Upper Teslin River Watershed Environmental DNA Sampling for Bull Trout and Chinook Salmon

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EDI
ENVIRONMENTAL DYNAMICS INC.
Down to Earth Biology

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EXECUTIVE SUMMARY

During 2021, EDI Environmental Dynamics Inc. (EDI) partnered with the Teslin Renewable Resources Council and Teslin Tlingit Council to conduct environmental DNA (eDNA) sampling for bull trout and Chinook salmon in the upper Teslin River watershed, specifically the Morley, Swift, Smart, Jennings and Gladys River drainages. Environmental DNA is genetic material contained in environmental samples (e.g., water samples) where there are no obvious signs of biological source material (e.g., a fish or tissue). This method can detect genetic material (i.e., presence/absence).

A total of 31 sampling sites were sampled for both target species through a combination of road and helicopter access within the watershed. The presence of bull trout was determined through eDNA sampling in the Morley, Swift, Smart and Jennings watersheds in addition to a control site in the Rancheria River watershed (Liard drainage) where this species is known to be widely distributed. The presence of Chinook salmon via eDNA sampled only occurred in the Swift and Jennings watersheds.

Similar eDNA sampling was conducted in the upper Teslin River watershed during 2020 and when used in combination, the presence/absence information of bull trout has filled a number of knowledge gaps pertaining to the distribution of this species. In the Morley River watershed, bull trout are now known to occur widely in the upper portion of the watershed (upstream of Morley Lake) where the species was not known to previously occur. There is anecdotal and limited scientific knowledge pertaining to bull trout distribution in the Swift and Smart River watersheds; however, they were known to occur within these watersheds at specific locations prior to the eDNA sampling program. The 2020 and 2021 sampling results from these watersheds have filled in gaps in the knowledge of the species distribution including positive detections in a number of small tributaries to the Swift River extending to the headwaters near Crescent Lake and Rudy Lakes. The species also appears to be absent from the upper portion of the Smart River watershed where a number of sampling sites upstream of the Yukon/BC border did not detect this species. In both the Morley and Smart River watersheds, there is evidence to suggest that lakes within these watersheds may serve to limit the species distribution. In the Jennings River watershed, all three sites sampled detected bull trout; these results provided the first confirmed presence of this species within the watershed.

The 2020 and 2021 eDNA sampling results for Chinook salmon provided limited new information on the species distribution for this species (with the exception of Ram Creek in the upper Morley River watershed); however, the species was not detected at a number of locations where the species would be expected to occur based upon existing information. Returns of adult Chinook to the upper Teslin River watershed have been very low in recent years and this is expected to have contributed to the limited number of positive detections of this species.

ACKNOWLEDGEMENTS

Gillian Rourke (Teslin Tlingit Council) assisted with field logistics and provided advice on project direction. Horizon Helicopters (Whitehorse, YT) provided safe and reliable transport to the remote field sites during the field sampling. Jennifer Clarke managed the project on behalf of the Teslin Renewable Resources Council.

Funding for this project was provided by the BC Habitat Conservation Trust Foundation, Yukon Fish and Wildlife Enhancement Trust Fund, and Teslin Tlingit Council.

AUTHORSHIP

Team members from EDI Environmental Dynamics Inc. who contributed to preparing this report include:

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Petra Szekeres was the field crew lead and completed the eDNA sample filtering. Additional personnel who assisted with the field work included: Ben Schonewille and James McGrath (EDI), Stefan Howarth and Tori Knutson (Teslin Tlingit Council Natural Resources Department).

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1 INTRODUCTION

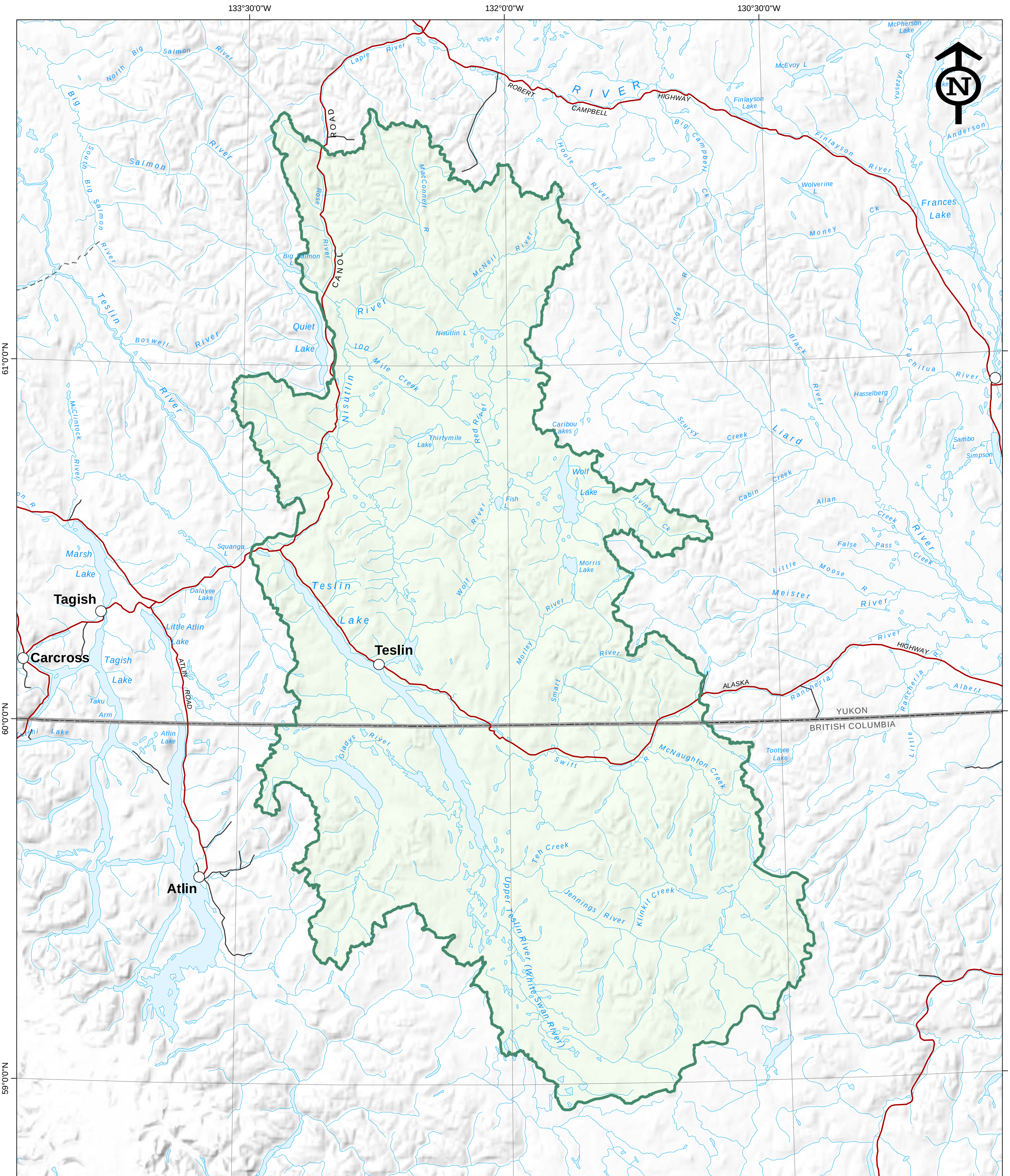
The Teslin Renewable Resource Council (TRRC) retained EDI Environmental Dynamics Inc. (EDI) to complete environmental DNA (eDNA) sampling on various streams in the upper Teslin River watershed (Map 1) during 2021 to determine the presence/absence of bull trout (*Salvelinus confluentus*). A number of sub-drainages were sampled including the Morley, Swift, Smart, Gladys and Jennings watersheds with an additional control sampling location located in the upper Rancheria River (Liard River watershed) where bull trout are known to occur. In addition to the sampling for bull trout, Teslin Tlingit Council (TTC) contributed to the project to analyze the samples for the presence/absence of Chinook salmon (*Oncorhynchus tshawytscha*).

Environmental DNA is genetic material contained in environmental samples (e.g., water samples) where there are no obvious signs of biological source material (e.g., a fish or tissue). This method can detect genetic material (i.e., presence/absence) but is unable to determine the life stage of fish (i.e., adult spawner or juvenile) or fish densities present (Hobbs 2017).

A similar study during 2020 was successful in validating the method for detection of bull trout and Chinook salmon in known locations and to test potential locations where these species may occur. Confirming the effectiveness of the methods for detecting the target species at known locations was an important first step before the current undertaking could be considered. The results from the previous year allowed the current study to be undertaken with confidence in the method.

The presence of bull trout in the upper Yukon River watershed is not well understood. Prior to the 2020 eDNA sampling program, local knowledge, and limited scientific evidence, note that they are present in at least portions of the Swift River watershed and there are also reports of their presence in the Morley River watershed. Anecdotal records of bull trout from Teslin Lake are also known and a juvenile captured near the BC/Yukon border during lake trout spawning studies during October 2017 (Schonewille and Costello 2018) provided the first scientific evidence of this species in the lake. The upper Yukon watershed population was assessed as data deficient by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC 2012) largely due to uncertainties regarding distribution and population sizes.

The eDNA sampling conducted during 2020 involved sampling a small number of known, or very likely to occur, locations in the Swift River watershed as well as sampling in the Morley River watershed to begin to determine the distribution of this species within the watershed. This initial probe was successful and revealed that eDNA was a suitable method to use to get a coarse-scale indication of bull trout and Chinook salmon presence. The most notable finding of the 2020 sampling program was the documented presence of bull trout in the upper Morley River watershed (upstream of Morley Lake) including tributaries such as Hake and Ram creeks (EDI Environmental Dynamics Inc. 2021a). Given the success of the 2020 sampling program, the 2021 sampling was expanded to include additional sites in the Morley, Swift and Smart River watersheds in addition to an expansion of the sampling to include the Jennings and Gladys river watersheds.



Legend

- ○ Community
- Highway
- Road
- Trail
- Yukon/British Columbia Border
- Upper Teslin River Watershed

Map 1. Overview of the Upper Teslin River watershed

Data Sources
1:1,000,000 Topographic Spatial Data courtesy of Her Majesty the Queen in Right of Canada, Department of Natural Resources. All Rights Reserved.

Digital Elevation Model, 1:1,000,000 National Topographic Database (NTDB) provided by Geomatics Yukon - Yukon Government via online source (Corporate Spatial Warehouse) www.geomaticsyukon.ca.

Disclaimer
EDI Environmental Dynamics Inc. has made every effort to ensure this map is free of errors. Data has been derived from a variety of digital sources and, as such, EDI does not warrant the accuracy, completeness, or reliability of this map or its data.

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2 METHODOLOGY

A total of 31 sites were visited for eDNA sampling of both bull trout and Chinook salmon in Morley, Swift, Smart, Jennings, Gladys, and Rancheria watersheds (Appendix A). There were three different sampling events: road access on August 18 and 27, and helicopter access on September 16, 2021. Each site had a GPS point and photos taken, as well as notes regarding bottle sampling order and stream characteristics to help interpret results. 0 includes photos of each stream sampled.

The eDNA methods involved disinfection, sampling, as well as preparing samples for laboratory analysis. Before leaving for the field, all equipment and sample bottles were cleaned and disinfected with 10% bleach solution and 85% ethanol and left to dry before being packed for transport. All equipment was kept in separate bags in the transport bin (e.g., envelopes, bottle triplicates) to mitigate contamination of equipment.

During sampling programs, one field member was the designated eDNA sampler. This individual was responsible for sample collection, storage, and handling to eliminate potential contamination with other DNA. The eDNA sampler would not carry any other fish sampling equipment for the day and no one else was allowed in the water within 50 m of the sampling location. New nitrile gloves were worn at each site. Triplicate 1 L sample bottles for each site were kept together in bags to prevent bottles from different sites contacting one another. Due to high rainfall leading up to sampling, and the possibility of a low density of bull trout and Chinook salmon, 2 L samples were collected per triplicate (i.e., each triplicate had 2 L of water sampled, thus 6 L per site). Rainwater dilutes genetic material available in the water samples—thus larger sample volumes were taken to offset this concern.

All samples were taken starting at downstream sites, working upstream throughout the day to keep from contaminating samples. Once arriving at the site, the eDNA sampler removed the six 1 L bottles for the site from their respective bags. Each of the six sample bottles were rinsed three times downstream of where the actual sample was taken; bottles were rinsed to remove any disinfectant residue. After rinsing bottles, they were replaced back into their bags and sealed while the sampler moved upstream to take the samples being analyzed for eDNA. Cascades were the preferred areas to take samples; otherwise, the sampler would try to stay out of the water (i.e., step on rocks), or take the sample from the shoreline. The main consideration for sampling was that it was from the main flow of the stream and not from eddies or stagnant pools (Hobbs 2017). Each sample bottle was filled, capped, and placed back into their bags and sealed. Samples were left in a cooler or refrigerator until being processed.

During the August 18 and 27 sampling, samples were processed in Teslin at the end of each field day and in the case of a long field day, samples were refrigerated and sampled the following morning (Hobbs 2017). The samples taken on September 16 were all transported back to Whitehorse and left in a refrigerator overnight and processed the following morning. Using a peristaltic pump, each triplicate sample was processed separately. The 2 L sample for each triplicate was filtered through a 45 µL filter. If the 2 L water sample was not fully filtered after 20 minutes (in the case of samples with higher turbidity), the filtering ended at that time and no more water was filtered for the sample. Once the water had been filtered, or 20 minutes had elapsed, the pump continued for another 5 minutes to continue drying out the sample. Using disinfected forceps (10%

bleach, distilled water x2), the filter paper was folded and placed into a small pre-labelled coin envelope and sealed. All three samples from each site received their own envelopes, but they were all kept together in a Ziploc bag with two teaspoons of desiccant (silica) beads. Beads were checked periodically for signs of dampening (i.e., turning clear or pink) and were replaced accordingly. Samples were shipped priority to BV Labs for analysis which was conducted as outlined in Hobbs (2017).

Analysis methodology are described in detail in Hobbs (2017). Each sample is analyzed as eight replicates in the lab using qPCR techniques. Thus, each of the triplicates from the field sampling is analyzed eight times as a qPCR replicate. Generally, if one triplicate is ≥ 3/8, the site is considered a positive detection. A site was considered negative if the detections were 0/8 or 1/8 for all replicates, or 2/8 for one replicate and 0/8 or 1/8 for the other two.

3 RESULTS AND DISCUSSION

The results of the 2021 eDNA sampling are presented below by watershed. Where applicable, sampling results from 2020 are also summarized to provide a complete summary of the eDNA sampling completed to date. Representative photos of the 2021 sampling sites are shown in Appendix B and the eDNA laboratory results are provided in Appendix C. Sampling location maps and results for the 2020 and 2021 results combined are shown in Appendix D.

3.1 MORLEY RIVER WATERSHED

Five sites were assessed in the Morley River watershed for bull trout and Chinook salmon eDNA during 2021 (Table 1). The results of the 2021 sampling, combined with 2020 sampling results, indicate that bull trout are present throughout the Ram Creek watershed. This stream is a notable tributary of the upper Morley River which enters the river directly downstream of Morley Lake. The watershed drains a high elevation area of the Cassiar Mountains and the headwaters originate at a chain of small alpine lakes which also drain to the upper Rancheria River where bull trout and known to be widely distributed. Such areas could provide for cross drainage movements of fish species depending upon site conditions such as high-water levels during spring freshet.

Table 1. Morley River watershed eDNA sampling results (2021).

Stream Name	Sampling Site	Date Sampled	Water Temperature (°C)	Dissolved Oxygen (mg/L)	Positive eDNA Detection	
					Bull trout	Chinook salmon
Ice Lakes Creek	ICC-01	Sept 16	5.6	-	Yes	No
Kartuhini Creek	KAC-01		5.8	-	No	No
Morley River	MOR-05		9.4	-	No	No
Ram Creek	RAC-03		5.1	-	Yes	No
	RAC-02		4.8	-	Yes	No

The 2021 sampling did not indicate the presence of bull trout in Morley River between Slim Lake and Morris Lake or Kartuhini Creek (tributary to Morris Lake); however, the 2020 sampling did indicate that bull trout were present in the upper Morley River downstream of Slim Lake to Morley Lake (Appendix D). There is also no evidence that bull trout are found in the lower Morley River downstream of Morley Lake and it is possible that the lake serves as a limiting factor to movement within the watershed by this species.

None of the sites sampled in the Morley River watershed during 2021 indicated the presence of Chinook salmon; however, 2020 sampling sites between Morley Lake and Slim Lake and in the very lower portion of Ram Creek did indicate their presence (Appendix D). This result was expected given that despite low returns of adult Chinook salmon in recent years, small numbers of spawners continue to be present within this area (EDI Environmental Dynamics Inc. 2021b). The lack of Chinook documented further upstream in the Ram Creek watershed suggests that this species may only utilize the very lower portion of this watershed; however, it is not known is historical habitat utilization may have been higher as a result of larger adult Chinook returns.

3.2 SWIFT RIVER WATERSHED

The Swift watershed had the highest number of sites visited, with a total of 16 sites assessed. Of these, 6 sites were sampled on the mainstem Swift River, and the other 10 were from tributaries of the Swift River. The Smart River is also a tributary of the Swift River; however, the results from the Smart watershed are presented and discussed separately in Section 0. There is anecdotal information and limited scientific evidence of bull trout presence in the watershed and the sampling sites were selected to obtain a more thorough understanding of distribution within the watershed.

Twelve sites were positive for bull trout (Table 2; Map 2) including both main stem and tributary sampling sites. When combined with 2020 sampling results (Appendix D), bull trout were determined to be present in the Swift River watershed from the Smart River confluence upstream to the headwaters near Crescent and Rudy Lakes, including the McNaughton Creek watershed, a notable tributary within this portion of the Swift River watershed. The presence of bull trout has also been confirmed in a number of other tributaries to the Swift River including Seagull, Partridge and Screw creeks. The lack of a positive detection on Plate Creek was an unexpected finding given the size of this stream and what appeared to be high quality fish habitat present. However, this stream is known to have extensive beaver dams in the lower reaches and it is possible that these may be limited fish movements within the watershed.

