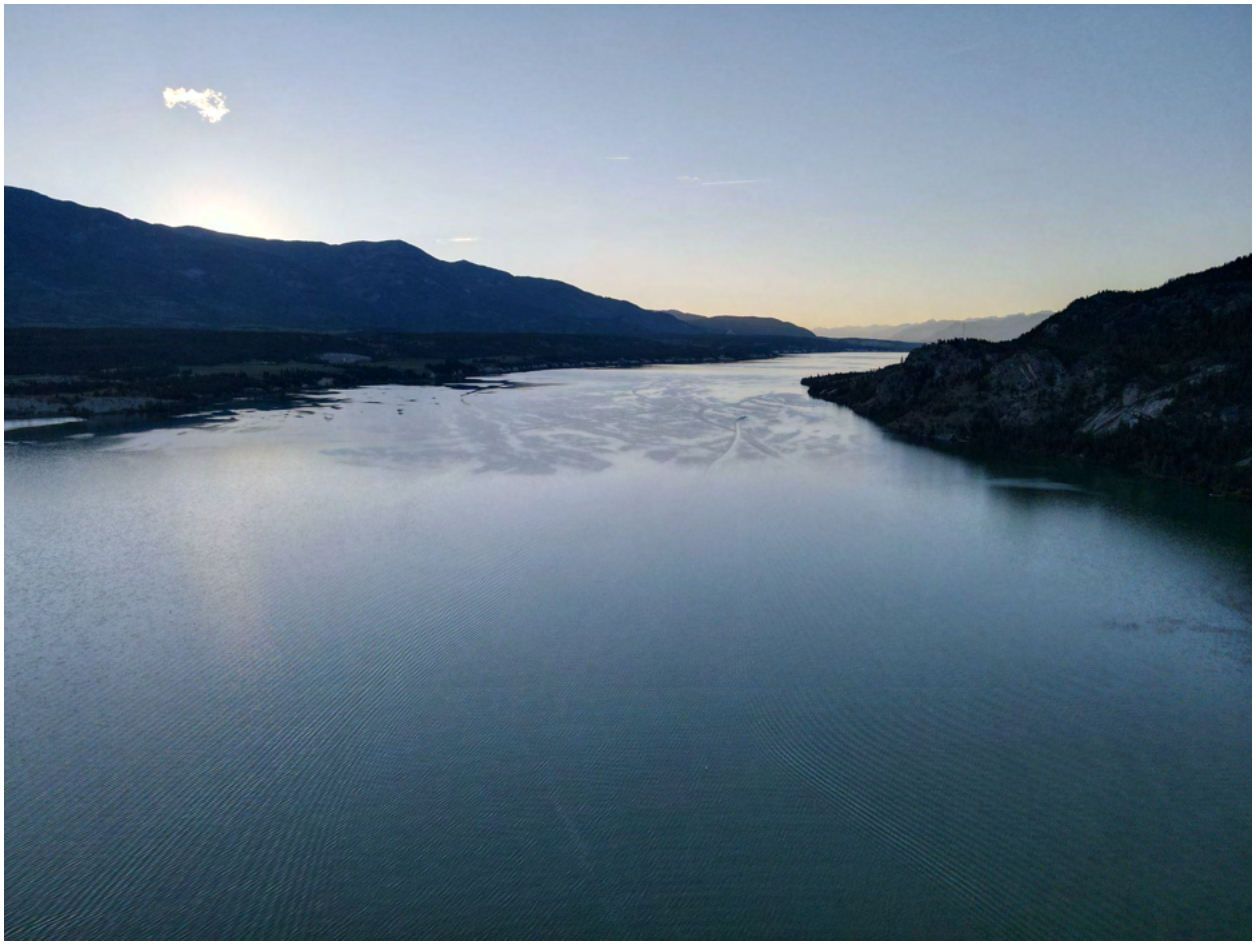
COLUMBIA LAKE
STEWARDSHIP SOCIETY

# 2023 Annual Report



4441 Cedar Bay, Fairmont Hot Springs, V0B 1L2

Prepared by: Caily Craig

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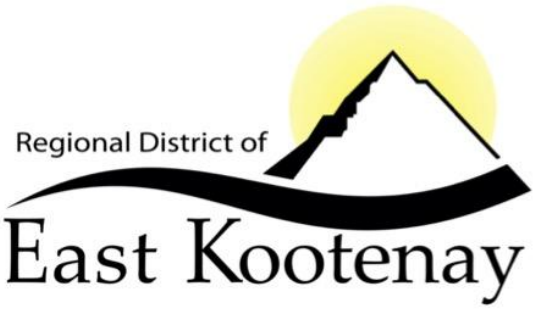


**Hoodoo Mountain Resort**

Thank you to our partners:

& Our Supporting Community Associations:

Columbia Ridge Community Association
Spirits Reach Strata Association
Columere Park Community Association & Marina
Fairmont Community Association

# Executive Summary

The Columbia Lake Stewardship Society (CLSS) is an organization whose mission is to preserve the ecological health and water supply of Columbia Lake for present and future generations through scientific investigation, collaboration, and education. CLSS has a volunteer board with representatives from several lakeside communities, one year-round employee, and one summer student. This year, the organization continued to fulfill its mission by collecting and disseminating data, organizing stewardship initiatives, facilitating public outreach and education programs, and providing community citizen science and volunteer opportunities. The Columbia Lake Stewardship Society is pleased to present the highlights of our activities and accomplishments over the past year in this 2023 Annual Report.

*The Columbia Lake Stewardship Society respectfully acknowledges that our water stewardship work is conducted on the traditional lands of the Secwépemc and Ktunaxa First Nations and the chosen home of the Columbia Valley Métis. We recognize these communities as the original and ongoing stewards of Columbia Lake and its surrounding land.*

## Our Team:

Bill Thompson,
Director of Water Quantity

Tom Dance,
Director of Water Quality

Nancy Wilson, Chair

Caily Craig,
Executive Director

Pat Silver, Treasurer

Cesar Fuertes,
Director

Tom Symington,
Secretary

Dario Staples,
Summer Student

