



2020
Spring
Newsletter



LICA
ENVIRONMENTAL STEWARDS



LICA Events

Photography Workshops in Cold Lake and Bonnyville

LICA started out the new year by hosting two photography workshops in Bonnyville and Cold Lake on January 25 and February 1. The participants began the workshops in a classroom setting, learning about basic and technical aspects of photography. They then travelled to Moose Lake Provincial Park or Cold Lake Provincial Park where they practiced the techniques that they learned in the classroom session.



Carbon Capture, Storage, and Utilization Lunch 'n' Learn

On February 6 Andrea Zabloski from Canadian Natural Resources Limited visited the LICA office to present information on carbon capture, utilization, and storage. Carbon capture and storage is the capture of carbon dioxide (CO₂) from a source, purification of the CO₂, and storage of it within a saline aquifer deep underground.

As participants enjoyed their

lunches, Andrea explained the process of carbon capture, the properties of suitable storage reservoirs, and monitoring requirements. Shell's Quest project at the Scotford Upgrader near Fort Saskatchewan was provided as a successful application of the technology; it has captured and safely stored 4 million tonnes of CO₂ in its first four years of operations.

Finally, Andrea gave details

about Canada's Oil Sands Innovation Alliance's (COSIA) Carbon XPRIZE. This is a global initiative that will award \$20 million dollars of prize money to teams that develop technologies that can convert CO₂ emissions from industrial facilities into valuable and usable products.

Thank you to everyone who came out to support this event!



Family Expo

On February 15 LICA hosted a booth at the Lakeland Connect's Family Expo. LICA's display promoted the Stop Needless Idling campaign. Children were invited to test their hockey skills and win a free prize by knocking over a toy beaver with a mini hockey stick or answer a trivia question about needless idling. Hundreds of people stopped by the booth and it was great to have some community members pledge to stop needless idling!

Farming, Energy, and Ecosystems

On February 27, Rural Routes to Climate Solutions hosted a workshop in Bonnyville on the clean energy options available to producers. The presenters included Thermal Creek Ltd. with Koen Vander Maaten, Sunfind Solar Products with Caleb Schmidt, Rong Rong Xiang with Lakeland College, Cows and Fish with Tonya Lwiwski, Jeff with Farm Credit Canada, and PACE Alberta with Leigh Bond.

This full day event provided attendees the opportunity to ask each expert questions on the various topics including the financial payoffs of solar power, the ins and outs of geothermal energy, how to apply for grants and access to additional financing for clean energy projects, and staying on-grid or going off-grid.

Thank you Rural Routes to Climate Solutions for organizing this informative workshop for LICA members.



Stop Needless Idling

60 Seconds or Less is Best

This winter LICA worked collaboratively with the Alberta Airsheds Council (AAC) to launch an Alberta-wide Stop Needless Idling campaign. This educational campaign describes two major benefits of stopping needless idling: keeping the air healthy and saving fuel and money. Drivers are asked to pledge to idle for 60 seconds or less when they are parked.

LICA presented information about this campaign to the Municipal District of Bonnyville during its Council meeting on February 5 and to the Town of Bonnyville during its Council Meeting on February 25.

LICA also supported École des Beaux-Lacs' Grade 5 class with rolling out a Stop Needless Idling campaign at their school. École des Beaux-Lacs received a Student Action Challenge grant from Alberta Environment and Parks to reduce the carbon footprint of the school. One of the ways the class plans to achieve this goal is by implementing a Stop Needless Idling campaign.

Continued on the next page.
Photo by Meagan MacEachern



Stop Needless Idling

LICA visited the school to present air quality information to the Grade 5 class and explain the benefits of stopping needless idling. The students took charge from there! Students collected baseline data to determine the amounts and types of idling occurring around their school during drop off and pick up times. They measured the amount of time vehicles idled and used AirBeam technology, borrowed from LICA, to measure particulate matter concentrations.

With help from parent volunteers and staff to ensure the safety of students, students approached cars in school parking areas, informed them about the campaign, and asked them if they were interested in committing to idling for 60 seconds or less. Interested drivers signed a pledge form and received a cling-on sticker for their windshield to display their commitment to stopping needless idling.

After the campaign had been running for a few weeks, students collected particulate matter concentration data again, and compared the concentrations to the baseline data.