Table 2. Swift River watershed eDNA sampling results (2021).

Stream Name	Sampling Site	Date Sampled	Water Temperature (°C)	Dissolved Oxygen (mg/L)	Positive eDNA Detection	
					Bull trout	Chinook salmon
Swift River Tributaries	T1SWR01	Aug 18	8.5	8.98	Yes	No
	T2SWR01		8.6	8.71	Yes	No
	T3SWR-1	Aug 27	12.5	5.63	No	No
	T4SWR-01		7.0	10.03	No	No
Swift River	SWR05	Aug 18	8.8	9.0	Yes	No
	SWR04-B	Aug 27	8.7	9.01	No	No
	SWR03-C		9.1	9.04	Yes	Yes
	SWR03-A		9.7	8.79	Yes	No
	SWR03-B		10.5	8.87	Yes	Yes
	SWR04-A		9.1	8.43	Yes	No
Seagull Creek	SEC-01		8.0	9.63	Yes	No
Partridge Creek	PAC-01		8.8	9.52	Yes	No
Screw Creek	SCC-01		8.0	9.84	Yes	No
McNaughton Creek	MCC-01	Sept 16	6.8	9.72	Yes	No
	MCC-02		6.4	9.08	Yes	No
Plate Creek	PLC-01		6.3	9.43	No	No

Positive detections of Chinook salmon within the Swift River watershed during 2021 were limited to two sites in the mainstem of the Swift River in the McNaughton Creek area and at the Alaska Highway crossing. Sites

sampled in the Swift watershed during 2020 were not analyzed for Chinook salmon. As with the other watersheds sampled, the very low returns of adult Chinook salmon in recent years need to be taken into consideration. It is possible that during time periods with larger adult Chinook returns, the habitat utilization by this species within the watershed could be increased. It is also relevant to note that there is no current information on Chinook salmon escapement to the Swift River watershed as no spawning/aerial surveys or other monitoring have been completed in the watershed.

3.3 SMART RIVER WATERSHED

Four sites were sampled in the Smart watershed including at the Yukon/BC border (SMR-02) and upstream to the headwater lakes (Cabin, Dorsey and Munson lakes; Table 3). The only site with a positive detection for bull trout during 2021 was located on the mainstem at the Yukon border and their absence further upstream in the watershed indicates that they are absent from this portion of the watershed (Map 2). As was the case in the Morley River watershed, it is possible that the headwater lakes serve as a sort of limitation to the distribution of bull trout within the Smart River watershed. During 2020, the single sampling location in the Smart River watershed was located at the Alaska Highway crossing just upstream from the Swift River (Appendix D). This location is one of a few locations where bull trout are known to occur as they are regular captured by recreational anglers at this location.

None of the sites sampled in the Smart River watershed had positive detections for Chinook salmon during 2021 and the single site sampled in 2020 was not analyzed for Chinook salmon.

Table 3. Smart River watershed eDNA sampling results (2021).

Stream Name	Sampling Site	Date Sampled	Water Temperature (°C)	Dissolved Oxygen (mg/L)	Positive eDNA Detection	
					Bull trout	Chinook salmon
Smart River	SMR-02	Sept 16	6.2	-	Yes	No
	SMR-04		8.5	-	No	No
	SMR-05		5.4	-	No	No
	SMR-06		7.0	-	No	No
Smart Tributary	T1SMR-01		4.0	-	No	No

3.4 JENNINGS RIVER WATERSHED

There were three sites accessed via helicopter and sampled in the Jennings watershed on September 16, 2021; this watershed was not sampled during the 2020 project. The remoteness of this watershed poses logistical challenges and the sites sampled were intended to by an initial assessment of a small number of sampling sites. The watershed is also quite large with a number of tributaries which could have been sampled; however, the focus of the sampling was to sample two mainstem sites and the largest tributary (Klinkit Creek). All three

sites sampled had a positive detection of bull trout (Table 4; Map 2) providing solid information to support anecdotal information that bull trout are present in the Jennings River watershed. Information on fish species presence and distribution in the Jennings River watershed is very limited and the 2021 eDNA sampling provides the first confirmed presence of bull trout in the watershed.

Chinook salmon were detected in Klinkit Creek (KLC-01) but not at either of the mainstem Jennings River sampling sites (Table 4; Map 3). Chinook are known to utilize the mainstem Jennings River for spawning (EDI Environmental Dynamics Inc. 2020) and the extent of juvenile rearing is not well known nor are estimates of Chinook spawner escapement known. The mainstem Jennings River is a relatively large river channel and it is conceivable that the eDNA sampling failed to detect this species due to a low number of individuals present combined with the water flow volume in the river.

Table 4. Jennings River watershed eDNA sampling results (2021).

Stream Name	Sampling Site	Date Sampled	Water Temperature (°C)	Dissolved Oxygen (mg/L)	Positive eDNA Detection	
					Bull trout	Chinook salmon
Jennings River	JER-01	Sept 16	6.6	9.85	Yes	No
	JER-02		6.98	9.49	Yes	No
Klinkit Creek	KLC-01		6.4	9.62	Yes	Yes

3.5 GLADYS RIVER WATERSHED

A single site was assessed in the Gladys watershed, on the Gladys River, accessed by helicopter on September 16, 2021. This single site on the Gladys River was located directly upstream of the outlet to Teslin Lake and had no detections of bull trout or Chinook salmon (Table 5; Map 2, Map 3). There are no anecdotal occurrences of bull trout in this watershed; however, low numbers of adult Chinook have been found to utilize this watershed in recent years (EDI Environmental Dynamics Inc. 2020). No current escapement counts for Chinook salmon are available for the watershed.

Table 5. Gladys River watershed eDNA sampling results (2021).

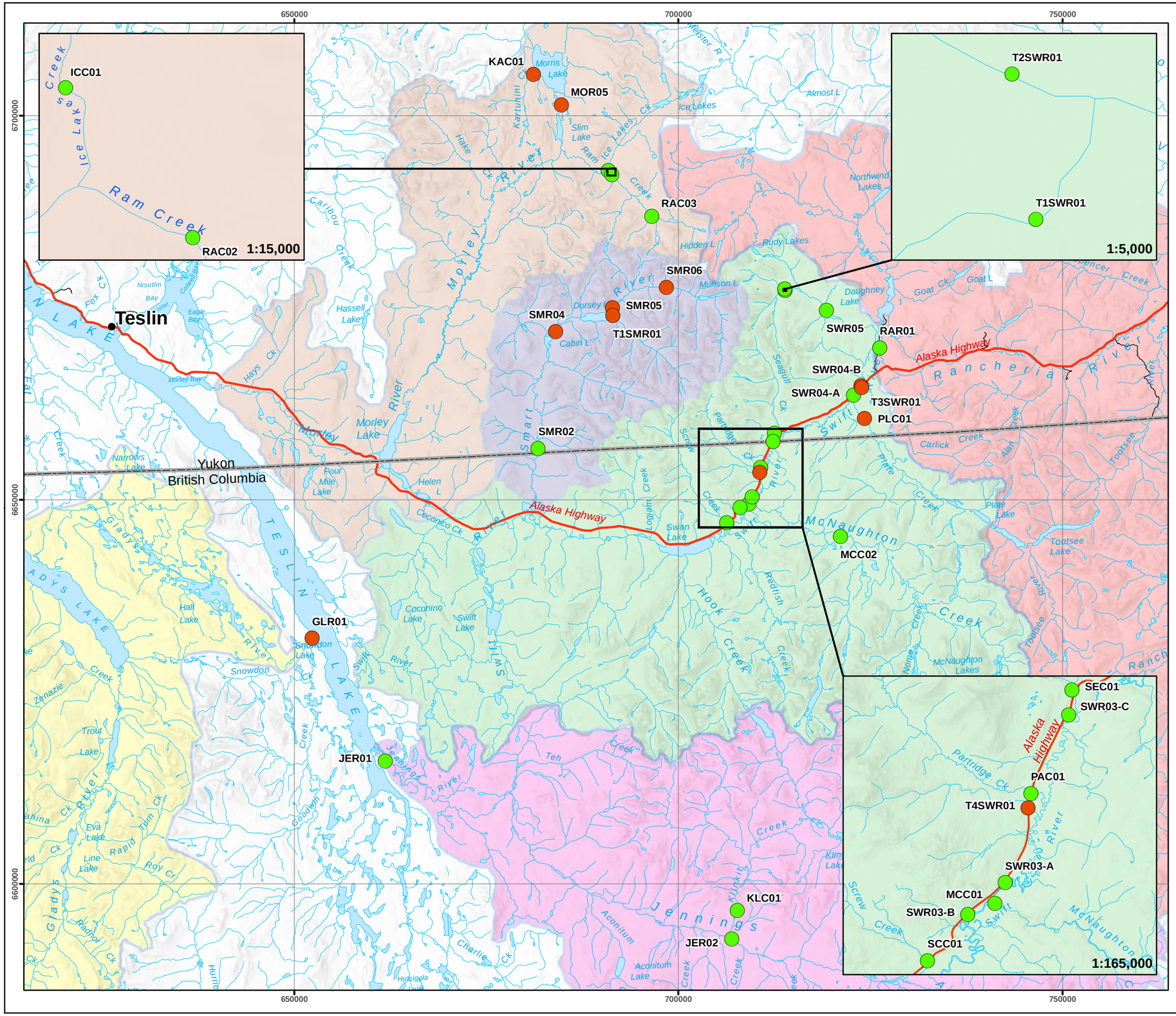
Stream Name	Sampling Site	Date Sampled	Water Temperature (°C)	Dissolved Oxygen (mg/L)	Positive eDNA Detection	
					Bull trout	Chinook salmon
Gladys River	GLR-01	Sept 16	11.3	8.73	No	No

3.6 RANCHERIA WATERSHED

A single site (RAR01) was assessed in the Rancheria watershed on the Upper Rancheria River on August 18, 2021. The site on the Upper Rancheria detected bull trout and no Chinook salmon DNA (Map 2, Map 3). Bull trout are known to be widely distributed within this watershed and Chinook salmon are absent given that this site is located within the Liard River watershed. As a result, this sampling site was considered a positive control for bull trout and a negative control for Chinook salmon. The sampling results were as expected and provide additional confidence in the sampling and analysis methods used.

Table 6. Rancheria River watershed eDNA sampling results (2021).

Stream Name	Sampling Site	Date Sampled	Water Temperature (°C)	Dissolved Oxygen (mg/L)	Positive eDNA Detection	
					Bull trout	Chinook salmon
Upper Rancheria River	RAR01	Aug 18	12.4	8.58	Yes	No



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eDNA 2021 Bull Trout Sampling Results

- Detected
- Not Detected
- Yukon Territorial Border
- Settlement/Community
- Alaska Highway
- Local Road/Access
- Morley River Watershed
- Smart River Watershed
- Swift River Watershed
- Jennings River Watershed
- Rancheria River Watershed
- Gladys River Watershed

Bull Trout eDNA 2021 Sampling Results

Data Sources

Digital Elevation Model and 1:50,000 and 1:1,000,000 National Topographic Database (NTDB) and satellite imagery provided by Geomatics Yukon - Yukon Government via online source (Corporate Spatial Warehouse) www.geomaticsyukon.ca.

Disclaimer
This document is not an official land survey and the spatial data presented is subject to change.

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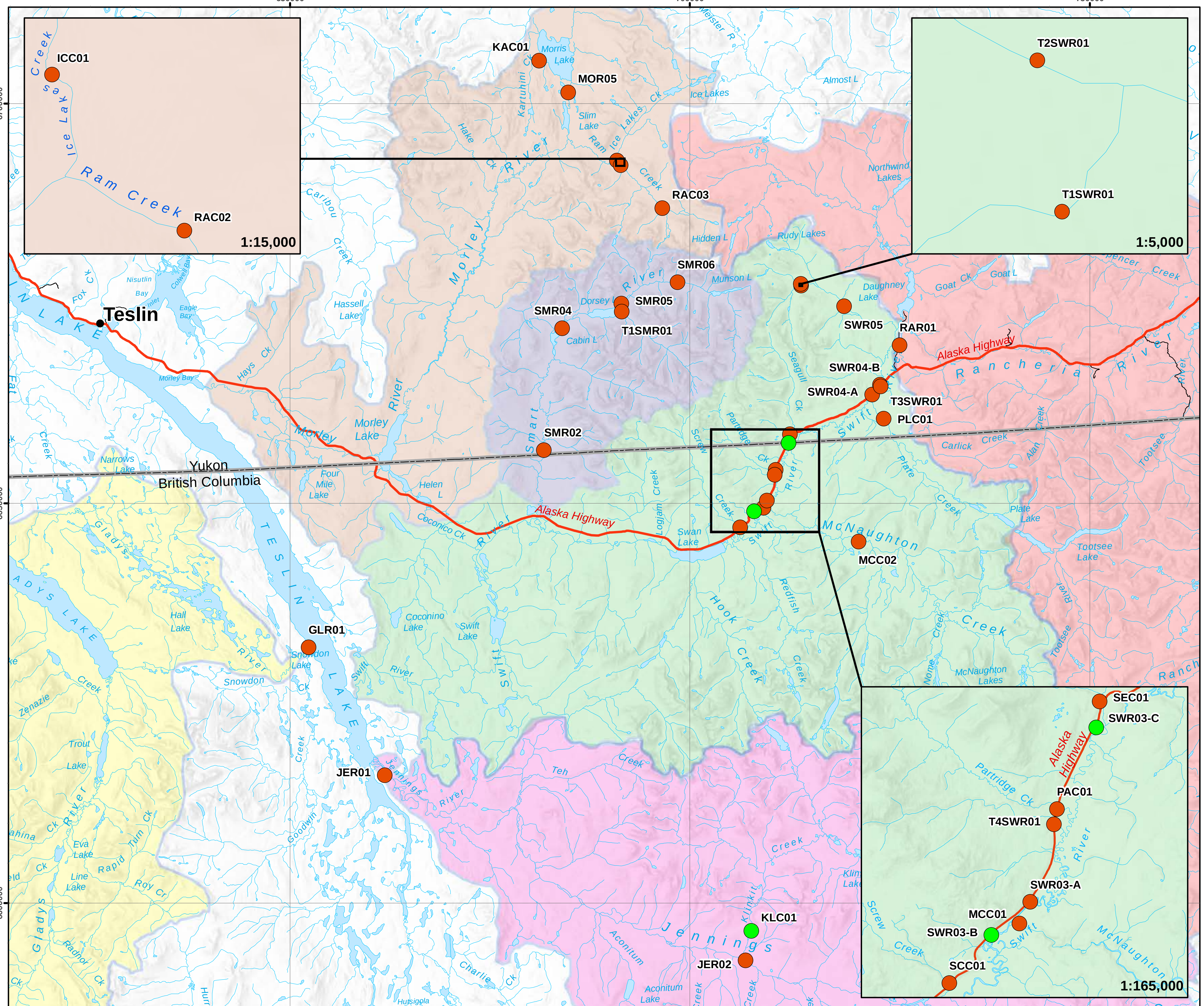

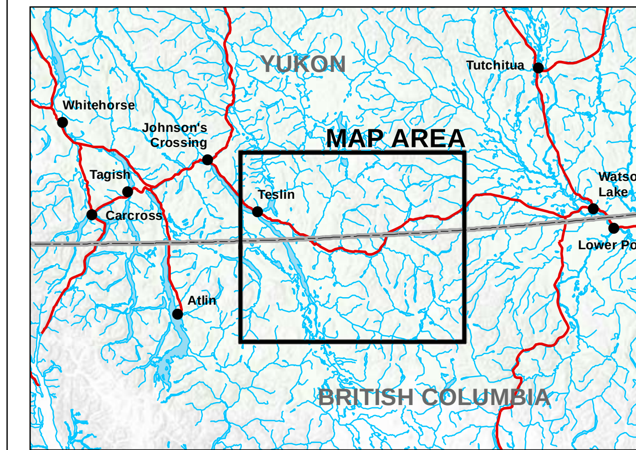

Legend

- Yukon Territorial Border
- Settlement/Community
- Alaska Highway
- Local Road/Access
- Morley River Watershed
- Smart River Watershed
- Swift River Watershed
- Jennings River Watershed
- Rancheria River Watershed
- Gladys River Watershed

eDNA 2021 Chinook Sampling Results

- Detected
- Not Detected

Chinook eDNA 2021 Sampling Results

Data Sources

Digital Elevation Model and 1:50,000 and 1:1,000,000 National Topographic Database (NTDB) and satellite imagery provided by Geomatics Yukon - Yukon Government via online source (Corporate Spatial Warehouse) www.geomaticsyukon.ca.

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4 CONCLUSION

The results of the eDNA sampling program completed in 2021, and supported by 2020 results, have considerably increased the understanding of bull trout distribution in the upper Teslin River watershed. The distribution within the Swift and Smart watersheds – where bull trout were previously known to occur – has been better defined and their presence within the upper Morley River watershed provided new information. Within both the Morley and Swift River watersheds, it appears as though lakes within these systems may limit bull trout distribution. The confirmation of bull trout in the Jennings River watershed through eDNA also provide the first confirmed documentation of this species in the watershed. The information on bull trout distribution gained by this project can be used during future conservation assessments with the goal of being able to adequately assess the upper Yukon population of bull trout which was determined to be data deficient by COSEWIC during 2012. The presence/absence information resulting from this eDNA sampling could also be used to focus data collection (using conventional fish sampling methods) to fine tune species distribution or collect information such as densities, age and growth, or other life history parameters.

The information on Chinook salmon distribution collected by the eDNA sampling provided limited new information on species distribution; however, the data collected is useful given that it was collected during a period with very low adult spawner returns to the upper Teslin River watershed. This information can be used, along with other data sources, for stock restoration planning and other research or monitoring initiatives.