## Message from the Executive Director:

Starting as the Program Coordinator in October 2022 and since moving into the role of Executive Director, I have had the opportunity to assist CLSS in developing and implementing its ongoing water monitoring, education and outreach programs. Over this past year, I have witnessed the organization's expansion and progress. CLSS began working towards streamlining its stewardship efforts and establishing its long-term sustainability through enhanced collaboration with other community groups that share similar missions.

I am pleased to report that the Columbia Lake Stewardship Society successfully achieved its goals for its 2023 water monitoring, education, and outreach programs, surpassing expectations. This past year, CLSS has expanded its water quality program to include water quality monitoring at locations on the Columbia River and sediment sampling on Columbia Lake. These accomplishments were possible thanks to the generous support of the organization's funders and the dedication of volunteers, who contributed numerous hours to these programs. The success of CLSS extends beyond program growth; CLSS has made progress in ensuring the continued sustainability of its ongoing initiatives. Throughout 2023, CLSS established closer partnerships with other organizations to create synergies and strengthen the organization's ability to sustain water monitoring along the Columbia River Headwaters.

Having been a part of this year of growth and development for CLSS, I look forward to planning the water monitoring, education and outreach programs for 2024 in the coming months. I am excited to witness the further growth and accomplishments of CLSS in the upcoming year and to collaborate with the volunteers and community members who support the mission and vision of CLSS.

**Caily Craig**

## 2023 Project Highlights:

# Project Work

The Columbia Lake Stewardship Society envisions Columbia Lake becoming an example of the balance that can exist between nature and the needs of our communities.

CLSS works toward its mission and vision by implementing five guiding principles:

1. Study our Lake
2. Share our Findings
3. Involve our Communities
4. Promote our Lake's Sustainability
5. Develop our Organization

Throughout 2023, the organization remained committed to these guiding principles, successfully executing its programs and achieving its goals.

