shorelines. Cheslatta and Murray lake shorelines were gently sloping (Figure 25) and where steep banks were observed, they were frequently intersected with more moderate slopes where animal access would be relatively easy within a small spatial scale (Figure 26).

Figure 25. Gently sloping shoreline of Cheslatta Lake. Photographed on October 4, 2022.

Figure 26. Steep, eroded bank intersected with lower gradient area on the northern shoreline of Cheslatta Lake. Photographed on October 4, 2022.

3.11. Recreational, Social, Culture, and Heritage

Cheslatta Carrier Nation traditional use and ceremonial sites, including arrowheads, village and camp sites, and burial sites were observed.

4. CLOSURE

This memo summarizes observations during a reconnaissance field survey of Cheslatta Lake, Murray Lake, and two locations along Cheslatta River. Although not definitive, the observations generally support assumptions in WEI technical memos and this information can be used to inform performance measures, data gap studies, and monitoring studies.

Yours truly,

Ecofish Research Ltd.

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Disclaimer:

APPENDICES

Appendix A. Tributary Confluence Photos

Figure 27. Looking upstream at unnamed tributary #1, located on the northern shore of Cheslatta Lake. Photographed on October 4, 2022.

Figure 28. Looking downstream at the partially dewatered mouth of unnamed tributary #2 on the southern shore of Cheslatta Lake. Photographed on October 4, 2022.

Figure 29. Looking downstream at the partially dewatered mouth of unnamed tributary #3, located on the southern shore of Cheslatta Lake. Photographed on October 4, 2022.

Figure 30. Looking upstream at a dewatered portion of unnamed tributary #3, located on the southern shore of Cheslatta Lake. Photographed on October 4, 2022.

Figure 31. Looking downstream at unnamed tributary #4. Photographed on October 4, 2022.

Figure 32. Looking upstream at unnamed tributary #4. Photographed on October 4, 2022.

Figure 33. Looking downstream at the mouth of unnamed tributary #5. Photographed on October 4, 2022.

Figure 34. Looking upstream at unnamed tributary #5. Photographed on October 4, 2022.

Figure 35. Looking upstream at the mouth of Knapp Creek. Photographed on October 4, 2022.

Figure 36. Knaff Creek immediately upstream of the confluence with Cheslatta Lake. Photographed on October 4, 2022.