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APPENDICES

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APPENDIX A SAMPLING SITE DESCRIPTIONS

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Watershed	Stream Name	Site IDs	Site Descriptions	Latitude	Longitude	Dates	Access
Morley	Ice Lakes Creek	ICC-01	Tributary to Ram Creek, ~ 7km upstream from Slim Lake	60.32700465	-131.5371772	Sept 16	Helicopter
	Kartuhini Creek	KAC-01	Tributary to Morris Lake	60.44370206	-131.7071918	Sept 16	Helicopter
	Morley River	MOR-05	Between Slim Lake and Morris Lake	60.40630615	-131.6453013	Sept 16	Helicopter
	Ram Creek	RAC-03	Upper watershed	60.27085887	-131.4462839	Sept 16	Helicopter
		RAC-02	Above confluence of Ice Lakes Creek	60.32307574	-131.5321017	Sept 16	Helicopter
Gladys	Gladys River	GLR-01	Gladys mainstem, ~ 200m upstream of Teslin Lake	59.79743454	-132.2850253	Sept 16	Helicopter
Jennings	Jennings River	JER-01	Jennings mainstem	59.65054407	-132.1281499	Sept 16	Helicopter
		JER-02	Jennings mainstem	59.42295897	-131.3515077	Sept 16	Helicopter
	Klinkit Creek	KLC-01	Tributary to Jennings River	59.45554733	-131.3356841	Sept 16	Helicopter
Rancheria	Upper Rancheria River	RAR01	Upper Rancheria River, accessed from Pine Lake airstrip	60.1022500	-130.9303300	Aug 18	Road
Smart	Smart River	SMR-02	Just above Yukon boarder	60.00679401	-131.7399551	Sept 16	Helicopter
		SMR-04	Above Cabin Lake	60.14206962	-131.6856335	Sept 16	Helicopter
		SMR-05	Above Dorsey Lake	60.16651439	-131.5494075	Sept 16	Helicopter
		SMR-06	Below Munson Lake	60.1871035	-131.4206533	Sept 16	Helicopter

Watershed	Stream Name	Site IDs	Site Descriptions	Latitude	Longitude	Dates	Access
	Smart River Tributary	T1SMR-01	Tributary to Dorsey Lake	60.15725385	-131.5495713	Sept 16	Helicopter
Swift	Swift Tributary	T1SWR01	13km above Pine Creek	60.1755200	-131.1433900	Aug 18	Road
		T2SWR01	Swift tributary from Crescent Lake	60.1772200	-131.1437700	Aug 18	Road
		T3SWR-1	Near Swift River highway crossing	60.0569852	-130.9784954	Aug 27	Road
		T4SWR-01	Small tributary near Partridge Creek	59.9650769	-131.2266932	Aug 27	Road
	Swift River	SWR05	Swift River, 7km above Pine Lake	60.1496200	-131.0496400	Aug 18	Road
		SWR04-B	Above AK highway crossing	60.0588955	-130.9796741	Aug 27	Road
		SWR03-C	At Swift River town site	60.0000243	-131.1915553	Aug 27	Road
		SWR03-A	Above McNaughton Creek	59.9368478	-131.2475095	Aug 27	Road
		SWR03-B	Below McNaughton Creek	59.9253834	-131.2776373	Aug 27	Road
		SWR04-A	At AK highway crossing	60.0485281	-130.9983557	Aug 27	Road
	Seagull Creek	SEC-01	At AK highway crossing	60.0095208	-131.1878785	Aug 27	Road
	Partridge Creek	PAC-01	At AK highway crossing	59.97063432	-131.2239008	Aug 27	Road
	Screw Creek	SCC-01	At AK highway crossing	59.9075693	-131.3104257	Aug 27	Road

Watershed	Stream Name	Site IDs	Site Descriptions	Latitude	Longitude	Dates	Access
	McNaughton Creek	MCC-01	Above Swift confluence	59.92917216	-131.2563955	Sept 16	Helicopter
		MCC-02	13km upstream from Swift confluence	59.88507537	-131.0479361	Sept 16	Helicopter
	Plate Creek	PLC-01	Near Swift confluence	60.02093715	-130.9758817	Sept 16	Helicopter

APPENDIX B REPRESENTATIVE PHOTOGRAPHS OF SAMPLING SITES

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Appendix Photo 1. Ice Lakes Creek (ICC-01) eDNA sampling site on September 16, 2021.

Appendix Photo 2. Kartuhini Creek (KAC-01) eDNA sampling site on September 16, 2021.

Appendix Photo 3. Morley River (MOR-05) eDNA sampling site on September 16, 2021.

Appendix Photo 4. Ram Creek (RAC-02) eDNA sampling site on September 16, 2021.

Appendix Photo 5. Swift River tributary (T1SWR-01) eDNA sampling site on August 18, 2022 in the upper portion of the watershed downstream of Crescent Lake.

Appendix Photo 6. Swift River tributary (T2SWR-01) eDNA sampling site on August 18, 2022 in the upper portion of the watershed.

Appendix Photo 7. Swift River (SWR-05) eDNA sampling site on August 18, 2022.

Appendix Photo 8. Swift River (SWR-03B) eDNA sampling site downstream of McNaughton Creek on August 27, 2022.

Appendix Photo 9. Seagull Creek (SEC-01) eDNA sampling site on August 27, 2022.

Appendix Photo 10. Partridge Creek (PAC-01) eDNA sampling site on August 27, 2022.

Appendix Photo 11. Screw Creek (SCC-01) eDNA sampling site on August 27, 2022.

Appendix Photo 12. Lower McNaughton Creek (MCC-01) eDNA sampling site on September 16, 2022.

Appendix Photo 13. Plate Creek (PLC-01) eDNA sampling site on September 16, 2022.

Appendix Photo 14. Smart River (SMR-01) eDNA sampling site near the Yukon/BC Border on September 16, 2022.

Appendix Photo 15. Tributary to Smart River (T1SMR-01) eDNA sampling site on September 16, 2022.

Appendix Photo 16. Klinkit Creek (KLC-01) eDNA sampling site on September 16, 2022.

Appendix Photo 17. Jennings River (JER-01) eDNA sampling site on September 16, 2022.

Appendix Photo 18. Gladys River (GLR-01) eDNA sampling site on September 16, 2022.

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APPENDIX C EDNA LABORATORY RESULTS

Attention: **Ben Schonewille**
EDI Environmental Dynamics Inc.
2195 Second Avenue
Whitehorse, YT
Canada, Y1A 3T8

Client Project #: **20Y0408**
Site Location: **Swift River**
C.O.C. #: **20211210-2 & 20211222-1**
Quote #: **N/A**
PO#: **N/A**

Report Date: **2022/01/18**
Report #: **ED20220118**
Version: **1**

ENVIRONMENTAL DNA - CERTIFICATE OF ANALYSIS

BV JOB #: **E20211210-2 & E20211222-1**
Received: **2021/12/13, 2:40 PM ; 2021/12/22, 3:08 PM**

Sample Type: Cellulose Nitrate (CN) filter, preserved in silica
Samples Received: 2021/12/13 n=44
2021/12/22 n=52

Analyses (eDNA Isolation - Species)	Test Requested	Test Performed	Date eDNA Extracted	Date Analyzed IntegritE-DNA™	Date Analyzed Target Species	Laboratory Method	Analytical Method (qPCR Primer/Probe set)
eDNA Isolation and IntegritE-DNA™	96	96	2021/12/13 2021/12/14 2021/12/15 2021/12/20 2021/12/30 2022/01/05 2022/01/06	2021/12/18 2021/12/20 2021/12/21 2021/12/31 2022/01/05 2022/01/06 2022/01/07	N/A	GUE SOP-00056	ePlant5
Chinook Salmon (*Oncorhynchus tschawytscha*)	96	93	N/A	N/A	2021/12/21 2021/12/22 2022/01/04 2022/01/10 2022/01/11 2022/01/13	GUE SOP-00056	eONTS5
Bull Trout (*Salvelinus confluentus*)	96	93	N/A	N/A	2021/12/23 2022/01/04 2022/01/13 2022/01/14 2022/01/18	GUE SOP-00056	eSACO3

Remarks:

Bureau Veritas Laboratories (Animal DNA Department, DNA Services) is accredited to ISO17025:2017 for eDNA testing.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by industry professionals using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas Laboratories in writing). All data has met quality control and method performance criteria unless otherwise noted.

Bureau Veritas Laboratories' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas Laboratories has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas Laboratories unless otherwise agreed in writing. Bureau Veritas Laboratories is not responsible for the accuracy or any data impacts that result from the information provided by the customer or their agent.

Results relate to supplied samples tested. This Certificate should not be reproduced except in full, without the written approval of the laboratory.

eDNA tests are used to confirm presence of eDNA in samples for the targeted species / species groups.

Collected eDNA samples will contain eDNA at various stages of degradation, being subject to environmental forces that breakdown DNA, including microbial activity, ultraviolet radiation, heat, hydrolysis, and enzymatic activity. eDNA is first evaluated for eDNA quality and presence of qPCR assay inhibitors using the IntegritE-DNA™ assay before testing for target species or genera to confirm that the eDNA is of sufficient quality for testing and to identify and address qPCR inhibition (if present) to avoid false negatives.

SAMPLE RETENTION: Samples and DNA extracts generated from the samples will be retained by Bureau Veritas Laboratories for a period of 90 days after which time they will be discarded unless prearrangement has been made by client with Bureau Veritas Laboratories for longer storage.

Attention: Ben Schonewille
EDI Environmental Dynamics Inc.
2195 Second Avenue
Whitehorse, YT
Canada, Y1A 3T8

Client Project #: 20Y0408
Site Location: Swift River
C.O.C. #: 20211210-2 & 20211222-1
Quote #: N/A
PO#: N/A

Report Date: 2022/01/18
Report #: ED20220118
Version: 1

ENVIRONMENTAL DNA - CERTIFICATE OF ANALYSIS

BV JOB #: E20211210-2 & E20211222-1
Received: 2021/12/13, 2:40 PM ; 2021/12/22, 3:08 PM

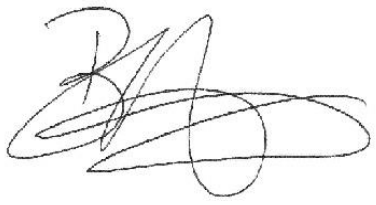
Methodology for Sample Analysis

Samples received to the laboratory are entered into the Laboratory Information Management System (LIMS) upon receipt. Samples were inspected and assessed for amount of silica beads, silica bead saturation level, coin envelope condition and number of coin envelopes in each bag. Samples were stored in freezer until processing in the laboratory. Sample analysis is completed within 10 or 15 business days (as indicated by the client on the COC) following receipt of samples by the testing laboratory.

eDNA isolation is completed using the DNeasy Blood & Tissue Kit™ (QIAGEN). A negative control is included as a blank filter sample with each batch of eDNA isolation to monitor for potential laboratory contamination during the eDNA isolation process.

Following eDNA isolation (150µL) from a quarter of filter, the IntegritE-DNA™ assay[1] is used to avoid the potential of a false negative (Type II error) during target species or genera testing. The IntegritE-DNA™ assay evaluates the integrity of eDNA for suitability for qPCR and for presence of qPCR inhibitors which may reduce the effectiveness of the qPCR assay for target species or genera. This assay evaluates the quality of eDNA to assess whether it is amplifiable using a qPCR assay that targets the chloroplast genome derived from plants/algae that are ubiquitously found in fresh water systems. Four technical replicates per eDNA sample, four technical replicates of negative control (Ultrapure water), and two technical replicates of positive control are used for the IntegritE-DNA™ assay. The cut-off Ct (qPCR cycle threshold) value for the IntegritE-DNA™ assay is 27 due to inhibition. If the IntegritE-DNA™ assay produces a positive detection frequency of ≥ 2 of the 4 technical replicates, this indicates that the eDNA for the target taxa is likely to be of sufficient quality to be detected (if present) with the target assay. If the IntegritE-DNA™ assay produces a positive detection frequency < 2 of the 4 technical replicates (eDNA is degraded or qPCR inhibitors are present), then sample cleanup is completed using the OneStep PCR Inhibitor Removal Kit™ (ZYMO Research) to remove potential qPCR assay inhibitors from the isolated eDNA. Subsequent to inhibitor removal, the IntegritE-DNA™ assay is repeated to re-assess whether the eDNA is of sufficient quality for qPCR. If a sample fails at the IntegritE-DNA™ assay (Ct Value over 30) for the second time the client will be informed that the quality of the sample is insufficient for the qPCR assay. eDNA indicator (IntegritE-DNA™) in the sample suggests that degradation has taken place and therefore the target species assay may be ineffective. Once a sample passes the IntegritE-DNA™ assay, then the target species or genera assay is performed. Eight technical replicates per eDNA sample, eight technical replicates of the negative control (Ultrapure water), and two technical replicates of positive control (total DNA or synthetic DNA) are used for the target species or genera assay to assess the detection or non-detection of DNA of the target species or genera. The cut-off Ct value for target species assay is 50.

[1] Hobbs J, Round JM, Allison MJ, Helbing CC (2019) Expansion of the known distribution of the coastal tailed frog, *Ascaphus truei* , in British Columbia, Canada, using robust eDNA detection methods. PLOS ONE 14(3): e0213849.



BECKY HENDERSON
Senior Customer Service Representative, Bureau Veritas Laboratories, DNA Services
Email: becky-a.henderson@bureauveritas.com
Phone #: (519) 836 2400 Ext. 7067714

Please direct all questions regarding this Certificate of Analysis to your Customer Service Representative above.
==========
For Service Group specific validation please refer to the Validation Signature Page.

Total Cover Pages: 2

BV JOB #: E20211210-2 & E20211222-1
Report Date: 2022/01/18
Report #: ED20220118

Client Name: EDI Environmental Dynamics Inc.
Client Project #: 20Y0408
Site Location: Swift River
Sampler Initials: PS

RESULTS - Chinook Salmon (*Oncorhynchus tschawytscha*)