## 1.0 Studying Our Lake

Between May and September 2023, we continued to operate and expand our water quality and quantity monitoring programs. This expansion involved implementing additional types of sampling, increasing sampling locations, and making equipment upgrades. We owe the success of these programs to our generous funders and dedicated volunteers who contributed countless hours to our programs.

We operate two primary programs that contribute to the study of the ecological health and water supply of Columbia Lake: our water quality and water quantity programs.

## 1.1 Water Quality Monitoring

This year, we collected water quality data for Columbia Lake, its tributaries, and the Columbia River. This data contributes to our baseline inventory and allows us to detect ecological changes over time.

In 2023, CLSS was fortunate to have the support of six citizen scientists who assisted with our water quality monitoring program. Citizen scientists play a foundational role in our water monitoring program, contributing in various ways, including providing access to the lake by boat, participating in stream monitoring, and kayaking the river to conduct sampling.

### Columbia Lake:

The 2023 monitoring season marked our ninth year of monitoring water quality at four sites on Columbia Lake (N1, S1, S3, and S4). This year, we aimed to conduct bi-weekly measurements of physical and chemical parameters and monthly sampling. Inclement weather, smoke conditions, and a limited number of volunteers impacted some of our excursions, leading to a few missed days. However, we completed six lake monitoring excursions during the summer, measuring parameters including temperature, specific conductance, pH, dissolved oxygen, turbidity, and relative depth. Our approximately monthly sample collections were tested for parameters such as anions, nutrients, and total metals. On one of our sampling excursions, we conducted an along-the-lake profile, during which we gathered data on temperature, specific conductance, and dissolved oxygen levels, and collected samples for chloride testing at 14 different locations along the lake.

Our 2023 sampling season began with participating in the Lake Windermere Ambassadors' first two water quality monitoring excursions in April. These excursions allowed us to learn about their water quality program and compare instruments. We welcomed our new Sample Collection and Education Assistant, Dario Staples, in May. Dario assisted with our water quality program throughout the summer by taking measurements, collecting samples, and tabulating data.

## Columbia Lake's Tributaries:

In 2020, CLSS began monitoring the tributaries of Columbia Lake and continued this program for the fourth consecutive year in 2023. We completed six stream monitoring excursions, encompassing the monitoring of four tributaries of Columbia Lake: Dutch Creek, Hardie Creek, Marion Creek, and Canal Flats Creek. These excursions consisted of conducting the measurements of physical and chemical parameters and monthly sampling, providing valuable data about the quality of water entering Columbia Lake. This data contributes to our baseline stream inventory and is made available to inform effective decision-making on and around Columbia Lake.

## Columbia River:

In 2023, we expanded our water quality monitoring to include two sites on the Columbia River. CLSS initiated this program in June and concluded it in August, successfully collecting the first year of baseline data. The data collected on the Upper Columbia River will be compared with the data collected on our downstream neighbour, Lake Windermere. We plan to collaborate with the Lake Windermere Ambassadors and compare the data we have collected upstream with their data from Lake Windermere. We are grateful to have conducted this sampling on the Columbia River with two volunteer citizen scientists who sampled these sites monthly by kayak.

## Canadian Aquatic Biomonitoring Network (CABiN):

In September, we collaborated with Living Lakes Canada to collect a benthic invertebrate sample using the CABiN protocol on Dutch Creek. A member of CLSS has begun working toward completing their program manager certification. The addition of biomonitoring to our creek sampling program allows us to assess the presence of benthic invertebrates in the stream, contributing to our understanding of the health of the streams flowing into Columbia Lake.

## Public Beach Monitoring:

Columbia Lake's public access points include Columbia Lake Provincial Park and Tilley Memorial Park in Canal Flats. BC Interior Health offers a public beach sampling program. In the summer of 2023, we conducted microbiological sampling at Tilley Memorial Park's swimming area as a part of BC Interior Health's beach sampling program. Between July and August, five samples were tested for the presence of E. coli. The sample concentrations were within acceptable limits and publicized on the Drinking Water Sample Results page.