For more information about the campaign, and to do your part

and pledge to Stop Needless Idling please visit www.albertairshedscouncil.ca
Photos by Meagan MacEachern





Recycling at École des Beaux-Lacs

As part of École des Beaux-Lacs' Student Action Challenge grant from Alberta Environment and Parks, the Grade 5 students are implementing a school-wide recycling program. LICA arranged for Brad Ollen, the Municipal District of Bonnyville's Waste Management Supervisor, to visit the class and teach them about waste management and recycling. LICA then organized a tour of the Ardmore transfer station, where students got a chance to ask questions and see how local waste is managed. LICA would like to thank the Municipal District of Bonnyville for its support with this initiative.



School Programs

LICA teaches students about our Airshed & Watershed and all about those who live in it. We give students an inside look on how we use the environment and how we can help protect it. Each program links to the Alberta curriculum and is designed to provide hands-on learning and promote environmental stewardship. For teachers or parents interested in viewing our presentations for students at home please contact outreach@lica.ca.

These FREE programs are available year-round! Due to the closure of Alberta schools, virtual classroom presentations can be booked by contacting outreach@lica.ca or call (780) 812-2182. Learn more about LICA's programs visit www.lica.ca

- All Grades: Vermicomposting
- Kindergarten & Grade 1: Wildlife Discovery
- Grade 2: Creepy Crawlies
- Grade 3: Animal Survival
- Grade 4 : Waste Water / Plants in our Watershed
- Grade 5: Air, Water, and Climate / Wetland Ecosystems
- Grade 6: Trees and Forests
- Grade 7: Ecosystems
- Grade 8: Water Quality
- Grade 9,10, 11 & 12: X-Stream Science

Click on the posters for full-size.



School Programs

LICA—Environmental Stewards teaches students about our Airshed & Watershed and those who live in it. We give students an inside look at how we utilize the environment along with ways we can prevent harm. Each program is specifically aligned with the Alberta curriculum and designed to provide hands-on learning while promoting environmental awareness.

These FREE programs are available year round!

To book your classroom presentation contact outreach@lica.ca or call (587) 201-4345. To learn more about LICA's programs visit www.lica.ca.

GRADES

All **Vermicomposting** (1 hour)—Students learn about food waste and why it is important to compost. LICA will provide a starter vermicompost bin, including worms, for the classroom (while supplies last). Students will learn how to best care for their new class pets, and LICA will provide extra resources for the teacher.

k-1 **Wildlife Discovery** (1 hour)—Students are introduced to animals that live within our watershed and adaptations that help them survive. This program includes an interactive hands-on station activity with skulls and pelts.

2 **Creepy Crawlies** (1 hour)—Students will learn about different types of creepy crawlies, how their adaptations help them survive, and how they help people and the environment. Students will have the chance to interact with live red-wiggler worms. LICA can provide worms to build a vermicompost bin for the classroom upon request (while supplies last).

3 **Animal Survival** (1 hour)—Students learn about the Beaver River Watershed and how we deal with our waste water. Students learn what waste water is and where it ends up. They will engage in a group challenge to learn about water use and actions that can reduce water waste.

4 **Waste Water** (1 hour)—Students learn about the importance and many uses of native plants that are found within our watershed, and they are introduced to some ways that Indigenous People use these plants. Students work together to identify plants that are helpful and harmful to humans, followed by a game of jeopardy that reviews facts about plants in our watershed.

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GRADES

5 **Air, Water, and Climate** (1 hour)—Students learn about how human actions can affect air, water, and the climate. They learn about sources and effects of greenhouse gases and the effects of vehicle idling on air quality. They play a Jeopardy game to review the benefits of stopping needless idling.

6 **Wetland Ecosystems** (1 hour)—Students learn about their role within in our ecosystem and how human actions can threaten, preserve, and enhance wetland ecosystems. Students engage in a hands-on activity, working together in teams to restore a simulated wetland.

Trees and Forests (1 hour)—Students learn about how trees clean our air and water, and about impacts to forests. Students use tree cookies to identify trees parts that are involved in filtering water and air, and they investigate the amount of carbon dioxide absorbed by the trees on their school property.