Client Sample ID	BV Case ID	Sampling Date	Preservation Type	COC Number	IntegritE-DNA™ Positive detection (Ct≤27)[1]	QC Batch	Cleanup required	IntegritE-DNA™ Positive detection (Ct≤30)[1] after cleanup	QC Batch	Analytical Method (qPCR Primer/Probe set)	Target Species eDNA Positive detection (Ct≤50)[2]	QC Batch
T1SWR01-A	ED20210058	2021/08/18	Silica	20211210-2	4/4	211218Q1	No	N/A	N/A	eONTS5[6]	0/8	211221Q7
T1SWR01-B	ED20210059	2021/08/18	Silica	20211210-2	4/4	211218Q1	No	N/A	N/A	eONTS5	0/8	211221Q7
T1SWR01-C	ED20210060	2021/08/18	Silica	20211210-2	4/4	211218Q1	No	N/A	N/A	eONTS5	0/8	211221Q7
T2SWR01-A	ED20210061	2021/08/18	Silica	20211210-2	4/4	211218Q2	No	N/A	N/A	eONTS5	0/8	211221Q7
T2SWR01-B	ED20210062	2021/08/18	Silica	20211210-2	4/4	211218Q2	No	N/A	N/A	eONTS5	0/8	211221Q7
T2SWR01-C	ED20210063	2021/08/18	Silica	20211210-2	4/4	211218Q2	No	N/A	N/A	eONTS5	0/8	211221Q7
SWR05-A	ED20210064	2021/08/18	Silica	20211210-2	4/4	211218Q2	No	N/A	N/A	eONTS5	0/8	211221Q7
SWR05-B	ED20210065	2021/08/18	Silica	20211210-2	4/4	211218Q2	No	N/A	N/A	eONTS5	0/8	211222Q1
SWR05-C	ED20210066	2021/08/18	Silica	20211210-2	4/4	211218Q2	No	N/A	N/A	eONTS5	0/8	211222Q1
RAR01-A	ED20210067	2021/08/18	Silica	20211210-2	4/4	211218Q2	No	N/A	N/A	eONTS5	0/8	211222Q1
RAR01-B	ED20210068	2021/08/18	Silica	20211210-2	4/4	211218Q2	No	N/A	N/A	eONTS5	0/8	211222Q1
RAR01-C	ED20210069	2021/08/18	Silica	20211210-2	4/4	211218Q2	No	N/A	N/A	eONTS5	0/8	211222Q1
DW01-A	ED20210070	2021/08/18	Silica	20211210-2	0/4[3]	211218Q2	No	N/A	N/A	eONTS5	N/A	N/A
T3SWR-1-A	ED20210071	2021/08/27	Silica	20211210-2	4/4	211218Q2	No	N/A	N/A	eONTS5	1/8	211222Q1
T3SWR-1-B	ED20210072	2021/08/27	Silica	20211210-2	4/4	211218Q2	No	N/A	N/A	eONTS5	0/8	211222Q1
T3SWR-1-C	ED20210073	2021/08/27	Silica	20211210-2	4/4	211218Q2	No	N/A	N/A	eONTS5	0/8	211222Q1
SWR04-B-A	ED20210074	2021/08/27	Silica	20211210-2	4/4	211218Q2	No	N/A	N/A	eONTS5	0/8	211222Q1
SWR04-B-B	ED20210075	2021/08/27	Silica	20211210-2	4/4	211218Q2	No	N/A	N/A	eONTS5	0/8	211222Q1
SWR04-B-C	ED20210076	2021/08/27	Silica	20211210-2	4/4	211218Q2	No	N/A	N/A	eONTS5	0/8	211222Q2
SEC-01-A	ED20210077	2021/08/27	Silica	20211210-2	4/4	211218Q2	No	N/A	N/A	eONTS5	0/8	211222Q2
SEC-01-B	ED20210078	2021/08/27	Silica	20211210-2	4/4	211218Q2	No	N/A	N/A	eONTS5	0/8	211222Q2
SEC-01-C	ED20210079	2021/08/27	Silica	20211210-2	4/4	211218Q2	No	N/A	N/A	eONTS5	0/8	211222Q2
SWR03-C-A	ED20210080	2021/08/27	Silica	20211210-2	4/4	211220Q9	No	N/A	N/A	eONTS5	8/8	211222Q2
SWR03-C-B	ED20210081	2021/08/27	Silica	20211210-2	4/4	211220Q9	No	N/A	N/A	eONTS5	7/8	211222Q2
SWR03-C-C	ED20210082	2021/08/27	Silica	20211210-2	4/4	211220Q9	No	N/A	N/A	eONTS5	7/8	211222Q2
PAC-01-A	ED20210083	2021/08/27	Silica	20211210-2	4/4	211220Q9	No	N/A	N/A	eONTS5	0/8	211222Q2
PAC-01-B	ED20210084	2021/08/27	Silica	20211210-2	4/4	211220Q9	No	N/A	N/A	eONTS5	0/8	211222Q2
PAC-01-C	ED20210085	2021/08/27	Silica	20211210-2	4/4	211220Q9	No	N/A	N/A	eONTS5	0/8	211222Q2
T4SWR-1-A	ED20210086	2021/08/27	Silica	20211210-2	4/4	211220Q9	No	N/A	N/A	eONTS5	0/8	211222Q3
T4SWR-1-B	ED20210087	2021/08/27	Silica	20211210-2	4/4	211220Q9	No	N/A	N/A	eONTS5	0/8	211222Q3
T4SWR-1-C	ED20210088	2021/08/27	Silica	20211210-2	4/4	211220Q9	No	N/A	N/A	eONTS5	0/8	211222Q3
SWR03-A	ED20210089	2021/08/27	Silica	20211210-2	4/4	211220Q9	No	N/A	N/A	eONTS5	2/8	211222Q3
SWR03-B	ED20210090	2021/08/27	Silica	20211210-2	4/4	211220Q9	No	N/A	N/A	eONTS5	1/8	211222Q3
SWR03-C	ED20210091	2021/08/27	Silica	20211210-2	4/4	211220Q9	No	N/A	N/A	eONTS5	0/8	211222Q3
SWR03-B-A	ED20210092	2021/08/27	Silica	20211210-2	4/4	211220Q9	No	N/A	N/A	eONTS5	6/8	211222Q3
SWR03-B-B	ED20210093	2021/08/27	Silica	20211210-2	4/4	211220Q9	No	N/A	N/A	eONTS5	6/8	211222Q3
SWR03-B-C	ED20210094	2021/08/27	Silica	20211210-2	4/4	211220Q9	No	N/A	N/A	eONTS5	5/8	211222Q3
SCC-01-A	ED20210095	2021/08/27	Silica	20211210-2	4/4	211220Q9	No	N/A	N/A	eONTS5	0/8	211222Q3
SCC-01-B	ED20210096	2021/08/27	Silica	20211210-2	4/4	211220Q9	No	N/A	N/A	eONTS5	0/8	211222Q5
SCC-01-C	ED20210097	2021/08/27	Silica	20211210-2	4/4	211220Q9	No	N/A	N/A	eONTS5	0/8	211222Q5
DW02	ED20210098	2021/08/27	Silica	20211210-2	0/4[3]	211220Q9	No	N/A	N/A	eONTS5	N/A	N/A
SWR04-A	ED20210099	2021/08/27	Silica	20211210-2	4/4	211221Q5	No	N/A	N/A	eONTS5	0/8	211222Q5
SWR04-B	ED20210100	2021/08/27	Silica	20211210-2	4/4	211221Q5	No	N/A	N/A	eONTS5	0/8	211222Q5
SWR04-C	ED20210101	2021/08/27	Silica	20211210-2	4/4	211221Q5	No	N/A	N/A	eONTS5	1/8	211222Q5
SMR-02-A	ED20210102	2021/09/16	Silica	20211222-1	4/4	211231Q5	No	N/A	N/A	eONTS5	0/8	220104Q3
SMR-02-B	ED20210103	2021/09/16	Silica	20211222-1	4/4	211231Q5	No	N/A	N/A	eONTS5	0/8	220104Q3
SMR-02-C	ED20210104	2021/09/16	Silica	20211222-1	4/4	211231Q5	No	N/A	N/A	eONTS5	0/8	220104Q3
SMR-04-A	ED20210105	2021/09/16	Silica	20211222-1	4/4	211231Q5	No	N/A	N/A	eONTS5	0/8	220104Q3
SMR-04-B	ED20210106	2021/09/16	Silica	20211222-1	1/4[4]	211231Q5	Yes[4]	4/4	220105Q1	eONTS5	0/8	220110Q1
SMR-04-C	ED20210107	2021/09/16	Silica	20211222-1	4/4	211231Q5	No	N/A	N/A	eONTS5	0/8	220104Q3
T1SMR-01-A	ED20210108	2021/09/16	Silica	20211222-1	4/4	211231Q5	No	N/A	N/A	eONTS5	0/8	220104Q3
T1SMR-02-B	ED20210109	2021/09/16	Silica	20211222-1	4/4	211231Q5	No	N/A	N/A	eONTS5	0/8	220104Q3
T1SMR-03-C	ED20210110	2021/09/16	Silica	20211222-1	4/4	211231Q5	No	N/A	N/A	eONTS5	0/8	220104Q3
SMR-05-A	ED20210111	2021/09/16	Silica	20211222-1	4/4	211231Q5	No	N/A	N/A	eONTS5	0/8	220104Q3
SMR-05-B	ED20210112	2021/09/16	Silica	20211222-1	4/4	211231Q5	No	N/A	N/A	eONTS5	0/8	220104Q3
SMR-05-C	ED20210113	2021/09/16	Silica	20211222-1	4/4	211231Q5	No	N/A	N/A	eONTS5	0/8	220110Q1
SMR-06-A	ED20210114	2021/09/16	Silica	20211222-1	4/4	220106Q3	No	N/A	N/A	eONTS5	0/8	220110Q1
SMR-06-B	ED20210115	2021/09/16	Silica	20211222-1	4/4	220106Q3	No	N/A	N/A	eONTS5	0/8	220110Q1
SMR-06-C	ED20210116	2021/09/16	Silica	20211222-1	0/4[4]	220106Q3	Yes[4]	4/4	220107Q3	eONTS5	0/8	220110Q1
RAC-03-A	ED20210117	2021/09/16	Silica	20211222-1	4/4	220106Q3	No	N/A	N/A	eONTS5	0/8	220110Q1
RAC-03-B	ED20210118	2021/09/16	Silica	20211222-1	4/4	220106Q3	No	N/A	N/A	eONTS5	0/8	220110Q1
RAC-03-B	ED20210119	2021/09/16	Silica	20211222-1	4/4	220106Q3	No	N/A	N/A	eONTS5	0/8	220110Q1
RAC-02-A	ED20210120	2021/09/16	Silica	20211222-1	4/4	220106Q3	No	N/A	N/A	eONTS5	0/8	220110Q1
RAC-02-B	ED20210121	2021/09/16	Silica	20211222-1	4/4	220106Q3	No	N/A	N/A	eONTS5	0/8	220110Q1
RAC-02-C	ED20210122	2021/09/16	Silica	20211222-1	4/4	220106Q3	No	N/A	N/A	eONTS5	0/8	220111Q1
DW03-C	ED20210123	2021/09/16	Silica	20211222-1	N/A	N/A	No	N/A	N/A	eONTS5	N/A	N/A
DW04-C	ED20210124	2021/09/16	Silica	20211222-1	0/4[3]	220106Q3	No	N/A	N/A	eONTS5	N/A	N/A
ICC-01-A	ED20210125	2021/09/16	Silica	20211222-1	4/4	220106Q3	No	N/A	N/A	eONTS5	0/8	220111Q1
ICC-01-B	ED20210126	2021/09/16	Silica	20211222-1	4/4	220106Q3	No	N/A	N/A	eONTS5	0/8	220111Q1
ICC-01-C	ED20210127	2021/09/16	Silica	20211222-1	4/4	220106Q3	No	N/A	N/A	eONTS5	0/8	220111Q1
MOR-05-A	ED20210128	2021/09/16	Silica	20211222-1	4/4	220106Q3	No	N/A	N/A	eONTS5	0/8	220111Q1
MOR-05-B	ED20210129	2021/09/16	Silica	20211222-1	0/4[4]	220107Q3	Yes[4]	4/4	220107Q4	eONTS5	0/8	220111Q1
MOR-05-C	ED20210130	2021/09/16	Silica	20211222-1	0/4[4]	220107Q3	Yes[4]	4/4	220107Q4	eONTS5	0/8	220111Q1

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BV JOB #: E20211210-2 & E20211222-1
Report Date: 2022/01/18
Report #: ED20220118

Client Name: EDI Environmental Dynamics Inc.
Client Project #: 20Y0408
Site Location: Swift River
Sampler Initials: PS

RESULTS - Chinook Salmon (*Oncorhynchus tschawytscha*)

Client Sample ID	BV Case ID	Sampling Date	Preservation Type	COC Number	IntegritE-DNA™ Positive detection (Ct≤27)[1]	QC Batch	Cleanup required	IntegritE-DNA™ Positive detection (Ct≤30)[1] after cleanup	QC Batch	Analytical Method (qPCR Primer/Probe set)	Target Species eDNA Positive detection (Ct≤50)[2]	QC Batch
KAC-01-A	ED20210131	2021/09/16	Silica	20211222-1	0/4[4]	220107Q3	Yes[4]	4/4	220107Q4	eONTS5	0/8	220111Q1
KAC-01-B	ED20210132	2021/09/16	Silica	20211222-1	0/4[4]	220107Q3	Yes[4]	4/4	220107Q4	eONTS5	0/8	220111Q1
KAC-01-C	ED20210133	2021/09/16	Silica	20211222-1	0/4[4]	220107Q3	Yes[4]	4/4	220107Q4	eONTS5	0/8	220111Q1
MCC-01-A	ED20210134	2021/09/16	Silica	20211222-1	4/4	220107Q2	No	N/A	N/A	eONTS5	0/8	220111Q2
MCC-01-B	ED20210135	2021/09/16	Silica	20211222-1	4/4	220107Q2	No	N/A	N/A	eONTS5	1/8	220111Q2
MCC-01-C	ED20210136	2021/09/16	Silica	20211222-1	4/4	220107Q2	No	N/A	N/A	eONTS5	0/8	220111Q2
MCC-02-A	ED20210137	2021/09/16	Silica	20211222-1	4/4	220107Q2	No	N/A	N/A	eONTS5	0/8	220111Q2
MCC-02-B	ED20210138	2021/09/16	Silica	20211222-1	0/4[4]	220107Q2	Yes[4]	4/4	220107Q3	eONTS5	0/8	220111Q2
MCC-02-C	ED20210139	2021/09/16	Silica	20211222-1	4/4	220107Q2	No	N/A	N/A	eONTS5	0/8	220111Q2
PLC-01-A	ED20210140	2021/09/16	Silica	20211222-1	0/4[4]	220107Q2	Yes[4]	4/4	220107Q4	eONTS5	0/8	220111Q2
PLC-01-B	ED20210141	2021/09/16	Silica	20211222-1	0/4[4]	220107Q2	Yes[4]	4/4	220107Q4	eONTS5	0/8	220111Q2
PLC-01-C	ED20210142	2021/09/16	Silica	20211222-1	0/4[4]	220107Q2	Yes[4]	4/4	220107Q3	eONTS5	0/8	220111Q2
KLC-01-A	ED20210143	2021/09/16	Silica	20211222-1	4/4	220107Q2	No	N/A	N/A	eONTS5	5/8	220111Q2
KLC-01-B	ED20210144	2021/09/16	Silica	20211222-1	4/4	220107Q2	No	N/A	N/A	eONTS5	2/8	220113Q1
KLC-01-C	ED20210145	2021/09/16	Silica	20211222-1	4/4	220107Q2	No	N/A	N/A	eONTS5	3/8	220113Q1
JER-02-A	ED20210146	2021/09/16	Silica	20211222-1	0/4[4]	220107Q2	Yes[4]	4/4	220107Q3	eONTS5	2/8	220113Q1
JER-02-B	ED20210147	2021/09/16	Silica	20211222-1	2/4[5]	220107Q2	Yes[5]	4/4	220107Q3	eONTS5	1/8	220113Q1
JER-02-C	ED20210148	2021/09/16	Silica	20211222-1	0/4[4]	220107Q2	Yes[4]	4/4	220107Q4	eONTS5	0/8	220113Q1
JER-01-A	ED20210149	2021/09/16	Silica	20211222-1	4/4	220107Q2	No	N/A	N/A	eONTS5	1/8	220113Q1
JER-01-B	ED20210150	2021/09/16	Silica	20211222-1	4/4	220107Q2	No	N/A	N/A	eONTS5	0/8	220113Q1
JER-01-C	ED20210151	2021/09/16	Silica	20211222-1	4/4	220107Q2	No	N/A	N/A	eONTS5	0/8	220113Q1
GLR-01-A	ED20210152	2021/09/16	Silica	20211222-1	0/4[4]	220107Q2	Yes[4]	4/4	220107Q4	eONTS5	0/8	220113Q1
GLR-01-B	ED20210153	2021/09/16	Silica	20211222-1	0/4[4]	220107Q2	Yes[4]	3/4	220107Q3	eONTS5	0/8	220113Q1
GLR-01-C	ED20210154	2021/09/16	Silica	20211222-1	0/4[4]	220107Q2	Yes[4]	4/4	220107Q3	eONTS5	0/8	220113Q3

[1] **IntegritE-DNA™ Assay:** Four technical replicates were assayed for each eDNA sample. The cut-off Ct value for IntegritE-DNA™ assay was 27 and 30 after clean-up. Results are reported as the number of positive detections (n) out of a total of 4 technical replicates, n/4.

[2] **Target Species Assay:** Eight technical replicates were assayed per eDNA sample. The cut-off Ct value for target species assay was 50. Results are reported as the number of positive detections (n) out of a total of 8 technical replicates, n/8.

[3] The IntegritE-DNA™ assay failed, and cleanup is not required for the field blank sample.

[4] The IntegritE-DNA™ assay failed, and cleanup is required.

[5] The IntegritE-DNA™ assay did not fail, but the amplification was weak, possibly indicating inhibition.

[6] eONTS5: qPCR primer/probe assay to assess the presence of Chinook Salmon (*Oncorhynchus tschawytscha*) eDNA

RESULTS - Bull Trout (*Salvelinus confluentus*)

Client Sample ID	BV Case ID	Sampling Date	Preservation Type	COC Number	IntegritE-DNA™ Positive detection (Ct≤27)[1]	QC Batch	Cleanup required	IntegritE-DNA™ Positive detection (Ct≤30)[1] after cleanup	QC Batch	Analytical Method (qPCR Primer/Probe set)	Target Species eDNA Positive detection (Ct≤50)[2]	QC Batch
T1SWR01-A	ED20210058	2021/08/18	Silica	20211210-2	4/4	211218Q1	No	N/A	N/A	eSACO3[6]	8/8	211223Q1
T1SWR01-B	ED20210059	2021/08/18	Silica	20211210-2	4/4	211218Q1	No	N/A	N/A	eSACO3	8/8	211223Q1
T1SWR01-C	ED20210060	2021/08/18	Silica	20211210-2	4/4	211218Q1	No	N/A	N/A	eSACO3	8/8	211223Q1
T2SWR01-A	ED20210061	2021/08/18	Silica	20211210-2	4/4	211218Q2	No	N/A	N/A	eSACO3	2/8	211223Q1
T2SWR01-B	ED20210062	2021/08/18	Silica	20211210-2	4/4	211218Q2	No	N/A	N/A	eSACO3	5/8	211223Q1
T2SWR01-C	ED20210063	2021/08/18	Silica	20211210-2	4/4	211218Q2	No	N/A	N/A	eSACO3	8/8	211223Q1
SWR05-A	ED20210064	2021/08/18	Silica	20211210-2	4/4	211218Q2	No	N/A	N/A	eSACO3	6/8	211223Q1
SWR05-B	ED20210065	2021/08/18	Silica	20211210-2	4/4	211218Q2	No	N/A	N/A	eSACO3	6/8	211223Q1
SWR05-C	ED20210066	2021/08/18	Silica	20211210-2	4/4	211218Q2	No	N/A	N/A	eSACO3	8/8	211223Q1
RAR01-A	ED20210067	2021/08/18	Silica	20211210-2	4/4	211218Q2	No	N/A	N/A	eSACO3	5/8	211223Q1
RAR01-B	ED20210068	2021/08/18	Silica	20211210-2	4/4	211218Q2	No	N/A	N/A	eSACO3	6/8	211223Q2
RAR01-C	ED20210069	2021/08/18	Silica	20211210-2	4/4	211218Q2	No	N/A	N/A	eSACO3	4/8	211223Q2
DW01-A	ED20210070	2021/08/18	Silica	20211210-2	0/4[3]	211218Q2	No	N/A	N/A	eSACO3	N/A	N/A
T3SWR-1-A	ED20210071	2021/08/27	Silica	20211210-2	4/4	211218Q2	No	N/A	N/A	eSACO3	0/8	211223Q2
T3SWR-1-B	ED20210072	2021/08/27	Silica	20211210-2	4/4	211218Q2	No	N/A	N/A	eSACO3	0/8	211223Q2
T3SWR-1-C	ED20210073	2021/08/27	Silica	20211210-2	4/4	211218Q2	No	N/A	N/A	eSACO3	0/8	211223Q2
SWR04-B-A	ED20210074	2021/08/27	Silica	20211210-2	4/4	211218Q2	No	N/A	N/A	eSACO3	1/8	211223Q2
SWR04-B-B	ED20210075	2021/08/27	Silica	20211210-2	4/4	211218Q2	No	N/A	N/A	eSACO3	1/8	211223Q2
SWR04-B-C	ED20210076	2021/08/27	Silica	20211210-2	4/4	211218Q2	No	N/A	N/A	eSACO3	2/8	211223Q2
SEC-01-A	ED20210077	2021/08/27	Silica	20211210-2	4/4	211218Q2	No	N/A	N/A	eSACO3	7/8	211223Q2
SEC-01-B	ED20210078	2021/08/27	Silica	20211210-2	4/4	211218Q2	No	N/A	N/A	eSACO3	8/8	211223Q2
SEC-01-C	ED20210079	2021/08/27	Silica	20211210-2	4/4	211218Q2	No	N/A	N/A	eSACO3	8/8	211223Q3
SWR03-C-A	ED20210080	2021/08/27	Silica	20211210-2	4/4	211220Q9	No	N/A	N/A	eSACO3	6/8	211223Q3
SWR03-C-B	ED20210081	2021/08/27	Silica	20211210-2	4/4	211220Q9	No	N/A	N/A	eSACO3	8/8	211223Q3
SWR03-C-C	ED20210082	2021/08/27	Silica	20211210-2	4/4	211220Q9	No	N/A	N/A	eSACO3	8/8	211223Q3
PAC-01-A	ED20210083	2021/08/27	Silica	20211210-2	4/4	211220Q9	No	N/A	N/A	eSACO3	8/8	211223Q3
PAC-01-B	ED20210084	2021/08/27	Silica	20211210-2	4/4	211220Q9	No	N/A	N/A	eSACO3	8/8	211223Q3
PAC-01-C	ED20210085	2021/08/27	Silica	20211210-2	4/4	211220Q9	No	N/A	N/A	eSACO3	8/8	211223Q3
T4SWR-1-A	ED20210086	2021/08/27	Silica	20211210-2	4/4	211220Q9	No	N/A	N/A	eSACO3	0/8	211223Q3
T4SWR-1-B	ED20210087	2021/08/27	Silica	20211210-2	4/4	211220Q9	No	N/A	N/A	eSACO3	0/8	211223Q3
T4SWR-1-C	ED20210088	2021/08/27	Silica	20211210-2	4/4	211220Q9	No	N/A	N/A	eSACO3	0/8	211223Q3