Appendix B. Water Quality Results

Site	Units	CLID		CLIS		MLID		MLIS	
Date		04-Oct-2022		04-Oct-2022		04-Oct-2022		04-Oct-2022	
Time		16:16		16:16		13:30		13:30	
Depth (m below surface of water)		15		0.5		15		0.5	
Replicate		A	B	A	B	A	B	A	B
Organic / Inorganic Carbon									
Dissolved Organic Carbon	mg/L	3.96	3.83	3.59	3.63	3.90	3.93	3.64	3.55
Total Organic Carbon	mg/L	3.87	3.92	3.65	3.59	3.63	3.98	3.81	3.76
Physical Tests									
Alkalinity, Total (as $CaCO_3$)	mg/L	25.0	25.1	23.5	23.6	25.4	23.6	24.1	23.8
Conductivity (lab)	µS/cm	59.2	59.0	57.9	56.7	60.2	56.6	57.3	57.4
Dissolved Hardness (as $CaCO_3$)	mg/L	25.0	25.0	24.1	24.0	24.6	24.1	23.9	24.6
Total Dissolved Solids	mg/L	51	43	43	43	51	35	55	46
Total Suspended Solids	mg/L	<1.0	<1.0	<1.0	<1.0	1.4	<1.0	<1.0	<1.0
Turbidity (lab)	NTU	1.25	0.71	0.58	0.35	0.70	0.48	0.37	0.44
pH (lab)	pH units	7.61	7.63	7.59	7.61	7.59	7.57	7.56	7.57
Anions and Nutrients									
Ammonia, Total (as N)	mg/L	0.0098	0.0050	0.0231	<0.0050	0.0062	0.0055	0.0055	<0.0050
Ammonia, Total (as N)	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0080	0.0136	<0.0050
Bromide (Br)	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Chloride (Cl)	mg/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Dissolved Kjeldahl Nitrogen	mg/L	0.167	0.123	0.184	0.119	0.173	0.143	0.176	0.127
Fluoride (F)	mg/L	0.050	0.039	0.036	0.038	0.052	0.040	0.037	0.036
Nitrate (as N)	mg/L	0.0194	0.0192	<0.0050	<0.0050	0.0070	<0.0050	<0.0050	<0.0050
Nitrite (as N)	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Phosphorus (P) - Total Dissolved	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	0.0030	0.0046	<0.0020	<0.0020
Phosphorus (P) - Total	mg/L	0.0025	0.0022	0.0030	0.0024	0.0051	0.0072	0.0035	0.0038
Sulfate (SO_4)	mg/L	2.66	2.70	2.66	2.66	2.60	2.62	2.61	2.61
Total Dissolved Nitrogen	mg/L	0.172	0.133	0.170	0.112	0.168	0.138	0.113	0.110
Total Kjeldahl Nitrogen	mg/L	0.147	0.135	0.204	0.167	0.169	0.175	0.157	0.144
Total Nitrogen	mg/L	0.145	0.142	0.155	0.126	0.154	0.181	0.160	0.139
Aggregate Organics									
COD	mg/L	18	22	15	13	16	18	13	14
phenols, total (4AAP)	mg/L	0.0015	0.0011	0.0014	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Plant Pigments									
Chlorophyll a	mg/L	0.000417	0.000374	0.00106	0.000975	0.000509	0.000480	0.00119	0.00126
Total Metals									
Aluminum (Al) - Total	mg/L	0.0470	0.0247	0.0151	0.0139	0.0213	0.0242	0.0230	0.0140
Antimony (Sb) - Total	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic (As) - Total	mg/L	0.00027	0.00026	0.00028	0.00027	0.00034	0.00032	0.00028	0.00028
Barium (Ba) - Total	mg/L	0.00637	0.00620	0.00638	0.00614	0.00651	0.00614	0.00610	0.00607
Beryllium (Be) - Total	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Bismuth (Bi) - Total	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B) - Total	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium (Cd) - Total	mg/L	0.0000159	<0.0000050	<0.0000050	<0.0000050	0.0000098	<0.0000050	<0.0000050	<0.0000050
Calcium (Ca) - Total	mg/L	7.59	7.54	7.34	7.33	7.48	7.34	7.29	7.51
Cesium (Cs) - Total	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Chromium (Cr) - Total	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt (Co) - Total	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper (Cu) - Total	mg/L	0.00318	0.00117	0.00065	0.00052	0.00189	0.00137	0.00053	0.00050
Iron (Fe) - Total	mg/L	0.036	0.022	0.013	0.012	0.022	0.020	0.016	0.015
Lead (Pb) - Total	mg/L	0.00208	0.000325	0.000186	<0.000050	0.000823	0.00130	<0.000050	<0.000050
Lithium (Li) - Total	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Magnesium (Mg) - Total	mg/L	1.48	1.49	1.41	1.39	1.43	1.41	1.38	1.42
Manganese (Mn) - Total	mg/L	0.00301	0.00195	0.00153	0.00144	0.00773	0.00416	0.00274	0.00282
Molybdenum (Mo) - Total	mg/L	0.000466	0.000492	0.000474	0.000474	0.000501	0.000521	0.000453	0.000493
Nickel (Ni) - Total	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Phosphorus (P) - Total	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Potassium (K) - Total	mg/L	0.409	0.391	0.366	0.337	0.422	0.373	0.357	0.367
Rubidium (Rb) - Total	mg/L	0.00041	0.00041	0.00036	0.00037	0.00045	0.00045	0.00037	0.00037
Selenium (Se) - Total	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Silicon (Si) - Total	mg/L	2.15	1.98	1.79	1.73	2.21	1.91	1.81	1.77
Silver (Ag) - Total	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na) - Total	mg/L	1.71	1.67	1.58	1.53	1.93	1.59	1.60	1.60
Strontium (Sr) - Total	mg/L	0.0375	0.0376	0.0368	0.0366	0.0381	0.0368	0.0365	0.0370
Sulfur (S) - Total	mg/L	0.97	0.82	0.79	0.74	0.95	0.84	0.79	0.71
Tellurium (Te) - Total	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium (Tl) - Total	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium (Th) - Total	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin (Sn) - Total	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti) - Total	mg/L	0.00096	0.00052	<0.00030	<0.00030	0.00054	0.00049	0.00046	0.00036
Tungsten (W) - Total	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium (U) - Total	mg/L	0.000029	0.000026	0.000025	0.000025	0.000039	0.000024	0.000029	0.000026
Vanadium (V) - Total	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc (Zn) - Total	mg/L	0.0119	<0.0030	<0.0030	<0.0030	0.0060	0.0048	<0.0030	<0.0030
Zirconium (Zr) - Total	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020