7 **Ecosystems** (1 hour)—Students learn about interactions among plants, animals, fungi, bacteria, and other microorganisms within ecosystems by creating an interactive food web. They learn about how ecosystems can change due to human impacts and the special role that decomposers can play in mitigating these impacts.

8 **Water Quality** (1 hour)—Students learn about how human actions can affect water quality in positive and negative ways. Human impacts on air and water are explored and solutions for mitigating these impacts are presented. Students perform a hands-on water quality testing activity that asks them to predict and test the pH and dissolved oxygen levels of local water bodies.

9-12 **X-Stream Science** (2 hours)—X-Stream Science is a citizen-science based educational program that gives participants a hands-on learning experience with their local stream by conducting real-world water quality monitoring. Scientific protocols will be used to collect aquatic benthic macro-invertebrates (water bugs), conduct water quality tests, and collect site information for the analysis of their findings. LICA supplies all of the training, equipment, and handouts needed for the program. Offered in early fall & late spring.

These FREE programs are available year round!

To book your classroom presentation contact outreach@lica.ca or call (587) 201-4345. To learn more about LICA's programs visit www.lica.ca.

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2020



LICA

ENVIRONMENTAL STEWARDS

Writing Contest

1st Place \$100 | 2nd Place \$75 | 3rd Place \$50

Submit by Monday, May 4, 2020

Grade 6 Students

You are invited to enter LICA's 2020 Writing Contest. This contest gives students in the LICA region the opportunity to compete for prize money while practicing for the Provincial Achievement Test. The topic of this functional writing assignment is blue-green algae blooms. See the writing prompt for more details on the assignment.

Teachers Submissions

- We would appreciate it if you could complete an entry form, including a score for each student's writing assignment. Please assign scores according to the [ELA Grade 6 Functional Writing Scoring Guide 2009](#).
- Email your class set of writing and entry forms to outreach@lica.ca or send them to LICA, PO Box 8237, 5107 W 50 Street, Bonnyville, T9N 2J5

Independent Submissions

- Complete an entry form, leaving the scoring section blank.
- Email your writing and entry form to outreach@lica.ca or send them to LICA, PO Box 8237, 5107 W 50 Street, Bonnyville, T9N 2J5

2021



Youth Calendar Contest

Which plants do you love in the Lakeland Region?

Would you like to have your drawing featured in a calendar? If you're a student in grades K-12 in the LICA region we invite you to send us your artwork! Our favourite drawings will be featured in our 2021 calendar!



Competition closes **Friday October 2nd, 2020**

Please complete the entry form available at

www.lica.ca/education

Submit entries by e-mail to

outreach@lica.ca or mail to

LICA, Box 8237,
Bonnyville, Alberta,
T9N 2J5

Winners will have their artwork featured in our calendar and receive a *\$50 VISA gift card!*



2020 Nature Photography Contest

Cash Prizes

1st: \$150

2nd: \$100

3rd: \$50

A Public
Showcase

Two
Categories

Beginner &
Advanced

Professional
Judges

Canvas
Prints
for the
Winners

Deadline
August 25th, 2020
@ 4:00 p.m.

Presented by



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Online entry forms
at www.lica.ca