BV JOB #: E20211210-2 & E20211222-1
Report Date: 2022/01/18
Report #: ED20220118

Client Name: EDI Environmental Dynamics Inc.
Client Project #: 20Y0408
Site Location: Swift River
Sampler Initials: PS

RESULTS - Bull Trout (*Salvelinus confluentus*)

Client Sample ID	BV Case ID	Sampling Date	Preservation Type	COC Number	IntegritE-DNA™ Positive detection (Ct≤27)[1]	QC Batch	Cleanup required	IntegritE-DNA™ Positive detection (Ct≤30)[1] after cleanup	QC Batch	Analytical Method (qPCR Primer/Probe set)	Target Species eDNA Positive detection (Ct≤50)[2]	QC Batch
SWR03-A	ED20210089	2021/08/27	Silica	20211210-2	4/4	211220Q9	No	N/A	N/A	eSACO3	8/8	211223Q4
SWR03-B	ED20210090	2021/08/27	Silica	20211210-2	4/4	211220Q9	No	N/A	N/A	eSACO3	7/8	211223Q4
SWR03-C	ED20210091	2021/08/27	Silica	20211210-2	4/4	211220Q9	No	N/A	N/A	eSACO3	8/8	211223Q4
SWR03-B-A	ED20210092	2021/08/27	Silica	20211210-2	4/4	211220Q9	No	N/A	N/A	eSACO3	8/8	211223Q4
SWR03-B-B	ED20210093	2021/08/27	Silica	20211210-2	4/4	211220Q9	No	N/A	N/A	eSACO3	8/8	211223Q4
SWR03-B-C	ED20210094	2021/08/27	Silica	20211210-2	4/4	211220Q9	No	N/A	N/A	eSACO3	5/8	211223Q4
SCC-01-A	ED20210095	2021/08/27	Silica	20211210-2	4/4	211220Q9	No	N/A	N/A	eSACO3	4/8	211223Q4
SCC-01-B	ED20210096	2021/08/27	Silica	20211210-2	4/4	211220Q9	No	N/A	N/A	eSACO3	8/8	211223Q4
SCC-01-C	ED20210097	2021/08/27	Silica	20211210-2	4/4	211220Q9	No	N/A	N/A	eSACO3	8/8	211223Q4
DW02	ED20210098	2021/08/27	Silica	20211210-2	0/4[3]	211220Q9	No	N/A	N/A	eSACO3	N/A	N/A
SWR04-A	ED20210099	2021/08/27	Silica	20211210-2	4/4	211221Q5	No	N/A	N/A	eSACO3	8/8	211223Q4
SWR04-B	ED20210100	2021/08/27	Silica	20211210-2	4/4	211221Q5	No	N/A	N/A	eSACO3	8/8	211223Q5
SWR04-C	ED20210101	2021/08/27	Silica	20211210-2	4/4	211221Q5	No	N/A	N/A	eSACO3	8/8	211223Q5
SMR-02-A	ED20210102	2021/09/16	Silica	20211222-1	4/4	211231Q5	No	N/A	N/A	eSACO3	8/8	220104Q4
SMR-02-B	ED20210103	2021/09/16	Silica	20211222-1	4/4	211231Q5	No	N/A	N/A	eSACO3	8/8	220104Q4
SMR-02-C	ED20210104	2021/09/16	Silica	20211222-1	4/4	211231Q5	No	N/A	N/A	eSACO3	8/8	220104Q4
SMR-04-A	ED20210105	2021/09/16	Silica	20211222-1	4/4	211231Q5	No	N/A	N/A	eSACO3	0/8	220104Q4
SMR-04-B	ED20210106	2021/09/16	Silica	20211222-1	1/4[4]	211231Q5	Yes[4]	4/4	220105Q1	eSACO3	0/8	220114Q5
SMR-04-C	ED20210107	2021/09/16	Silica	20211222-1	4/4	211231Q5	No	N/A	N/A	eSACO3	0/8	220104Q4
T1SMR-01-A	ED20210108	2021/09/16	Silica	20211222-1	4/4	211231Q5	No	N/A	N/A	eSACO3	0/8	220104Q4
T1SMR-02-B	ED20210109	2021/09/16	Silica	20211222-1	4/4	211231Q5	No	N/A	N/A	eSACO3	0/8	220104Q4
T1SMR-03-C	ED20210110	2021/09/16	Silica	20211222-1	4/4	211231Q5	No	N/A	N/A	eSACO3	0/8	220104Q4
SMR-05-A	ED20210111	2021/09/16	Silica	20211222-1	4/4	211231Q5	No	N/A	N/A	eSACO3	0/8	220104Q4
SMR-05-B	ED20210112	2021/09/16	Silica	20211222-1	4/4	211231Q5	No	N/A	N/A	eSACO3	0/8	220104Q4
SMR-05-C	ED20210113	2021/09/16	Silica	20211222-1	4/4	211231Q5	No	N/A	N/A	eSACO3	0/8	220114Q5
SMR-06-A	ED20210114	2021/09/16	Silica	20211222-1	4/4	220106Q3	No	N/A	N/A	eSACO3	0/8	220114Q5
SMR-06-B	ED20210115	2021/09/16	Silica	20211222-1	4/4	220106Q3	No	N/A	N/A	eSACO3	0/8	220114Q5
SMR-06-C	ED20210116	2021/09/16	Silica	20211222-1	0/4[4]	220106Q3	Yes[4]	4/4	220107Q3	eSACO3	0/8	220114Q5
RAC-03-A	ED20210117	2021/09/16	Silica	20211222-1	4/4	220106Q3	No	N/A	N/A	eSACO3	1/8	220114Q5
RAC-03-B	ED20210118	2021/09/16	Silica	20211222-1	4/4	220106Q3	No	N/A	N/A	eSACO3	7/8	220114Q5
RAC-03-B	ED20210119	2021/09/16	Silica	20211222-1	4/4	220106Q3	No	N/A	N/A	eSACO3	1/8	220114Q5
RAC-02-A	ED20210120	2021/09/16	Silica	20211222-1	4/4	220106Q3	No	N/A	N/A	eSACO3	8/8	220114Q5
RAC-02-B	ED20210121	2021/09/16	Silica	20211222-1	4/4	220106Q3	No	N/A	N/A	eSACO3	8/8	220114Q5
RAC-02-C	ED20210122	2021/09/16	Silica	20211222-1	4/4	220106Q3	No	N/A	N/A	eSACO3	6/8	220114Q6
DW03-C	ED20210123	2021/09/16	Silica	20211222-1	N/A	N/A	No	N/A	N/A	eSACO3	N/A	N/A
DW04-C	ED20210124	2021/09/16	Silica	20211222-1	0/4[3]	220106Q3	No	N/A	N/A	eSACO3	N/A	N/A
ICC-01-A	ED20210125	2021/09/16	Silica	20211222-1	4/4	220106Q3	No	N/A	N/A	eSACO3	4/8	220114Q6
ICC-01-B	ED20210126	2021/09/16	Silica	20211222-1	4/4	220106Q3	No	N/A	N/A	eSACO3	2/8	220114Q6
ICC-01-C	ED20210127	2021/09/16	Silica	20211222-1	4/4	220106Q3	No	N/A	N/A	eSACO3	7/8	220114Q6
MOR-05-A	ED20210128	2021/09/16	Silica	20211222-1	4/4	220106Q3	No	N/A	N/A	eSACO3	0/8	220114Q6
MOR-05-B	ED20210129	2021/09/16	Silica	20211222-1	0/4[4]	220107Q3	Yes[4]	4/4	220107Q4	eSACO3	8/8	220114Q6
MOR-05-C	ED20210130	2021/09/16	Silica	20211222-1	0/4[4]	220107Q3	Yes[4]	4/4	220107Q4	eSACO3	0/8	220114Q6
KAC-01-A	ED20210131	2021/09/16	Silica	20211222-1	0/4[4]	220107Q3	Yes[4]	4/4	220107Q4	eSACO3	0/8	220114Q6
KAC-01-B	ED20210132	2021/09/16	Silica	20211222-1	0/4[4]	220107Q3	Yes[4]	4/4	220107Q4	eSACO3	0/8	220114Q6
KAC-01-C	ED20210133	2021/09/16	Silica	20211222-1	0/4[4]	220107Q3	Yes[4]	4/4	220107Q4	eSACO3	0/8	220114Q6
MCC-01-A	ED20210134	2021/09/16	Silica	20211222-1	4/4	220107Q2	No	N/A	N/A	eSACO3	3/8	220118Q1
MCC-01-B	ED20210135	2021/09/16	Silica	20211222-1	4/4	220107Q2	No	N/A	N/A	eSACO3	5/8	220118Q1
MCC-01-C	ED20210136	2021/09/16	Silica	20211222-1	4/4	220107Q2	No	N/A	N/A	eSACO3	3/8	220118Q1
MCC-02-A	ED20210137	2021/09/16	Silica	20211222-1	4/4	220107Q2	No	N/A	N/A	eSACO3	8/8	220118Q1
MCC-02-B	ED20210138	2021/09/16	Silica	20211222-1	0/4[4]	220107Q2	Yes[4]	4/4	220107Q3	eSACO3	3/8	220118Q1
MCC-02-C	ED20210139	2021/09/16	Silica	20211222-1	4/4	220107Q2	No	N/A	N/A	eSACO3	8/8	220118Q1
PLC-01-A	ED20210140	2021/09/16	Silica	20211222-1	0/4[4]	220107Q2	Yes[4]	4/4	220107Q4	eSACO3	0/8	220118Q1
PLC-01-B	ED20210141	2021/09/16	Silica	20211222-1	0/4[4]	220107Q2	Yes[4]	4/4	220107Q4	eSACO3	1/8	220118Q1
PLC-01-C	ED20210142	2021/09/16	Silica	20211222-1	0/4[4]	220107Q2	Yes[4]	4/4	220107Q3	eSACO3	0/8	220118Q1
KLC-01-A	ED20210143	2021/09/16	Silica	20211222-1	4/4	220107Q2	No	N/A	N/A	eSACO3	8/8	220118Q1
KLC-01-B	ED20210144	2021/09/16	Silica	20211222-1	4/4	220107Q2	No	N/A	N/A	eSACO3	7/8	220113Q2
KLC-01-C	ED20210145	2021/09/16	Silica	20211222-1	4/4	220107Q2	No	N/A	N/A	eSACO3	8/8	220113Q2
JER-02-A	ED20210146	2021/09/16	Silica	20211222-1	0/4[4]	220107Q2	Yes[4]	4/4	220107Q3	eSACO3	1/8	220113Q2
JER-02-B	ED20210147	2021/09/16	Silica	20211222-1	2/4[5]	220107Q2	Yes[5]	4/4	220107Q3	eSACO3	3/8	220113Q2
JER-02-C	ED20210148	2021/09/16	Silica	20211222-1	0/4[4]	220107Q2	Yes[4]	4/4	220107Q4	eSACO3	7/8	220113Q2
JER-01-A	ED20210149	2021/09/16	Silica	20211222-1	4/4	220107Q2	No	N/A	N/A	eSACO3	6/8	220113Q2
JER-01-B	ED20210150	2021/09/16	Silica	20211222-1	4/4	220107Q2	No	N/A	N/A	eSACO3	7/8	220113Q2
JER-01-C	ED20210151	2021/09/16	Silica	20211222-1	4/4	220107Q2	No	N/A	N/A	eSACO3	8/8	220113Q2
GLR-01-A	ED20210152	2021/09/16	Silica	20211222-1	0/4[4]	220107Q2	Yes[4]	4/4	220107Q4	eSACO3	0/8	220113Q2
GLR-01-B	ED20210153	2021/09/16	Silica	20211222-1	0/4[4]	220107Q2	Yes[4]	3/4	220107Q3	eSACO3	0/8	220113Q2
GLR-01-C	ED20210154	2021/09/16	Silica	20211222-1	0/4[4]	220107Q2	Yes[4]	4/4	220107Q3	eSACO3	0/8	220113Q4

[1] **IntegritE-DNA™ Assay:** Four technical replicates were assayed for each eDNA sample. The cut-off Ct value for IntegritE-DNA™ assay was 27 and 30 after clean-up. Results are reported as the number of positive detections (n) out of a total of 4 technical replicates, n/4.

[2] **Target Species Assay:** Eight technical replicates were assayed per eDNA sample. The cut-off Ct value for target species assay was 50. Results are reported as the number of positive detections (n) out of a total of 8 technical replicates, n/8.

[3] The IntegritE-DNA™ assay failed, and cleanup is not required for the field blank sample.

[4] The IntegritE-DNA™ assay failed, and cleanup is required.

[5] The IntegritE-DNA™ assay did not fail, but the amplification was weak, possibly indicating inhibition.

[6] eSACO3: qPCR primer/probe assay to assess the presence of Bull Trout (*Salvelinus confluentus*) eDNA

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GENERAL COMMENTS

eDNA is extracted (150 µL) from a quarter of filter, and 2 µL is used as a template for each technical replicate.

T1SMR-02-B and T1SMR-03-C were labeled T1SMR-01-B and T1SMR-01-C on their envelopes.
The DW03-C had been listed on COC 20211210-2, but not on the COC 20211222-1. The Bureau Veritas (Guelph laboratory) did not receive the DW03-C sample.

Results relate only to the items tested.

QUALITY ASSURANCE REPORT

			eDNA Isolation Negative Control[1]		qPCR Positive Controls[2]		qPCR Negative Controls[3]	
QC Batch	Parameter	Date	Detection at: Ct 27 (IntegritE-DNA™) Ct 50 (other assays)	Pass/Fail	Detection at: Ct 27 (IntegritE-DNA™) Ct 50 (other assays)	Pass/Fail	Detection at: Ct 27 (IntegritE-DNA™) Ct 50 (other assays)	Pass/Fail
211218Q1	IntegritE-DNA	2021/12/18	0 of 4 technical replicates	Pass	2 of 2 technical replicates	Pass	0 of 4 technical replicates	Pass
211218Q2	IntegritE-DNA	2021/12/18	0 of 4 technical replicates	Pass	2 of 2 technical replicates	Pass	0 of 4 technical replicates	Pass
211220Q9	IntegritE-DNA	2021/12/20	0 of 4 technical replicates	Pass	2 of 2 technical replicates	Pass	0 of 4 technical replicates	Pass
211221Q5	IntegritE-DNA	2021/12/21	0 of 4 technical replicates	Pass	2 of 2 technical replicates	Pass	0 of 4 technical replicates	Pass
211231Q5	IntegritE-DNA	2021/12/31	0 of 4 technical replicates	Pass	2 of 2 technical replicates	Pass	0 of 4 technical replicates	Pass
220106Q3	IntegritE-DNA	2022/01/06	0 of 4 technical replicates	Pass	2 of 2 technical replicates	Pass	0 of 4 technical replicates	Pass
220107Q2	IntegritE-DNA	2022/01/07	0 of 4 technical replicates	Pass	2 of 2 technical replicates	Pass	0 of 4 technical replicates	Pass
220105Q1	IntegritE-DNA	2022/01/05	eDNA Isolation Negative Control is assessed using IntegritE-DNA only once for each extraction batch.	N/A	2 of 2 technical replicates	Pass	0 of 4 technical replicates	Pass
220107Q3	IntegritE-DNA	2022/01/07			2 of 2 technical replicates	Pass	0 of 4 technical replicates	Pass
220107Q4	IntegritE-DNA	2022/01/07			2 of 2 technical replicates	Pass	0 of 4 technical replicates	Pass
211221Q7	eONTS5	2021/12/21			2 of 2 technical replicates	Pass	0 of 8 technical replicates	Pass
211222Q1	eONTS5	2021/12/22			2 of 2 technical replicates	Pass	0 of 8 technical replicates	Pass
211222Q2	eONTS5	2021/12/22			2 of 2 technical replicates	Pass	0 of 8 technical replicates	Pass
211222Q3	eONTS5	2021/12/22			2 of 2 technical replicates	Pass	0 of 8 technical replicates	Pass
211222Q5	eONTS5	2021/12/22			2 of 2 technical replicates	Pass	0 of 8 technical replicates	Pass
220104Q3	eONTS5	2022/01/04			2 of 2 technical replicates	Pass	0 of 8 technical replicates	Pass
220110Q1	eONTS5	2022/01/10			2 of 2 technical replicates	Pass	0 of 8 technical replicates	Pass
220111Q1	eONTS5	2022/01/11			2 of 2 technical replicates	Pass	0 of 8 technical replicates	Pass
220111Q2	eONTS5	2022/01/11			2 of 2 technical replicates	Pass	0 of 8 technical replicates	Pass
220113Q1	eONTS5	2022/01/13			2 of 2 technical replicates	Pass	0 of 8 technical replicates	Pass
220113Q3	eONTS5	2022/01/13			2 of 2 technical replicates	Pass	0 of 8 technical replicates	Pass
211223Q1	eSACO3	2021/12/23			2 of 2 technical replicates	Pass	0 of 8 technical replicates	Pass
211223Q2	eSACO3	2021/12/23			2 of 2 technical replicates	Pass	0 of 8 technical replicates	Pass
211223Q3	eSACO3	2021/12/23			2 of 2 technical replicates	Pass	0 of 8 technical replicates	Pass
211223Q4	eSACO3	2021/12/23			2 of 2 technical replicates	Pass	0 of 8 technical replicates	Pass
211223Q5	eSACO3	2021/12/23			2 of 2 technical replicates	Pass	0 of 8 technical replicates	Pass
220104Q4	eSACO3	2022/01/04			2 of 2 technical replicates	Pass	0 of 8 technical replicates	Pass
220113Q2	eSACO3	2022/01/13			2 of 2 technical replicates	Pass	0 of 8 technical replicates	Pass
220113Q4	eSACO3	2022/01/13			2 of 2 technical replicates	Pass	0 of 8 technical replicates	Pass
220114Q5	eSACO3	2022/01/14			2 of 2 technical replicates	Pass	0 of 8 technical replicates	Pass
220114Q6	eSACO3	2022/01/14			2 of 2 technical replicates	Pass	0 of 8 technical replicates	Pass
220118Q1	eSACO3	2022/01/18			2 of 2 technical replicates	Pass	0 of 8 technical replicates	Pass