## Sediment Sampling:

In August, we collected sediment samples from the lake bottom. Sampling sediments is an indicator of the lake's health, in addition to our regular water sampling program. Sediments may serve as a repository for chemical compounds such as metals and hydrocarbons. When disturbed, these compounds can be released into the water column, potentially affecting aquatic life and humans. Sediment stirring can result from runoff, erosion, and human activity. The samples we collected will allow us to test for chemicals that may not be detectable in our regular water sampling program.

## Watercraft Counts:

Throughout 2023, we maintained our bi-weekly boat counts on Sundays and Wednesdays. The counts determine the quantity and categorization of recreational watercraft on Columbia Lake. These watercraft counts help us understand the range of recreational activities on the lake and help us improve our educational programs and the resources we offer to lake users.

## 1.2 Water Quantity Monitoring

Through our collection of weather data and various streamflow measurements, we have established a comprehensive water database and estimated the water balance of Columbia Lake based on annual and seasonal variations in streamflow from Dutch Creek, Canal Flats Creek and the Columbia River. This information is significant in comprehending the changes and fluctuations in Columbia Lake's water balance.

In 2023, we maintained three flow monitoring stations, two lake-level monitoring stations, three rain gauges, and a weather station. Additionally, we conducted streamflow measurements on Dutch Creek, the Columbia River and the lake outlet, adding five new flow measurements to our database.

To complement our streamflow data, we continued to operate our weather station. In addition, we gathered weather data from other stations, including the Little Dragon Avalanche station near Panorama and the Fairmont Ski Hill weather station.

One of our lake-level stations underwent an upgrade to provide real-time lake-level data accessible online through HOBOlink. To improve the accessibility of our data, we hope to upgrade our other stations to provide real-time data in the future.

## 2.0 Sharing Our Findings

In 2023, CLSS continued to share its scientific findings through its education and outreach programs. Disseminating our findings is an essential aspect of our work, as we make this data readily available to the public to facilitate informed, effective decision-making and planning around Columbia Lake. Furthermore, we aim to inspire others to join us in our mission as stewards of Columbia Lake.

### Data Sharing:

At the beginning of each year, we share our findings from the previous year in our annual Water Quality and Quantity reports. Our 2022 Water Quality and Quantity Reports were published in January 2023. This data is publicly accessible on Living Lakes Canada's Columbia Basin Water Hub, contributing to a more extensive water monitoring database.

### Presentations and Community Events:

Following the release of our annual reports, substantial efforts are made to share our findings and recommendations with local governments, lakeside communities, and partner organizations. CLSS staff and volunteers actively participated in various meetings, gatherings, and events to engage with other organizations, exchange information, and offer recommendations. Some of the events attended this year included:

- Canal Flats Council Committee Meeting – January
- RDEK Columbia Valley Services Committee Meeting – April
- Columbia Basin Trust Community Engagement – April
- Columbia Wetland Stewardship Partners AGM – May
- East Kootenay Stewardship Committee Meeting – May
- Spirit's Reach Community Association AGM – May
- Columbia Ridge Community Association AGM – May
- Columbia Valley Community Foundation Garden Party – June
- Kootenay Conservation Program AGM – October

## Wings over the Rockies:

In May, CLSS organized an educational tour at the Source of the Columbia Trail in Canal Flats as part of the Wings over the Rockies Nature Festival. We partnered with local Canal Flats resident Colin Cartwright to provide insights into the history, environment and stewardship of Columbia Lake.

## Information Booths:

Throughout the summer, we set up outreach booths around Columbia Lake and the Upper Columbia River in Fairmont. The booths were hosted at Tilley Memorial Park, Canal Days Market in Canal Flats, and the recreational take-out access point on the Columbia River. At these booths, we engaged with residents and visitors, providing education on our stewardship efforts, safe boating practices, responsible recreation on the Columbia River, and information about invasive species. These outreach booths reached approximately 50 members of the community and visitors. Many of them expressed an interest in learning about Dutch Creek and the fish of Columbia Lake.