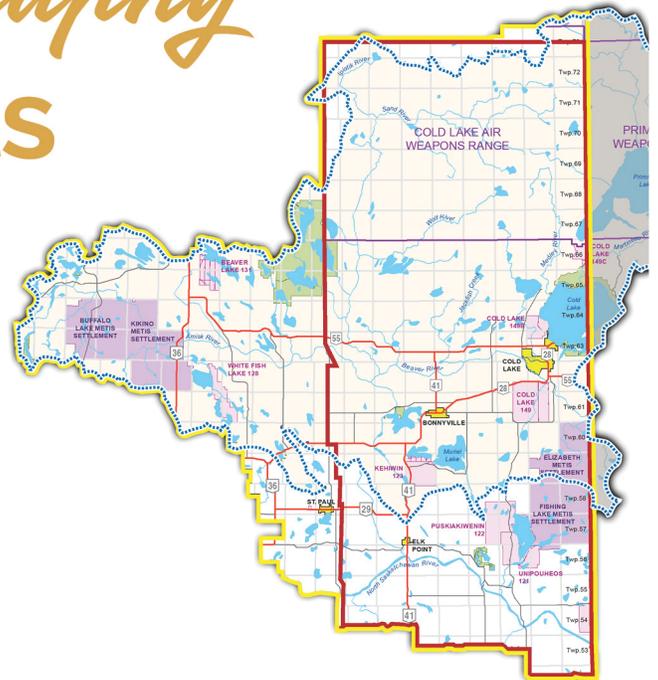
More Information on
the following page

2020

Nature Photography Contest Details

Eligibility

- Open to all photographers that reside or work in the LICA region
- Open to all ages
- Advanced Category: 5 or more years of experience
- Beginner Category: Less than 5 years of experience
- **Photos must be within the LICA region**
- LICA Staff, Board & Committee members are not eligible to enter the contest



Submission Specifications

- All entries must be received by **August 25th, 2020 @ 4:00 p.m.**
- Up to three (3) entries per person
- The online [entry form](#) must be completed
- E-mail entries as JPEG files
- Send entries to outreach@lica.ca with the subject line as "Photography Contest"
- The entry file name must be titled: Category-Name-Entry Number
Ex. Beginner-Jane Doe#1
Beginner-Jane Doe#2
Beginner-Jane Doe#3
- Resolution: Min. 300 dpi / Max. 10 MB
- Do not digitally alter photos (beyond colour adjustments)
- Photo entries must be captured by the person entering the contest

Winners

- 1st, 2nd, & 3rd place images from both categories will receive a cash prize, a print, and a public showcase around the LICA region
- The printed versions of the winning images will be held for two weeks while they are on display at indoor, public spaces

Judging

- This year LICA is privileged to have Susie O'Connor from Images Studio in Cold Lake help with the judging. She is certified through the Professional Photographers of Canada to judge photography contests. This ensures the best photos submitted will be the ones that win!

Publication

- LICA reserves the right to publish winners' names & photographs in any promotional material
- To be published, your prints & digital files must be of acceptable quality & resolution