[1] **eDNA Isolation Negative Control:** Blank filters were included for each batch of eDNA extraction to monitor for laboratory contamination during eDNA isolation. eDNA Isolation Negative Control is assessed using IntegritE-DNA™ only. QC results show no eDNA was isolated from the negative control, therefore there was no indication of sample contamination during handling. Acceptance criteria: 0 of 4 technical replicates

[2] **qPCR Positive Controls:** Two technical replicates of isolated eDNA from freshwater sample were used as positive controls for IntegritE-DNA™. Two technical replicates of total DNA or synthetic DNA from the target species were used as positive controls for eDNA assays. Results show that 100% of the technical replicates amplified the positive control eDNA as expected, therefore an observation of negative result in eDNA samples is not related to the qPCR performance. Acceptance criteria: 2 of 2 technical replicates

[3] **qPCR Negative Controls (Ultrapure water):** Four technical replicates for IntegritE-DNA™ and eight technical replicates for target species or genera were used to monitor for laboratory contamination. Results show that 0% of the technical replicates in the negative controls had amplified eDNA, indicating no contamination was detected. Acceptance criteria: 0 of 4 technical replicates for IntegritE-DNA™, and 0 of 8 technical replicates for other assays.

BV JOB #: E20211210-2 & E20211222-1
Report Date: 2022/01/18
Report #: ED20220118

Client Name: EDI Environmental Dynamics Inc.
Client Project #: 20Y0408
Site Location: Swift River
Sampler Initials: PS

LABORATORY RESULTS VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Reporter: ALI MIRABZADEH, M.Sc.
Scientific Specialist, Bureau Veritas Laboratories, DNA Services

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Reviewer: APINYA SATRUPINAS
Analyst II, Bureau Veritas Laboratories, DNA Services

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Chinook Salmon (*Oncorhynchus tschawytscha*) eDNA Assay Validation Information

eDNA assay Validation

All eDNA assays are validated through a rigorous multi-step evaluation protocol that includes tests of DNA target specificity and amplification sensitivity. All eDNA tests available at Bureau Veritas Laboratories have been validated for performance using interlaboratory verification.

General eDNA Assay Information

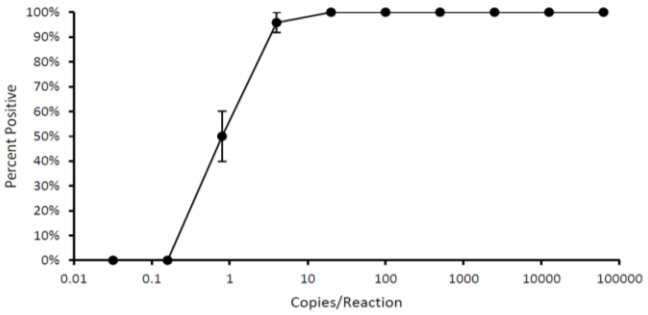
Target Species	Chinook Salmon (*Oncorhynchus tschawytscha*)
Species Abbreviation	ONTS
eDNA qPCR Primer/Probe set	eONTS5
eDNA qPCR Format	TaqMan

eDNA Assay Specificity Tests

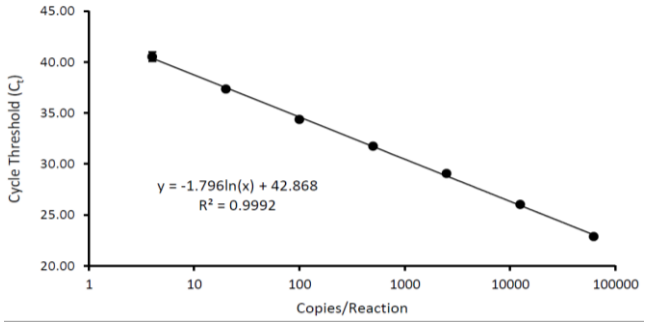
qPCR Activity: Multi-species analysis of eDNA assay efficiency

Multiple qPCR reactions (n=25) performed per target DNA. Detection within the standardized eDNA qPCR assay = Yes										
ONTS	ONKI	ONNE	ONGO	ONKE	ONMY	ONCL	THAR	LICA	HOSA	NTC
Yes	No	No	No	No	No	No	No	No	No	No

eDNA Assay Sensitivity Test using gBlocks™ synthetic DNA



>100 copies/reaction were tested with n=8 technical replicates.
≤100 copies/reaction were tested with n=24 technical replicates.



The relationship between Cycle Threshold and Copy Number does not necessarily remain linear when fewer than 100% of technical replicates are positive.

Abbreviations

eDNA	environmental DNA
gDNA	Total Genomic DNA extracted from voucher specimen tissue or swabs
HOSA	Human (*Homo sapiens*)
LICA	Bullfrog (*Lithobates (Rana) catesbeiana*)
NTC	qPCR no template control
ONCL	Cutthroat Trout (*Oncorhynchus clarkii*)
ONGO	Pink Salmon (*Oncorhynchus gorbuscha*)
ONKE	Chum Salmon (*Oncorhynchus keta*)
ONKI	Coho Salmon (*Oncorhynchus kisutch*)
ONMY	Rainbow Trout (*Oncorhynchus mykiss*)
ONNE	Sockeye Salmon (*Oncorhynchus nerka*)
ONTS	Chinook Salmon(*Oncorhynchus tshawytscha*)
qPCR	quantitative real-time polymerase chain reaction
THAR	Arctic Grayling (*Thymallus arcticus*)

References

1. Hobbs, J, Adams, IT, Round, JM, Goldberg, CS, Allison, MJ, Bergman, LC, Mirabzadeh, A, Allen, H, Helbing, CC (2020) Revising the range of Rocky Mountain tailed frog, Ascaphus montanus, in British Columbia, Canada, using environmental DNA methods. Environmental DNA. 2020; 00: 1– 12. https://doi.org/10.1002/edn3.82
2. Hobbs, J, Round, JM, Allison, MJ, Helbing, CC (2019) Expansion of the known distribution of the coastal tailed frog, Ascaphus truei, in British Columbia, Canada, using robust eDNA detection methods. PLOS ONE 14(3): e0213849.
3. Klymus, KE, Merkes, CM, Allison, MJ, Goldberg, CS, Helbing, CC, Hunter, ME, Jackson, CA, Lance, RF, Mangan, AM, Monroe, EM, Piaggio, AJ, Stokdyk, JP, Wilson, CC, Richter, CA (2019) Reporting the limits of detection and quantification for
4. Veldhoen N, Hobbs J, Ikonomou G, Hii M, Lesperance M, Helbing, CC (2016) Implementation of novel design features for qPCR-based eDNA assessment. PLOS ONE 11(11): e0164907. https://doi.org/10.1371/journal.pone.0164907

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BV JOB #: E20211210-2 & E20211222-1
Report Date: 2022/01/18
Report #: ED20220118

Client Name: EDI Environmental Dynamics Inc.
Client Project #: 20Y0408
Site Location: Swift River
Sampler Initials: PS

Bull Trout (Salvelinus confluentus) eDNA Assay Validation Information

eDNA assay Validation

All eDNA assays are validated through a rigorous multi-step evaluation protocol that includes tests of DNA target specificity and amplification sensitivity. All eDNA tests available at Bureau Veritas Laboratories have been validated for performance using interlaboratory verification.

General eDNA Assay Information

Target Species: Bull Trout (*Salvelinus confluentus*)
Species Code: te-SACO
eDNA qPCR Tool: eSACO3
eDNA qPCR Format: TaqMan
Gene Target: NC-ITS1
Published in: N/A

eDNA Assay Sensitivity Test using gBlocks™ synthetic DNA

LOD **0.5** 95% CI **0.3-1.1** Copies LOQ **2** 95% CI **1.3-4.2** Copies
LOB **0** hits/8

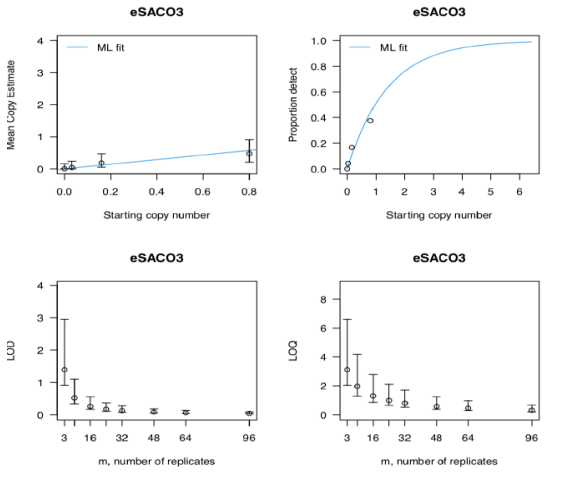
Binomial-Poisson model for 8 technical replicates
Determined using eLowQuant R code[4].

eDNA Assay Specificity Test Information

Each qPCR reaction in the specificity assay contained 10 picograms of voucher target gDNA (n=25 technical replicates)

Species	Common Name (Species)	Detection	# Voucher Specimens	Sample Sources/Locations
ma-HOSA	Human (*Homo sapiens*)	No	1	Netherlands
te-COCO	Slimy Sculpin (*Cottus cognatus*)	No	1	Yukon
te-ESLU	Northern Pike (*Esox lucius*)	No*	1	British Columbia
te-MIDO	Smallmouth Bass (*Micropterus dolomieu*)	No	1	British Columbia
te-MISA	Largemouth Bass (*Micropterus salmoides*)	No	1	British Columbia
te-ONCL	Cutthroat Trout (*Oncorhynchus clarkii*)	No	1	British Columbia
te-ONGO	Pink Salmon (*Oncorhynchus gorbuscha*)	No	1	British Columbia
te-ONKE	Chum Salmon (*Oncorhynchus keta*)	No	1	British Columbia
te-ONKI	Coho Salmon (*Oncorhynchus kisutch*)	No	1	British Columbia
te-ONMY	Rainbow Trout (*Oncorhynchus mykiss*)	No	1	Alberta and British Columbia
te-ONNE	Sockeye Salmon (*Oncorhynchus nerka*)	No	1	British Columbia
te-ONTS	Chinook Salmon (*Oncorhynchus tschawytscha*)	No	1	British Columbia
te-PRCY	Round Whitefish (*Prosopium cylindraceum*)	No	1	Yukon
te-SACO	Bull Trout (*Salvelinus confluentus*)	Yes	1	Alberta
te-SAMA	Dolly Varden (*Salvelinus malma*)	No	1	British Columbia
te-SASA	Atlantic Salmon (*Salmo Salar*)	No	1	Nova Scotia
te-THAR	Arctic Grayling (*Thymallus arcticus*)	No	1	Alberta
te-THPA	Eulachon (*Thaleichthys pacificus*)	No	1	British Columbia

eDNA Assay Sensitivity Test Details using gBlocks™ synthetic DNA



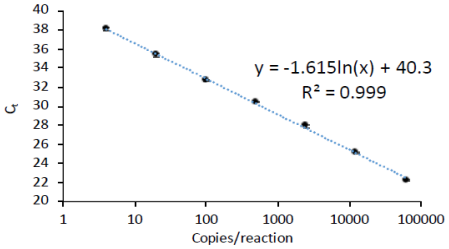
Binomial-Poisson model: No intercept
Determined using eLowQuant R code[4].
Based on a 2 µL DNA input in a total 15 µL reaction

From 8 Technical Replicates

# Detects	# Copies	SE
0	0	0
1	0.19	0.19
2	0.4	0.3
3	0.66	0.42
4	0.97	0.56
5	1.37	0.74
6	1.93	1
7	2.9	1.52

Determined using eLowQuant R code[4].

Applied to reactions with 100% positive hits



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Field Sample Validation

Sample Type	Known presence	# Samples	Detected	Location
N/A	N/A	N/A	N/A	N/A

Abbreviations

95% CI	95% Confidence interval	LOQ	Limit of quantification
eDNA	Environmental DNA	NC-ITS1	Nuclear internal transcribed spacer 1 gene
gDNA	Total genomic DNA extracted from voucher specimen	NTC	qPCR no template control
LOB	Limit of blank	qPCR	Quantitative real-time polymerase chain reaction
LOD	Limit of detection	SE	Standard error

References

1. Hobbs, J, Adams, IT, Round, JM, Goldberg, CS, Allison, MJ, Bergman, LC, Mirabzadeh, A, Allen, H, Helbing, CC (2020) Revising the range of Rocky Mountain tailed frog, Ascaphus montanus , in British Columbia, Canada, using environmental DNA methods. Environmental DNA. 2020; 2: 350-361. https://doi.org/10.1002/edn3.82
2. Hobbs, J, Round, JM, Allison, MJ, Helbing, CC (2019) Expansion of the known distribution of the coastal tailed frog, Ascaphus truei , in British Columbia, Canada, using robust eDNA detection methods. PLOS ONE 14(3): e0213849. https://doi.org/10.1371/journal.pone.0213849
3. Langlois, VS, Allison, MJ, Bergman, LC, To, TA, and Helbing, CC (2020) The need for robust qPCR-based eDNA detection assays in environmental monitoring and risk assessments. Environmental DNA, 3: 519-527. doi: 10.1002/edn3.164
4. Lesperance, M, Allison, MJ, Bergman, LC, Hocking, MD, and Helbing, CC (2021) A statistical model for calibration and computation of detection and quantification limits for low copy number environmental DNA samples. Environmental DNA, 00: 1-12. doi: 10.1002/edn3.220

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BV JOB #: E20211210-2 & E20211222-1
Report Date: 2022/01/18
Report #: ED20220118

Client Name: EDI Environmental Dynamics Inc.
Client Project #: 20Y0408
Site Location: Swift River
Sampler Initials: PS

From Canada, send to:
Bureau Veritas, DNA Services
335 Laird Rd #2
Guelph, ON N1G 4P7
eDNA@bureauveritas.com

From USA, send to:
Bureau Veritas
240 Portage Rd
Po Box 670, PMB 19
Lewiston NY 149092-1604

ENVIRONMENTAL DNA (eDNA) CHAIN OF CUSTODY RECORD

COC 20211210-2

«An incomplete or incorrect form may lead to delays in testing»

1 Invoice Information (Required)	2 Report Information (if differs from invoice)	3 Project Information (where applicable)	4 Turnaround Time (TAT) (Required)
Company Name: EDI Environmental Dynamics Inc.	Company Name:	Quotation #:	Regular TAT (Most analyses)
Contact Name: Ben Schonewille	Contact Name:	P.O. #:	☐ 10 business days (Sample # ≤50)
Address: 2195 Second Avenue, Whitehorse, YT	Address:	Project #: 20Y0408	☒ 15 business days (Sample # > 50)
Phone: 867-393-4882 Fax:	Phone: Fax:	Site Location: Swift River	From date received
Email:	Email:	Sampled By: Petra Szekeres	PLEASE REQUEST RUSH FROM CUSTOMER SERVICE
		Note:	Rush TAT (Surcharges will be applied)
			☐ 5 business days (Sample # ≤50)
			☐ 10 business days (Sample # > 50)
			From date received

eDNA ANALYSIS

5 IMPORTANT INFORMATION

- Water samples should be kept cool and filtered as soon as possible (within 24 hours of collection).
- Cellulose Nitrate (CN) filter is recommended to use for eDNA test because of higher eDNA recovery.
- Preserve filter in self-indicating silica beads (2-4 mm diameter) or molecular grade ethanol (95 to 100%) immediately following sample filtration.