## Articles & Educational Materials:

Throughout the spring, summer, and early fall, we made Safe Boating and River Access Guide brochures available to the public around Columbia Lake and the Columbia River. Additionally, we published articles in the Canal Flats News, published quarterly Newsletters on our website, and submitted an article to the Columbia Valley Pioneer.

## 3.0 Involving Our Communities

Each year, our commitment to preserving the ecological health and water supply of Columbia Lake extends to involving our communities. We provide opportunities for community members to participate in our stewardship initiatives. In 2023, we engaged our communities through various initiatives, including citizen science opportunities within our water monitoring program, invasive weed pulls, community cleanups, and free summer camps for kids.

### Invasive Weed Pull:

On June 10th, we organized a knapweed pull in partnership with the East Kootenay Invasive Species Council. With the assistance of 10 volunteers, two CLSS staff members, and two EKISC staff, we successfully removed 31 bags of knapweed from the shoreline of Columbia Lake. Knapweed is an invasive species that inhibits the growth of native vegetation by releasing chemicals, outcompeting other plants, and destabilizing the soil. The spread of knapweed is often due to vehicle transportation of seed fragments. We selected the west side of Columbia Lake's shoreline for this weed pull, as knapweed is commonly found in disturbed areas. This location is home to the Canadian Pacific Railway, resulting in shoreline disturbances and knapweed growth. We thank the members of the Spirits Reach Community who participated in this initiative.

## Summer Camps:

In 2023, we collaborated with the Lake Windermere Ambassadors to host free educational summer camps for kids in the Columbia Valley. These camps were held at Tilley Memorial Park in Canal Flats, James Chabot Provincial Park in Invermere, and the lakeside community, Columere Park. We also hosted a camp at Columbia Lake Provincial Park in partnership with the Little Badgers Early Learning Centre's Day Camp, broadening our reach to youth in the community. Each camp had an educational theme that changed weekly. The summer camps in 2023 included

- Wild Wetlands @ James Chabot
- Aliens in the Lake @ Tilley Memorial Park
- Junior Water Stewards @ Columere Park
- Junior Ambassadors @ James Chabot
- Our Wonderful Watershed @James Chabot
- Little Badgers Become Water Stewards @ Columbia Lake Provincial Park
- Fishing for Fun & the Fisherman @ Tilley Memorial Park

We are delighted by the strong interest in our summer camps.

### Columbia Lake and Fairmont Community Cleanup:

In June, we joined forces with the Fairmont and District Lions Club and Fairmont Community Association to organize a community cleanup. Thirty-six volunteers participated and collected 45 bags of garbage around the north end of Columbia Lake and the Fairmont community. The Fairmont Community has a long-standing tradition of hosting annual cleanups, and we are grateful to have assisted in planning this year's event. Additionally, in May, we conducted a cleanup along the Canal Flats highway near the Source of the Columbia with the help of two CLSS staff and two volunteers. We responded to community concerns about the volume of waste entering the wetlands in this area.

## 4.0 Promoting the Sustainability of Our Lake

Each year, we remain committed to advancing the sustainability of our lake through active collaboration with various conservation initiatives in the area. In the past year, we contributed to sustainability through our support and educational efforts for:

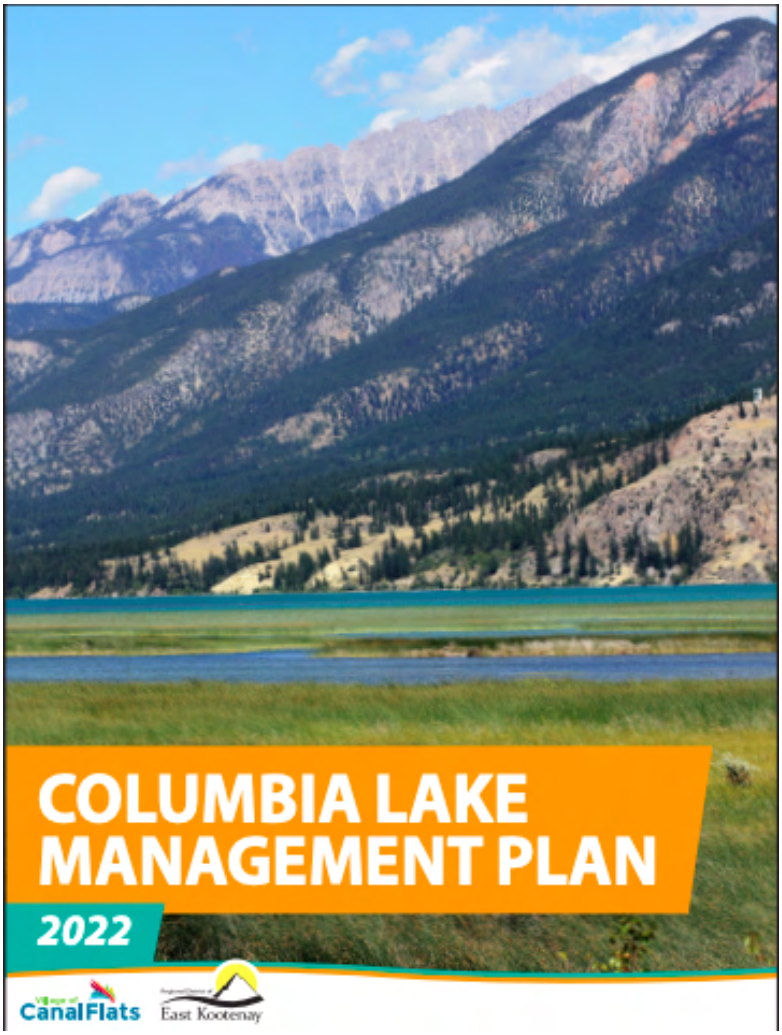
- Species at Risk and Sensitive Habitats around Columbia Lake
- Columbia Lake Management Plan Implementation
- Site Stewardship of the Columbia River Access Points in Fairmont

### Species at Risk and Sensitive Habitats:

Bank swallows are a Species at Risk facing one of the fastest population declines for a species in Canada, with less than 10% of their population remaining in the country. The Upper Columbia Swallow Habitat Enhancement project is working to mitigate and reverse the decline of this species. In 2023, we continued supporting the Upper Columbia Swallow Habitat Enhancement Project by educating and recruiting volunteers to monitor swallow colonies around Columbia Lake. To support this project, we recruited four volunteers who assisted with swallow monitoring around Columbia Lake. In addition, we designed a new sign to be displayed at a sensitive swallow nesting area within a lakeside community.

## Columbia Lake Management Plan:

The Columbia Lake Management Plan (CLMP) was adopted by the Village of Canal Flats and the Regional District of East Kootenay (RDEK) in 2022. This plan contains a list of recommendations and priority actions to help guide local government decision-making for Columbia Lake. In January and April of 2023, CLSS delivered presentations to our local governments (RDEK and Village of Canal Flats) recommending the establishment of a lake management committee. This committee would assist in implementing the recommendations from the CLMP, as it states that the success of these recommendations relies on collaborative efforts between local governments, local organizations, provincial and federal authorities, and the Ktunaxa Nation and Shuswap Band. We believe that a lake management committee with representation from all these stakeholders provides the best opportunity for assembling a diverse group of stakeholders, creating collective action and building capacity to fulfill the CLMP's recommendations.