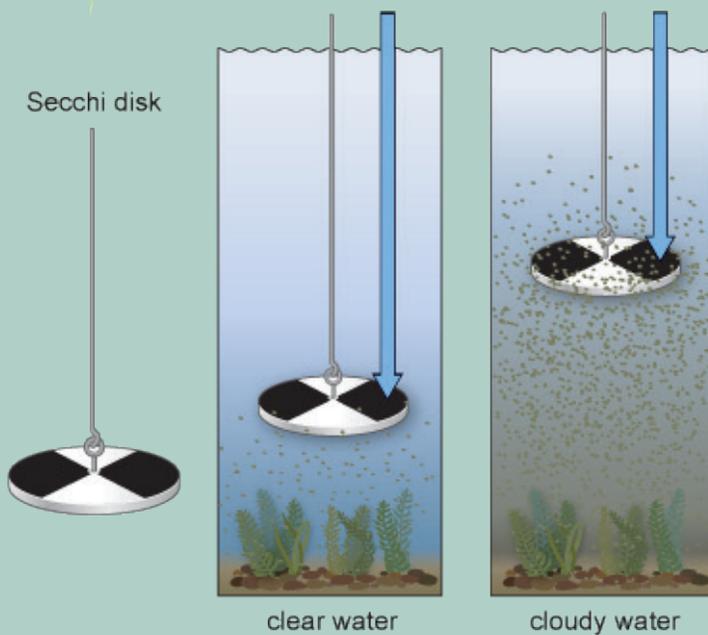


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LakeWatch



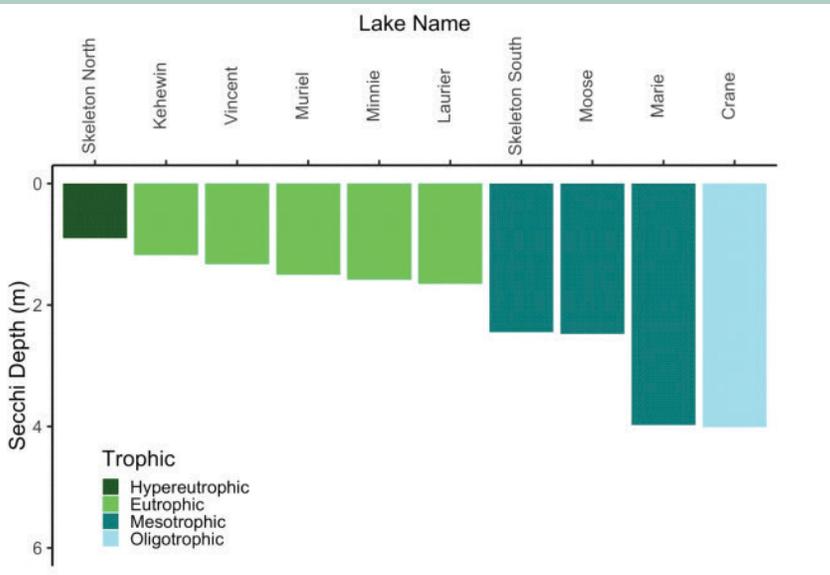
LICA has completed its 12th year of the LakeWatch program with the Alberta Lake Management Society (ALMS). This program samples the water quality of ten lakes within the LICA region four times throughout the summer. These samples are analyzed for turbidity, phosphorous, chlorophyll, microcystin, temperature, pH, dissolved oxygen and presence of invasive mussels. ALMS completes a report for each individual lake, providing long term trends where possible, and compiles a summary report which can be found on the LICA website www.lica.ca/resources/



The following lakes were sampled during the summer of 2019

- Skeleton North
- Skeleton South
- Laurier
- Vincent
- Minnie
- Crane
- Moose
- Muriel
- Kehewin
- Marie

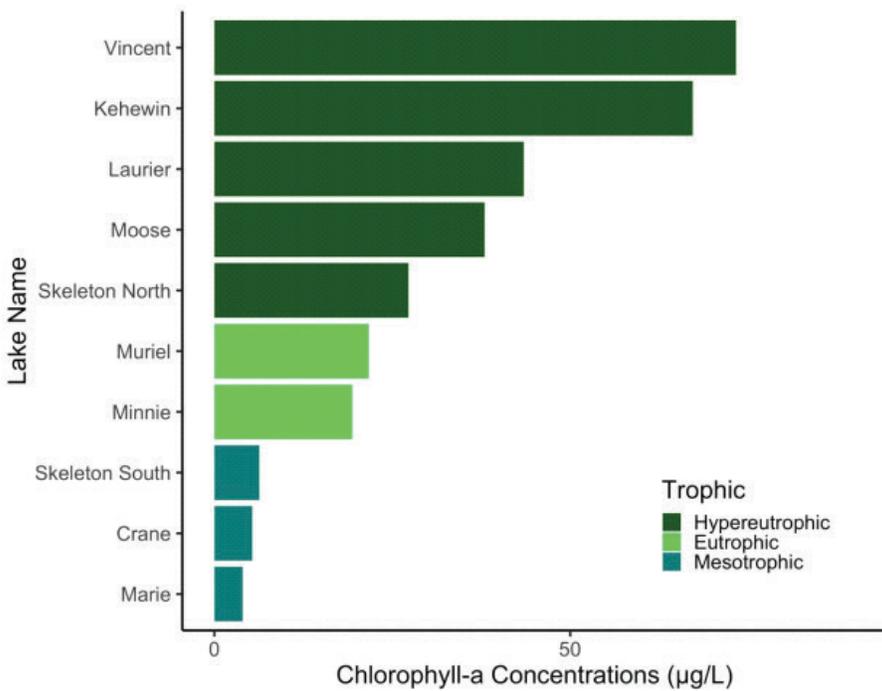
The table below shows the average Secchi depth of the sampled lakes in 2019. The Secchi depth measures the clarity of the water by how far in the water you can still see the Secchi disk. The greater the Secchi disk depth the greater the clarity of the lake. In general, the more clear the water the healthier the body of water. Things that can reduce clarity in water are suspended sediment and plant matter, like algae.



LakeWatch

The trophic state is the process by which lakes are enriched with nutrients, increasing the production of rooted aquatic plants and algae. The extent to which this process is reflected in the lake's trophic classification: mesotrophic (moderately productive), eutrophic (very productive and fertile), and hypereutrophic (extremely productive and fertile). The higher the trophic state, the higher the levels of algae present in the lake.

