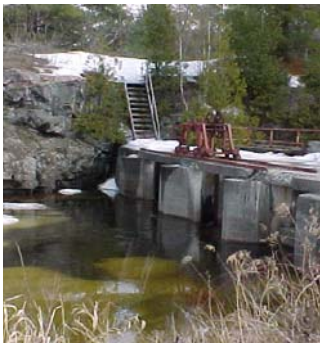
Spring Water Awareness & Safety Around Dams Program

Quinte CONSERVATION

The Spring Water Awareness Program (S.W.A.P.) was developed by the Quinte Conservation to make children aware of the dangers associated with the spring water runoff.

As part of the Conservation Authority's role as the lead flood warning agency and its related interest in public safety, we have created this teacher resource kit to be used in area schools.


www.quinteconservation.ca

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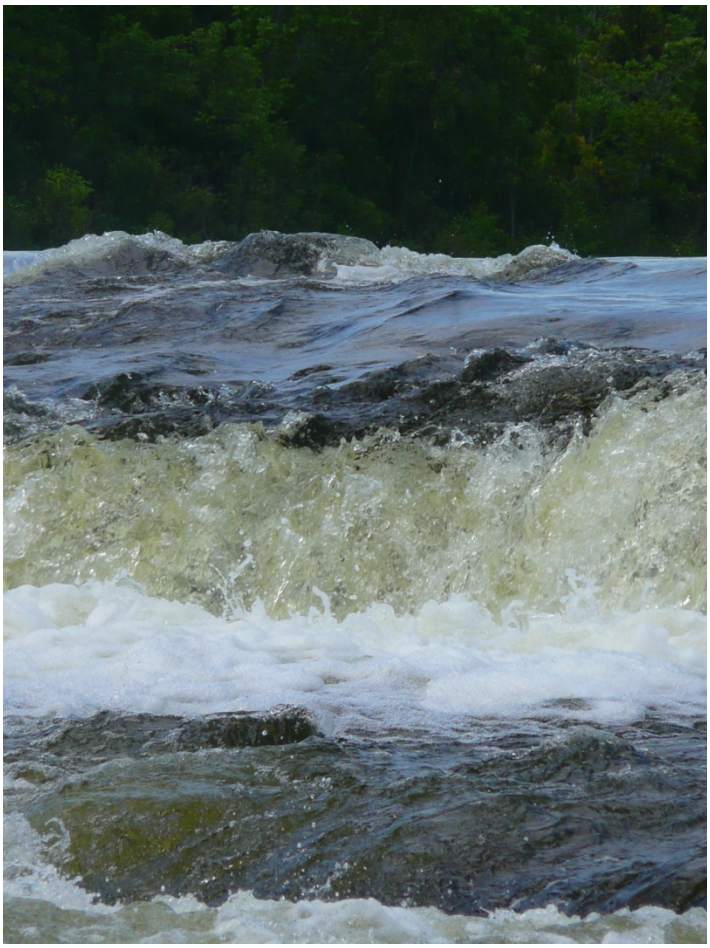

Teacher's Guide & Notes

Tragically, every year children drown in Ontario's waterways. As part of Quinte Conservation's role as the lead flood advisory agency and our related interest in public safety, we have created this curriculum based resource kit on spring water safety and safety around dams.

We encourage teachers to use this information to warn children of the dangers of fast flowing water, dangers of dams and thin ice. A 10 minute video is available that communicates the main safety messages around spring waters and dams. The video "Safety Says" is available on www.quinteconservation.ca under Activities and Education/Spring Water Awareness and there is also a DVD copy in your library. Introducing the topic of spring water safety before March break is recommended. Let's work together and through education, prevent a tragedy!

Quinte Conservation is a community based environmental protection agency representing three regions: Moira River watershed region; Prince Edward region; and Napanee region. Quinte Conservation is a locally directed agency that works on watershed conservation concerns such as flood forecasting, reforestation, environmental planning, storm water management, habitat restoration and other water related conservation issues.