6 CLIENT SPECIAL INSTRUCTIONS

Number	7 Sample identification	8 Date Sampled (YYYY/MM/DD)	9 Date Filtered and Preserved (YYYY/MM/DD)	10 Filter Material	11 Filter Size (Diameter)	12 Filter Pore Size (µm)	13 Preservation Method (Ethanol / Silica)	14 Assays Requested[1]	15 Comments
1	T1SWR01-A	2021-08-18	2021-08-18	CN	47	0.45	Silica	ONTS, SACO	2000 mL
2	T1SWR01-B	2021-08-18	2021-08-18	CN	47	0.45	Silica	ONTS, SACO	
3	T1SWR01-C	2021-08-18	2021-08-18	CN	47	0.45	Silica	ONTS, SACO	
4	T2SWR01-A	2021-08-18	2021-08-18	CN	47	0.45	Silica	ONTS, SACO	
5	T2SWR01-B	2021-08-18	2021-08-18	CN	47	0.45	Silica	ONTS, SACO	
6	T2SWR01-C	2021-08-18	2021-08-18	CN	47	0.45	Silica	ONTS, SACO	
7	SWR05-A	2021-08-18	2021-08-18	CN	47	0.45	Silica	ONTS, SACO	
8	SWR05-B	2021-08-18	2021-08-18	CN	47	0.45	Silica	ONTS, SACO	
9	SWR05-C	2021-08-18	2021-08-18	CN	47	0.45	Silica	ONTS, SACO	
10	RAR01-A	2021-08-18	2021-08-18	CN	47	0.45	Silica	ONTS, SACO	
11	RAR01-B	2021-08-18	2021-08-18	CN	47	0.45	Silica	ONTS, SACO	
12	RAR01-C	2021-08-18	2021-08-18	CN	47	0.45	Silica	ONTS, SACO	
13	DW01-A	2021-08-18	2021-08-18	CN	47	0.45	Silica	ONTS, SACO	
14	T3SWR-1-A	2021-08-27	2021-08-27	CN	47	0.45	Silica	ONTS, SACO	
15	T3SWR-1-B	2021-08-27	2021-08-27	CN	47	0.45	Silica	ONTS, SACO	
16	T3SWR-1-C	2021-08-27	2021-08-27	CN	47	0.45	Silica	ONTS, SACO	
17	SWR04-B-A	2021-08-27	2021-08-27	CN	47	0.45	Silica	ONTS, SACO	
18	SWR04-B-B	2021-08-27	2021-08-27	CN	47	0.45	Silica	ONTS, SACO	
19	SWR04-B-C	2021-08-27	2021-08-27	CN	47	0.45	Silica	ONTS, SACO	
20	SEC-01-A	2021-08-27	2021-08-27	CN	47	0.45	Silica	ONTS, SACO	

16 RELINQUISHED BY: (Signature/Print)	17 DATE: (YYYY/MM/DD)	18 TIME: (HH:MM)	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)
Alex deBruyn	2021-~~12-01~~ 11/30	~~7:30~~ 16:00	SK-AM Mirab Zadeh	For Lab Use Only 2021/12/10	2:40

[1] See instruction guide for the available eDNA assays at Bureau Veritas.

BV JOB #: E20211210-2 & E20211222-1
Report Date: 2022/01/18
Report #: ED20220118

Client Name: EDI Environmental Dynamics Inc.
Client Project #: 20Y0408
Site Location: Swift River
Sampler Initials: PS

From Canada, send to:
Bureau Veritas, DNA Services
335 Laird Rd #2
Guelph, ON N1G 4P7
eDNA@bureauveritas.com

From USA, send to:
Bureau Veritas
240 Portage Rd
Po Box 670, PMB 19
Lewiston NY 149092-1604

ENVIRONMENTAL DNA (eDNA) CHAIN OF CUSTODY RECORD

‹‹‹An incomplete or incorrect form may lead to delays in testing›››

1 Invoice Information (Required)	2 Report Information (if differs from invoice)	3 Project Information (where applicable)	4 Turnaround Time (TAT) (Required)
Company Name: EDI Environmental Dynamics Inc.	Company Name:	Quotation #:	Regular TAT (Most analyses)
Contact Name: Ben Schonewille	Contact Name:	P.O. #:	[ ] 10 business days (Sample # ≤50)
Address: 2195 Second Avenue	Address:	Project #: 20Y0408	[x] 15 business days (Sample # > 50)
Whitehorse, YT		Site Location: Swift River	From date received
Phone: 867-393-4882 Fax:	Phone: Fax:	Sampled By: Petra Szekeres	***PLEASE REQUEST RUSH FROM CUSTOMER SERVICE***
Email:	Email:	Note:	Rush TAT (Surcharges will be applied)
			[ ] 5 business days (Sample # ≤50)
			[ ] 10 business days (Sample # > 50)
			From date received

eDNA ANALYSIS

5 IMPORTANT INFORMATION

- Water samples should be kept cool and filtered as soon as possible (within 24 hours of collection).
- Cellulose Nitrate (CN) filter is recommended to use for eDNA test because of higher eDNA recovery.
- Preserve filter in self-indicating silica beads (2-4 mm diameter) or molecular grade ethanol (95 to 100%) immediately following sample filtration.

6 CLIENT SPECIAL INSTRUCTIONS

Number	7 Sample identification	8 Date Sampled (YYYY/MM/DD)	9 Date Filtered and Preserved (YYYY/MM/DD)	10 Filter Material	11 Filter Size (Diameter)	12 Filter Pore Size (µm)	13 Preservation Method (Ethanol / Silica)	14 Assays Requested[1]	15 Comments
1	SEC-01-B	2021-08-27	2021-08-27	CN	47	0.45	Silica	ONTS, SACO	
2	SEC-01-C	2021-08-27	2021-08-27	CN	47	0.45	Silica	ONTS, SACO	
3	SWR03-C-A	2021-08-27	2021-08-27	CN	47	0.45	Silica	ONTS, SACO	
4	SWR03-C-B	2021-08-27	2021-08-27	CN	47	0.45	Silica	ONTS, SACO	
5	SWR03-C-C	2021-08-27	2021-08-27	CN	47	0.45	Silica	ONTS, SACO	
6	PAC-01-A	2021-08-27	2021-08-27	CN	47	0.45	Silica	ONTS, SACO	
7	PAC-01-B	2021-08-27	2021-08-27	CN	47	0.45	Silica	ONTS, SACO	
8	PAC-01-C	2021-08-27	2021-08-27	CN	47	0.45	Silica	ONTS, SACO	
9	T4SWR-01-A	2021-08-27	2021-08-27	CN	47	0.45	Silica	ONTS, SACO	
10	T4SWR-01-B	2021-08-27	2021-08-27	CN	47	0.45	Silica	ONTS, SACO	
11	T4SWR-01-C	2021-08-27	2021-08-27	CN	47	0.45	Silica	ONTS, SACO	
12	SWR03-A	2021-08-27	2021-08-27	CN	47	0.45	Silica	ONTS, SACO	
13	SWR03-B	2021-08-27	2021-08-27	CN	47	0.45	Silica	ONTS, SACO	
14	SWR03-C	2021-08-27	2021-08-27	CN	47	0.45	Silica	ONTS, SACO	
15	SWR03-B-A	2021-08-27	2021-08-27	CN	47	0.45	Silica	ONTS, SACO	
16	SWR03-B-B	2021-08-27	2021-08-27	CN	47	0.45	Silica	ONTS, SACO	
17	SWR03-B-C	2021-08-27	2021-08-27	CN	47	0.45	Silica	ONTS, SACO	
18	SCC-01-A	2021-08-27	2021-08-27	CN	47	0.45	Silica	ONTS, SACO	
19	SCC-01-B	2021-08-27	2021-08-27	CN	47	0.45	Silica	ONTS, SACO	
20	SCC-01-C	2021-08-27	2021-08-27	CN	47	0.45	Silica	ONTS, SACO	

16 RELINQUISHED BY: (Signature/Print)	17 DATE: (YYYY/MM/DD)	18 TIME: (HH:MM)	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)
Alex deBruyn	~~2021-12-01~~ 11/30	~~7:30~~ 16:00	For Lab Use Only		

[1] See instruction guide for the available eDNA assays at Bureau Veritas.

Unit 2 - 335 Laird Road
Guelph, ON N1G 4P7

Phone: (519) 836-2400
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Fax: (519) 836-4218
www.bvlabs.com

BV JOB #: E20211210-2 & E20211222-1
Report Date: 2022/01/18
Report #: ED20220118

Client Name: EDI Environmental Dynamics Inc.
Client Project #: 20Y0408
Site Location: Swift River
Sampler Initials: PS

Bureau Veritas
CD-00441/13
CHAIN OF ODY RECORD

From Canada, send to:
Bureau Veritas, DNA Services
335 Laird Rd #2
Guelph, ON N1G 4P7
eDNA@bureauveritas.com

From USA, send to:
Bureau Veritas
240 Portage Rd
Po Box 670, PMB 19
Lewiston NY 149092-1604

ENVIRONMENTAL DNA (eDNA) CHAIN OF CUSTODY RECORD

Page 3 of 5

«««An incomplete or incorrect form may lead to delays in testing»»»

COC20211210-2

1 Invoice Information (Required)	2 Report Information (if differs from invoice)	3 Project Information (where applicable)	4 Turnaround Time (TAT) (Required)
Company Name: EDI Environmental Dynamics Inc.	Company Name:	Quotation #:	Regular TAT (Most analyses)
Contact Name: Ben Schonewille	Contact Name:	P.O. #:	[ ] 10 business days (Sample # ≤50)
Address: 2195 Second Avenue	Address:	Project #: 20Y0408	[x] 15 business days (Sample # > 50)
Whitehorse, YT		Site Location: Swift River	From date received
Phone: 867-393-4882 Fax:	Phone: Fax:	Sampled By: Petra Szekeres	PLEASE REQUEST RUSH FROM CUSTOMER SERVICE
Email:	Email:	Note:	Rush TAT (Surcharges will be applied)
			[ ] 5 business days (Sample # ≤50)
			[ ] 10 business days (Sample # > 50)
			From date received

eDNA ANALYSIS

5 IMPORTANT INFORMATION
- Water samples should be kept cool and filtered as soon as possible (within 24 hours of collection).
- Cellulose Nitrate (CN) filter is recommended to use for eDNA test because of higher eDNA recovery.
- Preserve filter in self-indicating silica beads (2-4 mm diameter) or molecular grade ethanol (95 to 100%) immediately following sample filtration.

6 CLIENT SPECIAL INSTRUCTIONS

Number	7 Sample identification	8 Date Sampled (YYYY/MM/DD)	9 Date Filtered and Preserved (YYYY/MM/DD)	10 Filter Material	11 Filter Size (Diameter)	12 Filter Pore Size (µm)	13 Preservation Method (Ethanol / Silica)	14 Assays Requested[1]	15 Comments
1	DW02	2021-08-27	2021-08-27	CN	47	0.45	Silica	ONTS, SACO	
2	SWR04-A	2021-08-27	2021-08-27	CN	47	0.45	Silica	ONTS, SACO	
3	SWR04-B	2021-08-27	2021-08-27	CN	47	0.45	Silica	ONTS, SACO	
4	SWR04-C	2021-08-27	2021-08-27	CN	47	0.45	Silica	ONTS, SACO	
5	SMR-02-A	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	Not received 2021/12/10 AM
6	SMR-02-B	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
7	SMR-02-C	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
8	SMR-04-A	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
9	SMR-04-B	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
10	SMR-04-C	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
11	T1SMR-01-A	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
12	T1SMR-02-B	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
13	T1SMR-03-C	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
14	SMR-05-A	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
15	SMR-05-B	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
16	SMR-05-C	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
17	SMR-06-A	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
18	SMR-06-B	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
19	SMR-06-C	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
20	RAC-03-A	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	

16 RELINQUISHED BY: (Signature/Print)	17 DATE: (YYYY/MM/DD)	18 TIME: (HH:MM)	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)
Alex deBruyn	~~2021-12-01~~ 11/30	~~7:30~~ 16.00	For Lab Use Only		

[1] See instruction guide for the available eDNA assays at Bureau Veritas.

BV JOB #: E20211210-2 & E20211222-1
Report Date: 2022/01/18
Report #: ED20220118

Client Name: EDI Environmental Dynamics Inc.
Client Project #: 20Y0408
Site Location: Swift River
Sampler Initials: PS

Bureau Veritas
FCD-00441/13
CHAIN OF CUSTODY RECORD

From Canada, send to:
Bureau Veritas, DNA Services
335 Laird Rd #2
Guelph, ON N1G 4P7
eDNA@bureauveritas.com

From USA, send to:
Bureau Veritas
240 Portage Rd
Po Box 670, PMB 19
Lewiston NY 149092-1604

ENVIRONMENTAL DNA (eDNA) CHAIN OF CUSTODY RECORD

‹‹‹An incomplete or incorrect form may lead to delays in testing›››

COC2021 1210-2

1 Invoice Information (Required)	2 Report Information (if differs from invoice)	3 Project Information (where applicable)	4 Turnaround Time (TAT) (Required)
Company Name: EDI Environmental Dynamics Inc.	Company Name:	Quotation #:	Regular TAT (Most analyses)
Contact Name: Ben Schonewille	Contact Name:	P.O. #:	10 business days (Sample # ≤50)
Address: 2195 Second Avenue	Address:	Project #: 20Y0408	x 15 business days (Sample # > 50)
Whitehorse, YT		Site Location: Swift River	From date received
Phone: 867-393-4882 Fax:	Phone: Fax:	Sampled By: Petra Szekeres	PLEASE REQUEST RUSH FROM CUSTOMER SERVICE
Email:	Email:	Note:	Rush TAT (Surcharges will be applied)
			5 business days (Sample # ≤50)
			10 business days (Sample # > 50)
			From date received

eDNA ANALYSIS

5 IMPORTANT INFORMATION

- Water samples should be kept cool and filtered as soon as possible (within 24 hours of collection).
- Cellulose Nitrate (CN) filter is recommended to use for eDNA test because of higher eDNA recovery.
- Preserve filter in self-indicating silica beads (2-4 mm diameter) or molecular grade ethanol (95 to 100%) immediately following sample filtration.

6 CLIENT SPECIAL INSTRUCTIONS

Number	7 Sample Identification	8 Date Sampled (YYYY/MM/DD)	9 Date Filtered and Preserved (YYYY/MM/DD)	10 Filter Material	11 Filter Size (Diameter)	12 Filter Pore Size (µm)	13 Preservation Method (Ethanol / Silica)	14 Assays Requested[1]	15 Comments
1	RAC-03-B	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	Not received 2021/12/10 AM
2	RAC-03-C	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
3	RAC-02-A	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
4	RAC-02-B	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
5	RAC-02-C	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
6	DW03-C	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
7	DW04-C	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
8	ICC-01-A	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
9	ICC-01-B	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
10	ICC-01-C	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
11	MOR-05-A	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
12	MOR-05-B	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
13	MOR-05-C	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
14	KAC-01-A	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
15	KAC-01-B	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
16	KAC-01-C	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
17	MCC-01-A	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
18	MCC-01-B	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
19	MCC-01-C	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
20	MCC-02-A	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	

16 RELINQUISHED BY: (Signature/Print)	17 DATE: (YYYY/MM/DD)	18 TIME: (HH:MM)	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)
Alex deBruyn	~~2021-12-01~~ 11/30	~~7:30~~ 16:00	For Lab Use Only		

[1] See instruction guide for the available eDNA assays at Bureau Veritas.

Unit 2 - 335 Laird Road
Guelph, ON N1G 4P7

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Toll Free: (877) 706-7678
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www.bvna.com

BV JOB #: E20211210-2 & E20211222-1
Report Date: 2022/01/18
Report #: ED20220118

Client Name: EDI Environmental Dynamics Inc.
Client Project #: 20Y0408
Site Location: Swift River
Sampler Initials: PS

Bureau Veritas
FCD-00441/13
CHAIN OF CUSTODY RECORD

From Canada, send to:
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335 Laird Rd #2
Guelph, ON N1G 4P7
eDNA@bureauveritas.com

From USA, send to:
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Lewiston NY 149092-1604

ENVIRONMENTAL DNA (eDNA) CHAIN OF CUSTODY RECORD

«««An incomplete or incorrect form may lead to delays in testing»»» COC-20211210-2

1 Invoice Information (Required)	2 Report Information (if differs from invoice)	3 Project Information (where applicable)	4 Turnaround Time (TAT) (Required)
Company Name: EDI Environmental Dynamics Inc.	Company Name:	Quotation #:	Regular TAT (Most analyses)
Contact Name: Ben Schonewille	Contact Name:	P.O. #:	[ ] 10 business days (Sample # ≤50)
Address: 2195 Second Avenue	Address:	Project #: 20Y0408	[x] 15 business days (Sample # > 50)
Whitehorse, YT		Site Location: Swift River	From date received
Phone: 867-393-4882 Fax:	Phone: Fax:	Sampled By: Petra Szekeres	PLEASE REQUEST RUSH FROM CUSTOMER SERVICE
Email:	Email:	Note:	Rush TAT (Surcharges will be applied)
			[ ] 5 business days (Sample # ≤50)
			[ ] 10 business days (Sample # > 50)
			From date received

eDNA ANALYSIS

5 IMPORTANT INFORMATION

- Water samples should be kept cool and filtered as soon as possible (within 24 hours of collection).
- Cellulose Nitrate (CN) filter is recommended to use for eDNA test because of higher eDNA recovery.
- Preserve filter in self-indicating silica beads (2-4 mm diameter) or molecular grade ethanol (95 to 100%) immediately following sample filtration.

6 CLIENT SPECIAL INSTRUCTIONS

Number	7 Sample identification	8 Date Sampled (YYYY/MM/DD)	9 Date Filtered and Preserved (YYYY/MM/DD)	10 Filter Material	11 Filter Size (Diameter)	12 Filter Pore Size (µm)	13 Preservation Method (Ethanol / Silica)	14 Assays Requested[1]	15 Comments
1	MCC-02-B	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	Not received 2021/12/18 AM
2	MCC-02-C	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
3	PLC-01-A	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
4	PLC-01-B	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
5	PLC-01-C	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
6	KLC-01-A	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
7	KLC-01-B	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
8	KLC-01-C	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
9	JER-02-A	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
10	JER-02-B	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
11	JER-02-C	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
12	JER-01-A	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
13	JER-01-B	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
14	JER-01-C	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
15	GLR-01-A	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
16	GLR-01-B	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
17	GLR-01-C	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
18				CN	47	0.45	Silica	ONTS, SACO	
19				CN	47	0.45	Silica	ONTS, SACO	
20				CN	47	0.45	Silica	ONTS, SACO	

16 RELINQUISHED BY: (Signature/Print)	17 DATE: (YYYY/MM/DD)	18 TIME: (HH:MM)	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)
Alex deBruyn	~~2021-12-01~~ 11/20	~~7:30~~ 16:00	For Lab Use Only		

[1] See instruction guide for the available eDNA assays at Bureau Veritas.