Algae blooms have become an increasing concern within our region. Algae is a plant that uses chlorophyll-a for photosynthesis, therefore measuring chlorophyll-a levels can help determine the amount of algae present in the water. Below shows a chart of the average chlorophyll-a values measured at ten LICA lakes during the summer of 2019.



In general, the lakes sampled in 2019 have not fluctuated greatly from the previous years but have had slight increases or decreases. In 2019 Moose Lake and Kehewin have slightly less chlorophyll-a than the past few years, while Minnie Lake has increased. It is best to monitor the health of a lake with long term data, which is available for certain lakes within the LICA region. If you wish to read more about the individual lake reports and their long term trends please visit the ALMS website www.alms.ca/reports

LICA is continuing the LakeWatch program during summer 2020 to maintain the collection of this invaluable data for the LICA region. LICA is grateful for the help of the volunteers who assist the ALMS technicians in collecting the water samples for their local lakes. If you have a boat and are interested in volunteering to have your lake sampled please contact us at watershed@lica.ca



Air Quality Health Index

2019 Dashboard



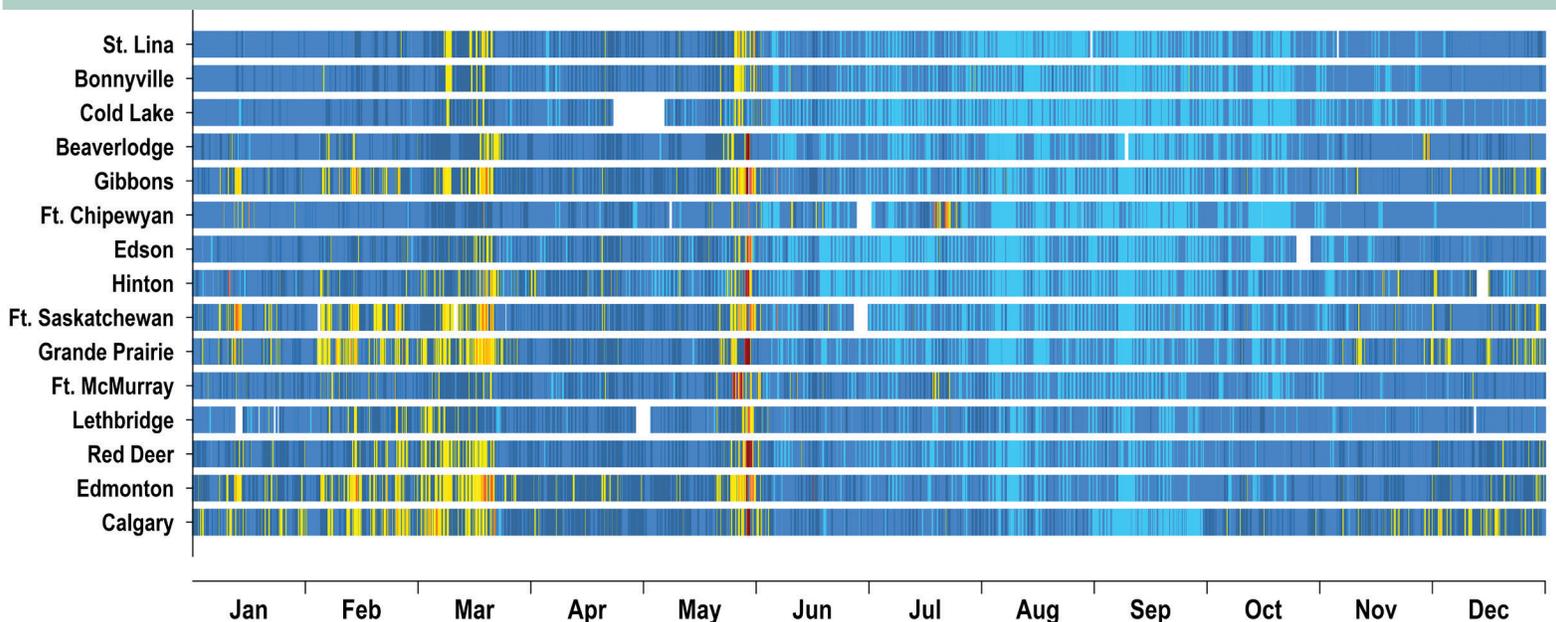
The Air Quality Health Index (AQHI) helps you understand what the air quality around you means to your health. The AQHI is a tool that relates the air quality outside to your health, using a scale from 1 to 10. The index describes the level of health risk associated with this number as 'low', 'moderate', 'high' or 'very high', and suggests steps we can take to reduce our exposure. The AQHI is determined with a complex formula using the ambient concentration of nitrogen dioxide, ground-level ozone, and particulate matter; these pollutants have been found to contribute to cardiovascular and respiratory disease. More information about the AQHI can be found on the LICA website.