Throughout the winter, the Authority monitors snow depth and ice buildup to provide a forecast of the amount of spring runoff and flood predictions.

Photo copying any of the following material is permitted. If you have any question, comments or concerns about this Spring Water Awareness Program please contact our Quinte Conservation Main Office.

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A PDF version of this kit can be found on our Quinte Conservation website.
Website: www.quinteconservation.ca

Spring Water Safety: Important Program Notes

Key Safety Messages

Stay Away from all dams and water control structures.

Remember to always dress warmly in the winter – every time you go outside!

It is important to always be with a friend when you play outside, so that someone can go for help if there is a problem. Always tell an adult where you are playing.

Children should stay off the ice, but if they do go onto the ice, they should have an adult check it first for safety.

If someone you know falls through the ice, ONLY AN ADULT should rescue a victim who has fallen through the ice because an adult is stronger. Even a small child can be very heavy when wearing soaked winter clothing. Find an adult, seek medical help, call 9-1-1!

Why is ice on our rivers, lakes and creeks unsafe?

1. Fast moving water (the current) in the rivers and creeks weakens the ice from underneath. The faster the current, the quicker the ice thins. Current can also affect ice on lakes and larger bodies of water. One cannot tell by looking if the ice is safe.

2. Snow acts as an insulator on the ice and prevents the ice from freezing completely.

3. The rivers and streams in urban areas are used as storm sewers for street runoff. This means not only melted snow from our cities and towns washes into the rivers, but also the salt that was used to melt the snow. The salt affects the ice and makes it weak and unpredictable.

DANGER AREAS! STAY AWAY FROM . . .

- Cold, fast flowing water
- Thin ice
- Slippery banks
- Eroded banks
- Dams
- Bridges
- Culverts
- Mounds of ice on the shores of Lake Ontario are ALL DANGER areas!

Understand that ice cover is often unpredictable:

- Ice formed on moving water such as rivers and creeks varies in thickness.
- AVOID walking on ice that is on or near moving water!
- In spring weather ice is not safe, even thick ice is not necessarily safe. During the spring melt, lines of impurities in the ice melt very quickly, creating weak spots.
- Ice rarely freezes or thaws at an equal rate.

IF IN DOUBT, DON'T GO ON THE ICE !!!

On the Ice

- Obey all signs posted on or near the ice.
- Only play on or near ice when a responsible adult is supervising.
- Use the "buddy system" - never walk on ice when alone.

The colour of ice *may* be an indication of its strength.

- Clear blue ice is strongest.
- White opaque (difficult to see through) or snow ice is half as strong as blue ice. Opaque ice is formed by wet snow freezing on the ice.
- Grey ice is unsafe. The grayness indicates the presence of water.

Be Water Aware Facts:

- Snow insulates ice from the cold air and can prevent it from thickening.
- A warm spell or thaw can degrade ice VERY quickly; therefore, ice that was safe one day may be dangerous the next.
- When snow or ice melts and flows into rivers and streams, waterways can become full with runoff and flooding can result. Even small ditches and culverts have cold fast flowing water in the spring.
- In the spring, the ground may be frozen or saturated and so precipitation is not absorbed. This means rain runs off the land into waterways, increasing their flow.
- During the spring, riverbanks thaw and may collapse when someone walks on them. Snow and ice overhangs also form in these areas and may present an additional danger.
- It is especially dangerous to fall through the ice of a fast flowing river, because the current can sweep you under the ice.
- The water in the spring is very cold and its low temperature alone can be a cause of death due to hypothermia.

Many accidents are due to lack of education and awareness. A concerted effort on all our parts to teach children the dangers of fast moving rivers and creeks will give them the edge they need to play safely and avoid tragedy this spring.

When is the Ice Safe?