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BV JOB #: E20211210-2 & E20211222-1
Report Date: 2022/01/18
Report #: ED20220118

Client Name: EDI Environmental Dynamics Inc.
Client Project #: 20Y0408
Site Location: Swift River
Sampler Initials: PS

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eDNA@bureauveritas.com

From USA, send to:
Bureau Veritas
240 Portage Rd
Po Box 670, PMB 19
Lewiston NY 149092-1604

ENVIRONMENTAL DNA (eDNA) CHAIN OF CUSTODY RECORD

COC# 20211222-1

«««An incomplete or incorrect form may lead to delays in testing»»»

1 Invoice Information (Required)	2 Report Information (if differs from invoice)	3 Project Information (where applicable)	4 Turnaround Time (TAT) (Required)
Company Name: EDI Environmental Dynamics Inc.	Company Name:	Quotation #:	Regular TAT (Most analyses)
Contact Name: Ben Schonewille	Contact Name:	P.O. #:	10 business days (Sample # ≤50)
Address: 2195 Second Avenue	Address:	Project #: 20Y0408	x 15 business days (Sample # > 50)
Whitehorse, YT		Site Location: Swift River	From date received
Phone: 867-393-4882 Fax:	Phone: Fax:	Sampled By: Petra Szekeres	PLEASE REQUEST RUSH FROM CUSTOMER SERVICE
Email:	Email:	Note:	Rush TAT (Surcharges will be applied)
			5 business days (Sample # ≤50)
			10 business days (Sample # > 50)
			From date received

eDNA ANALYSIS

5 IMPORTANT INFORMATION

- Water samples should be kept cool and filtered as soon as possible (within 24 hours of collection).
- Cellulose Nitrate (CN) filter is recommended to use for eDNA test because of higher eDNA recovery.
- Preserve filter in self-indicating silica beads (2-4 mm diameter) or molecular grade ethanol (95 to 100%) immediately following sample filtration.

6 CLIENT SPECIAL INSTRUCTIONS

Number	7 Sample identification	8 Date Sampled (YYYY/MM/DD)	9 Date Filtered and Preserved (YYYY/MM/DD)	10 Filter Material	11 Filter Size (Diameter)	12 Filter Pore Size (µm)	13 Preservation Method (Ethanol / Silica)	14 Assays Requested[1]	15 Comments
1	SMR-02A	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	2000 mL
2	SMR-02B	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
3	SMR-02C	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
4	SMR-04A	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
5	SMR-04B	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
6	SMR-04C	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
7	T1SMR-01A	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
8	T1SMR-02B	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
9	T1SMR-03C	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
10	SMR-05 A	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
11	SMR-05 B	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
12	SMR-05 C	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
13	SMR-06 A	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
14	SMR-06 B	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
15	SMR-06 C	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
16	RAC-03 A	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
17	RAC-03 B	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
18	RAC-03 C	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
19	RAC-02 A	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
20	RAC-02 B	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	

16 RELINQUISHED BY: (Signature/Print)	17 DATE: (YYYY/MM/DD)	18 TIME: (HH:MM)	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)
Alex deBruyn	2021-12-13	16:00	JN-AM Mirabzadeh	For Lab Use Only 2021/12/22	3:08

[1] See instruction guide for the available eDNA assays at Bureau Veritas.

BV JOB #: E20211210-2 & E20211222-1
Report Date: 2022/01/18
Report #: ED20220118

Client Name: EDI Environmental Dynamics Inc.
Client Project #: 20Y0408
Site Location: Swift River
Sampler Initials: PS

Bureau Veritas
GUE FCD-00441/13
CHAIN OF CUSTODY RECORD

From Canada, send to:
Bureau Veritas, DNA Services
335 Laird Rd #2
Guelph, ON N1G 4P7
eDNA@bureauveritas.com

From USA, send to:
Bureau Veritas
240 Portage Rd
Po Box 670, PMB 19
Lewiston NY 149092-1604

ENVIRONMENTAL DNA (eDNA) CHAIN OF CUSTODY RECORD

«««An incomplete or incorrect form may lead to delays in testing»»» COC 20211222-1

1 Invoice Information (Required)	2 Report Information (if differs from invoice)	3 Project Information (where applicable)	4 Turnaround Time (TAT) (Required)
Company Name: EDI Environmental Dynamics Inc.	Company Name:	Quotation #:	Regular TAT (Most analyses)
Contact Name: Ben Schonewille	Contact Name:	P.O. #:	☐ 10 business days (Sample # ≤50)
Address: 2195 Second Avenue	Address:	Project #: 20Y0408	x 15 business days (Sample # > 50)
Whitehorse, YT		Site Location: Swift River	From date received
Phone: 867-393-4882 Fax:	Phone: Fax:	Sampled By: Petra Szekeres	PLEASE REQUEST RUSH FROM CUSTOMER SERVICE
Email:	Email:	Note:	Rush TAT (Surcharges will be applied)
			☐ 5 business days (Sample # ≤50)
			☐ 10 business days (Sample # > 50)
			From date received

eDNA ANALYSIS

5 IMPORTANT INFORMATION

- Water samples should be kept cool and filtered as soon as possible (within 24 hours of collection).
- Cellulose Nitrate (CN) filter is recommended to use for eDNA test because of higher eDNA recovery.
- Preserve filter in self-indicating silica beads (2-4 mm diameter) or molecular grade ethanol (95 to 100%) immediately following sample filtration.

6 CLIENT SPECIAL INSTRUCTIONS

Number	7 Sample Identification	8 Date Sampled (YYYY/MM/DD)	9 Date Filtered and Preserved (YYYY/MM/DD)	10 Filter Material	11 Filter Size (Diameter)	12 Filter Pore Size (µm)	13 Preservation Method (Ethanol / Silica)	14 Assays Requested[1]	15 Comments
1	RAC-02 C	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
2	DW04-C	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
3	ICC-01 A	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
4	ICC-01 B	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
5	ICC-01 C	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
6	MOR-05 A	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
7	MOR-05 B	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
8	MOR-05 C	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
9	KAC-01 A	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
10	KAC-01 B	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
11	KAC-01 C	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
12	MCC-01 A	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
13	MCC-01 B	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
14	MCC-01 C	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
15	MCC-02 A	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
16	MCC-02 B	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
17	MCC-02 C	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
18	PLC-01 A	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
19	PLC-01 B	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	
20	PLC-01 C	2021-09-16	2021-09-17	CN	47	0.45	Silica	ONTS, SACO	

16 RELINQUISHED BY: (Signature/Print)	17 DATE: (YYYY/MM/DD)	18 TIME: (HH:MM)	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)
Alex deBruyn	2021-12-13	16:00	For Lab Use Only		

[1] See instruction guide for the available eDNA assays at Bureau Veritas.

Unit 2 - 335 Laird Road
Guelph, ON N1G 4P7

Phone: (519) 836-2400
Toll Free: (877) 706-7678
Fax: (519) 836-4218
www.bvna.com

APPENDIX D 2020 AND 2021 SAMPLING SITE MAPS AND RESULTS

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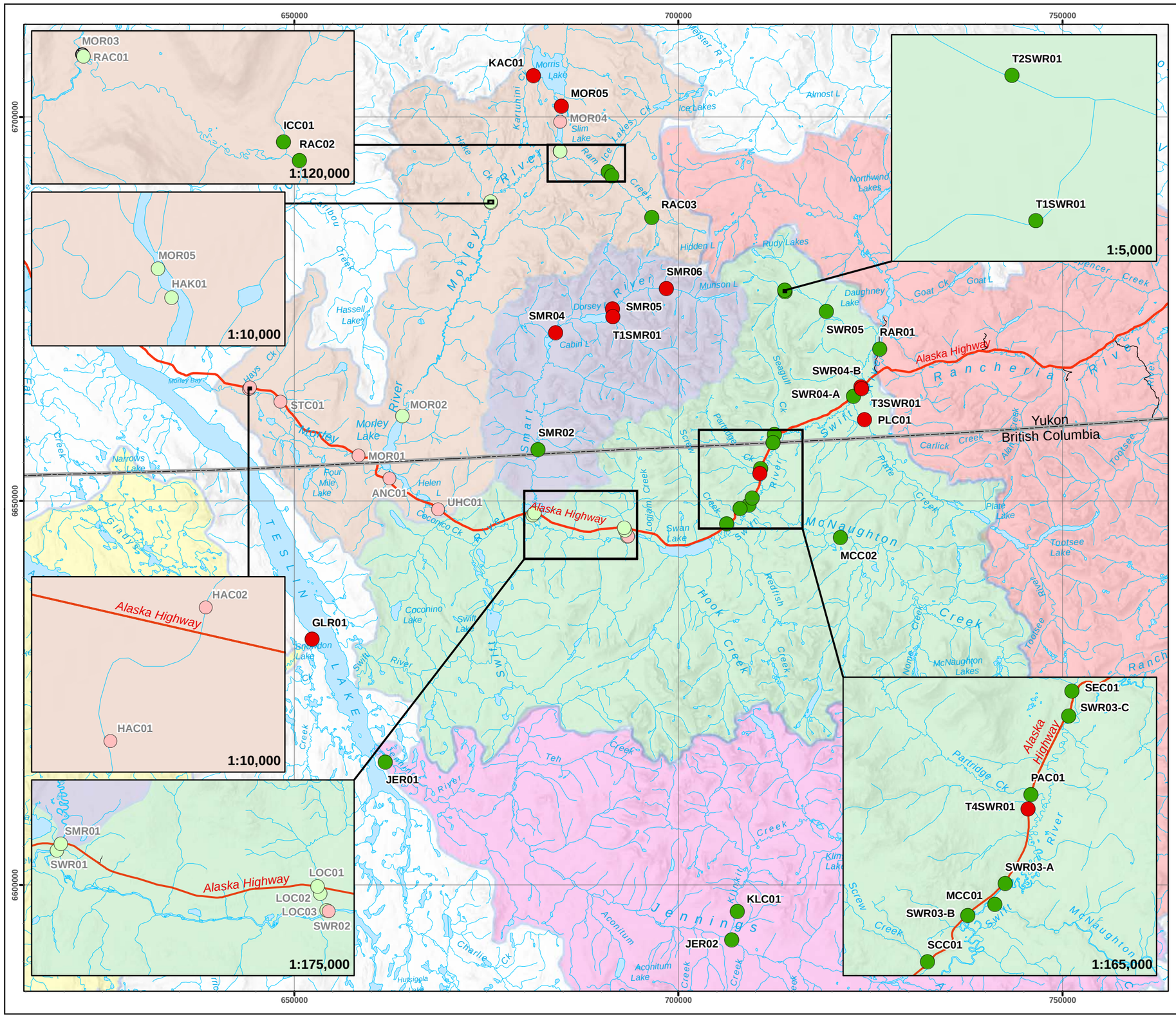
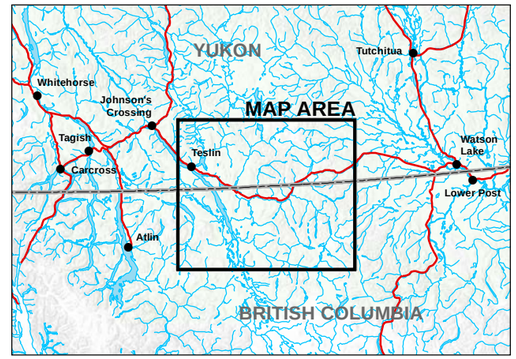




Legend

- Yukon Territorial Border
- Settlement/Community
- Alaska Highway
- Local Road/Access
- Morley River Watershed
- Smart River Watershed
- Swift River Watershed
- Jennings River Watershed
- Rancheria River Watershed
- Gladys River Watershed

eDNA 2021 Bull Trout Sampling Results

- Detected
- Not Detected

eDNA 2020 Bull Trout Sampling Results

- Detected
- Not Detected
- Sampling Error

Bull Trout eDNA 2020 and 2021 Sampling Results

Data Sources

Digital Elevation Model and 1:50,000 and 1:1,000,000 National Topographic Database (NTDB) and satellite imagery provided by Geomatics Yukon - Yukon Government via online source (Corporate Spatial Warehouse) www.geomaticsyukon.ca.

Disclaimer
This document is not an official land survey and the spatial data presented is subject to change.

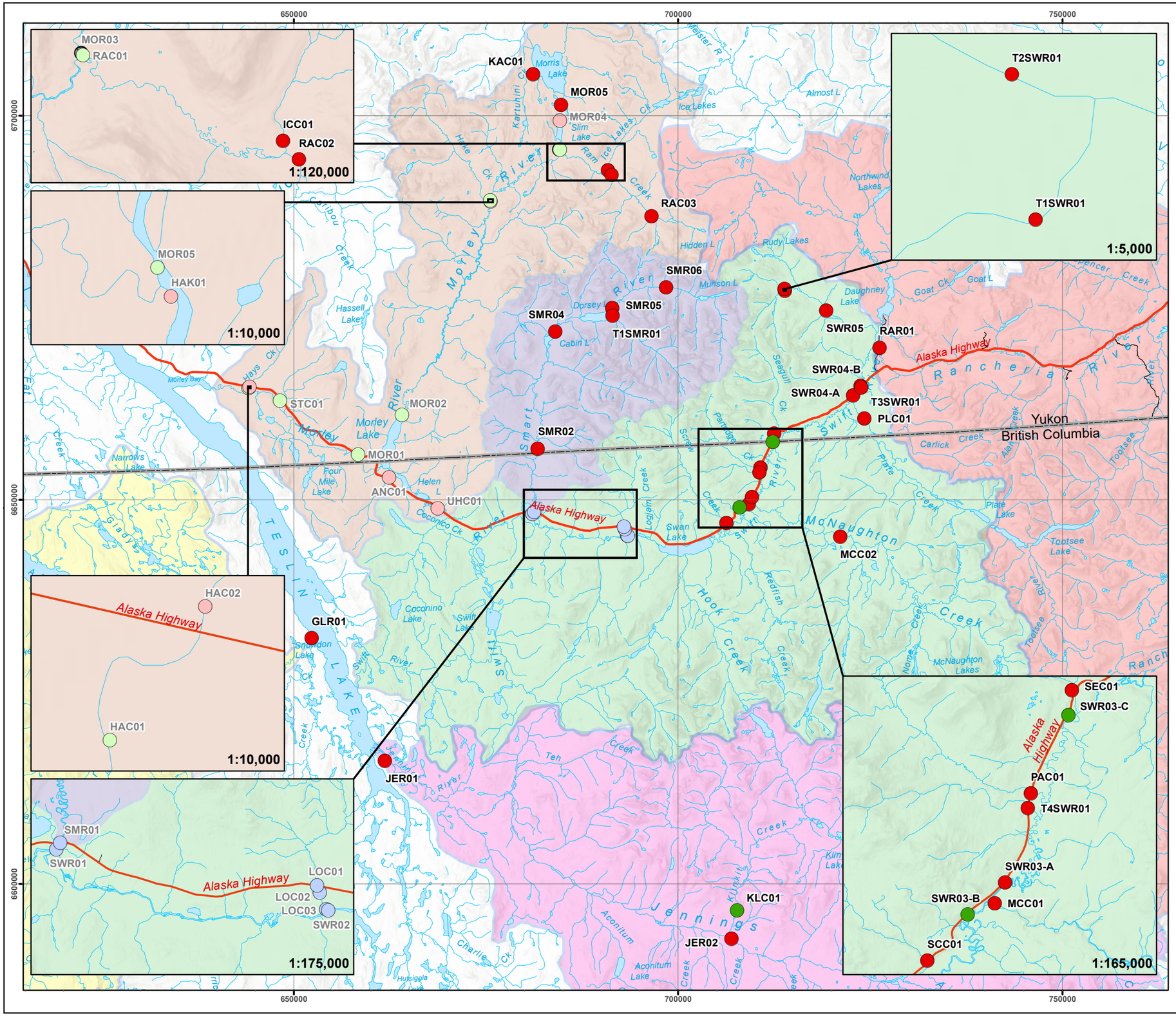
0 5 10 15 20
Kilometres

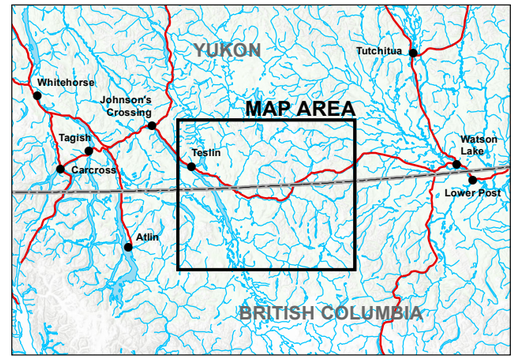
Map Scale = 1:500,000 (printed on 11 x 17)
Map Projection: NAD 1983 UTM Zone 8N

Drawn:	Checked:	Date:	
OL	PS/BSc	2022-03-03	**Appendix Map 1**

EDI

L:\PROJECTS\2020\20y0410_TRRC_BCMapping\2021_Reporting\Map3_BullTroutResults_2020and2021_20220222.mxd





Legend

eDNA 2021 Chinook Sampling Results
- Detected
- Not Detected

eDNA 2020 Chinook Sampling Results
- Detected
- Not Analyzed
- Not Detected
- Sampling Error
- Yukon Territorial Border
- Settlement/Community
- Alaska Highway
- Local Road/Access
- Morley River Watershed
- Smart River Watershed
- Swift River Watershed
- Jennings River Watershed
- Rancheria River Watershed
- Gladys River Watershed

Chinook eDNA 2020 and 2021 Sampling Results

Data Sources

Digital Elevation Model and 1:50,000 and 1:1,000,000 National Topographic Database (NTDB) and satellite imagery provided by Geomatics Yukon - Yukon Government via online source (Corporate Spatial Warehouse) www.geomaticsyukon.ca.

Disclaimer
This document is not an official land survey and the spatial data presented is subject to change.

0 5 10 15 20
Kilometres

Map Scale = 1:500,000 (printed on 11 x 17)
Map Projection: NAD 1983 UTM Zone 8N

Drawn:	Checked:	Date:	
OL	PS/BSc	2022-03-03	**Appendix Map 2**

EDI

L:\PROJECTS\2020\20190410_TRRC_BCMapping\2021_ReportingMap4_ChinookResults_2020and2021_20220222.mxd