LICA has three air monitoring stations where the AQHI is determined: Cold Lake, St. Lina, and the

2019 Air Quality Health Index DNA (Risk Value)

Portable Air Monitoring System (PAMS) which is currently located in Bonnyville. In 2020 the PAMS will be relocated to Lac La Biche to bring AQHI reporting to that community. In 2020 LICA's Maskwa monitoring station (located west of Marie Lake) will be enhanced to bring AQHI reporting to that area. The AQHI is made available on the LICA website in near real time. On the following page are a series of diagrams to help illustrate patterns and observations in the AQHI in Alberta in 2019. The first diagram is a modification of our "Air Quality DNA" visualization tool. Below that, are a series of charts to illustrate the distribution of AQHI risk values at locations across Alberta.

Typically, the DNA visualization is used to show how a single pollutant varies over many years at one location. For the AQHI, this tool has been modified to show the AQHI at multiple locations in Alberta in 2019. Some interesting patterns begin to emerge.

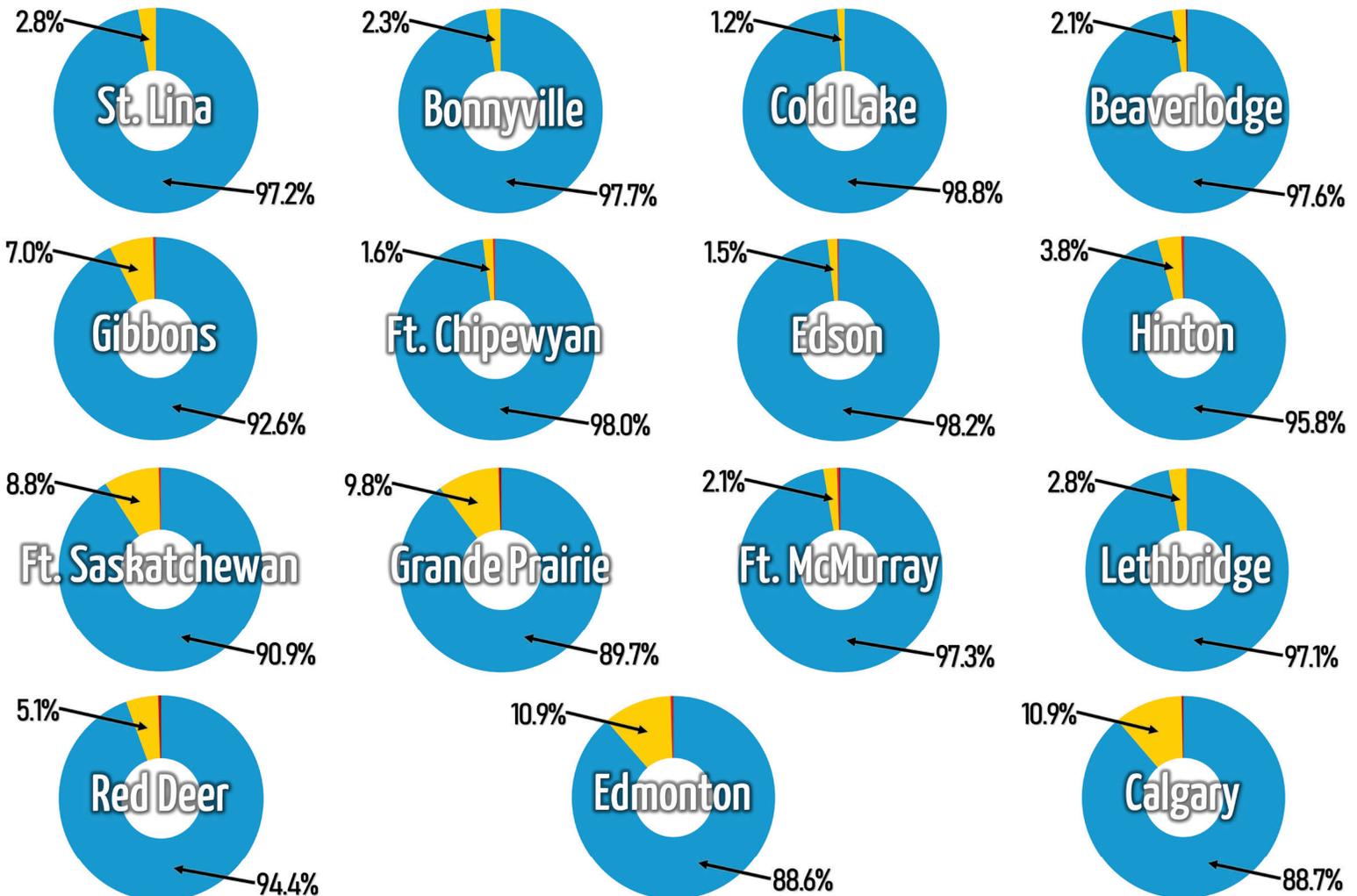


Air Quality Health Index: 2019 Dashboard

In late January 2019, a severe cold snap hit the Midwestern United States and Eastern Canada. It brought the coldest temperatures in over 20 years to most locations in the affected region. In early February, the polar vortex moved west, and became locked over Western Canada and the Western United States. As a result, February 2019 was among the coldest and snowiest on record in these regions. This cold snap influenced air quality. Frigid, stagnant air masses lingered and prevented the movement of pollutants, especially nitrogen dioxide, while an increased demand for home heating and vehicle idling likely compounded this problem. The DNA chart shows that wintertime smog, especially in Alberta's large cities, resulted in

AQHI risk levels in the moderate to very high range during this extreme cold event.

In mid-March 2019, ground-level concentrations of ozone in the LICA region and across Alberta began to rise with peak concentrations occurring around March 20th. The AQHI was in the moderate to high health risk range at several locations due to these elevated concentrations. Given the wide-spread nature of these observations, the cause of the event was likely a combination of tropospheric mixing and stratospheric intrusions of ozone; these are common causes of this elevated ground-level ozone springtime phenomenon.