## Columbia River Access Points:

In 2023, we continued collaboration with the Regional District of East Kootenay (RDEK), Fairmont Hot Springs Resort, and Fairmont Community Association in maintaining the Columbia River access points in Fairmont. A study conducted by the Columbia Wetland Stewardship Partners on Human Use and Boating Traffic on the Upper Columbia River found that approximately 14,000 people used this stretch of the river in Fairmont between May 17 and September 30, 2019. The upstream access point falls under the jurisdiction of the Ministry of Transportation and Infrastructure, and the downstream landowner is the Fairmont Hot Springs Resort. There are no permanent sanitation facilities or ongoing maintenance for these areas. This year, we supported the RDEK and Fairmont Hot Springs Resort by coordinating portable toilet facilities and distributing educational brochures on responsible river recreation. Members of the Fairmont community living near the downstream access point generously emptied the garbage bins at this location weekly and sometimes twice daily throughout the summer. The heavy use of this stretch of the Columbia River exemplifies the need for more permanent management and maintenance of these popular attractions in Fairmont. CLSS will continue to work with and support the RDEK and Fairmont community in these temporary management strategies until long-term solutions are implemented.

## 5.0 Developing Our Organization

### Fundraising:

In the fall of 2023, CLSS initiated a new fundraiser. We received a donation of a handmade stained glass panel featuring an illustration of Columbia Lake. We have begun selling raffle tickets for this stained glass panel within the community. All donations received will support CLSS during a period of financial challenges.

### Collaboration:

In 2023, we collaborated with eight other organizations and groups for various projects around Columbia Lake. These collaborations aim to streamline work, create efficiencies, share information, and align programs with other stewardship efforts in the area. The other groups we coordinated with include the

- Regional District of East Kootenay (Area F)
- Lake Windermere Ambassadors
- Fairmont Community Association
- Fairmont and District Lions Club
- Living Lakes Canada
- Columbia Wetland Stewardship Partners
- Upper Columbia Swallow Habitat Enhancement Project
- East Kootenay Invasive Species Council

### New Programs:

In 2023, CLSS introduced three new programs, including sediment sampling of the lake, sampling water quality at two sites on the Columbia River and began CABiN training. These programs collect additional data that enhances our understanding of the ecological health of Columbia Lake and its tributaries, complementing our existing water quality program.

### New Equipment:

In 2022, we acquired a telemetry data logger with funding from BC Hydro and Living Lakes Canada. In 2023, this logger was installed at one of our water quantity stations with resources donated by the Rae family. This equipment will reduce the workload required for data collection at this site, as CLSS employees will no longer need to visit the site as frequently to download data; they can now access it in real time online.

## Financials

The fiscal year for the Columbia Lake Stewardship Society runs from January 1 to December 31 each year. We invite you to review our summary financial statement online at columbialakess.com in our annual general meeting minutes or by request from our office at info@columbialakess.ca.

## Conclusions

This past year marked our organization's ninth year of working towards preserving the ecological health and water supply of Columbia Lake. Our programs were guided by our five pillars: study our lake, share our findings, involve our communities, promote our lake's sustainability and develop our organization. We were able to meet our goals in all of these areas and work towards our vision of Columbia Lake becoming an example of the balance that can exist between nature and the needs of our communities.

As we embark on our 10th year, we remain committed to and motivated by our mission and vision. In 2024, we are determined to continue existing programs and expand our water quality program by continuing river sampling, sediment sampling and CABiN if funding is secured. We will also continue fostering partnerships through water monitoring data collection, community engagement and sustainability initiatives.

Thank you to our many funders, supporters, and collaborators for your efforts to preserve Columbia Lake's ecological health and water supply. Your contributions have been invaluable in advancing our mission.

# Acknowledgements

The Columbia Lake Stewardship Society would like to acknowledge the ongoing and faithful support of our collaborators, partners and mentors, who are listed below:

All donors and volunteers
BC Lake Stewardship Society
Columbia Basin Trust
Columbia Basin Watershed Network
Columbia Ridge Community Association
Columbia Wetlands Stewardship Partners
Columere Park Community Association
East Kootenay Invasive Species Council
Eco Canada
Fairmont and District Lions Club
Fairmont Community Association
Lake Windermere Ambassadors
Little Badgers Early Learning Centre
Living Lakes Canada
Regional District of East Kootenay
Spirits Reach Strata Association
Village of Canal Flats