Air Quality Health Index: 2019 Dashboard

In May 2019, the Chuckegg Creek wildfire near High Level forced roughly 5,000 people from their homes. It was over 350,000 hectares in size and burned out of control for 70 days. This fire had a Province-wide effect on particulate matter in the air (smoke). The DNA chart shows that AQHI was driven into the high and very high risk levels in communities from Grand Prairie to Cold Lake, and from Fort McMurray to Lethbridge.

Lastly, the DNA visualization shows that our best air quality often occurs in the summer (excepting forest fire events). Unlike other parts of the country, we enjoy smog-free days nearly all summer long. Whether you are hiking in Moose Lake Provincial Park, enjoying the beach and swimming in Cold Lake, or riding your bike

down the Iron Horse Trail, you can breathe easy in the Lakeland region! Locally, it is also noted that poor air quality seldom occurs during the winter months when compared to other locations in Alberta; this highlights the importance of preventing "Needless Idling".

The series of charts below the DNA diagram show the frequency distribution of AQHI risk values for locations across Alberta. In the LICA region, we enjoyed good air quality in 2019 with a low risk level over 97% of the time. For the times when air quality was in the moderate risk level, our region was being impacted by smoke from forest fires burning in other parts of Alberta. Regionally, the AQHI was in the high and very high risk level less than 0.5% of the time.



Upcoming Events

March 28: Earth Hour 8:30pm - 9:30pm
Show your support for this event by turning off your lights and not using electricity for one hour!

April 21: Matrix Solutions is offering A Grain of Salt: A Consultant's Guide to Salinity in Oil & Gas workshop at the Marriott Courtyard Hotel in Cold Lake

April 22: Earth Day in Lac La Biche

May 4: Last day to submit entries for Earth Day Writing Contest

As a result of Covid-19 LICA has postponed physical events until further notice. Online versions of these events may be offered. If you have questions please contact outreach@lica.ca

outreach@lica.ca
(780) 812-2182
lica.ca



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Alberta Environment and Parks

Thank you for your support!