There is no sure answer. Ice is tricky, and just because a lake or stream is frozen doesn't mean the ice is safe. To understand the factors involved in the strength of ice, it's necessary to understand how ice forms on lakes and streams and a few of its physical properties.

You CANNOT tell the strength of ice just by looking at it! Ice strength is affected by all the factors listed below:

- Daily temperature: Ice moves as temperatures change. If you hear ice "booming" or cracking on cold days or still evenings, it doesn't necessarily mean the ice is dangerous, merely that it's changing shape as the temperature changes.
- Water currents: fast flowing water in streams, creeks and rivers create thin and weak ice that is not always visible to the recreationalist. Beware of all ice on flowing water bodies.
- River Ice: Ice formed over flowing water can be dangerous near shore, around inflowing or outflowing streams, or on lakes containing large numbers of springs. River ice is generally weaker than ice on lakes or ponds because of currents!
- Thickness: Ice seldom freezes or thaws at a uniform rate. The ice can be a very thick and strong in one spot while thin and weak in another!
- Snow is an Insulator: Whether the ice is or isn't covered with snow (snow acts as an insulator); a layer of snow insulates ice, slowing down the ice forming process. In addition, the weight of snow can decrease the bearing capacity of the ice.
- Depth of water under the ice: Ice near shore is weaker. The buckling action of the lake or stream over the winter breaks and refreezes ice continually along the shore.
- Water Chemistry: The rivers and streams in urban areas are used as storm sewers for street runoff. This means not only melted snow from our cities and towns washes into the rivers, but also the salt that was used to melt the snow. The salt affects the ice and makes it weak and unpredictable.
- Size/type of water body: Straight, smooth flowing stretches are safer than river bends. River mouths are dangerous because the current weakens the ice and creates unsafe pockets.
- Logs, rocks and docks: Such objects can absorb heat from the sun and weaken the ice.
- Distribution of the ice: A potential danger spot on lakes is an open portion completely surrounded by ice. Winds will force exposed water beneath the ice and rot it from below.
- Dams and bridges: Ice is *never* safe near dams due to strong currents and changing water levels. Bridges and structures in the water create unsafe conditions.
- Water level fluctuations: can create thin ice as water levels drop not visible to the recreationalist. Ice can be 'hanging' with no support beneath.

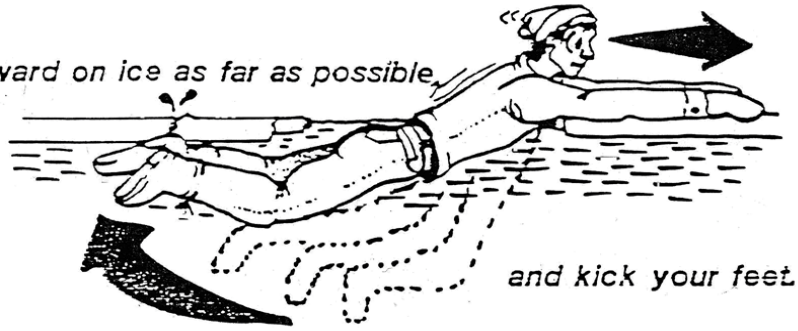
- Actions of birds and fish: schools of carp create thin ice spots or even open water by congregating in one location while circulating the water with their fins; Beavers create channels under the ice to move from one location to another – these channels can result in thin ice above them.
- And local climatic factors: Fluctuation in weather conditions result in unstable and unpredictable ice.

SELF RESCUE

1. Call for help loudly and clearly!
2. Resist the urge to climb back out where you fell in. The ice is weak in this area.
3. Use the air trapped in your clothing to get into a floating position on your stomach and face the shore.
4. Slowly reach forward onto the ice - do not push down on it.
5. Kick your legs to slowly push your torso onto the ice.
6. Crawl on your stomach or roll away from the open area with your arms and legs spread out as far as possible to evenly distribute your body weight.
7. DO NOT stand up! Look for shore and make sure you're going in the right direction.
8. Get medical help immediately!

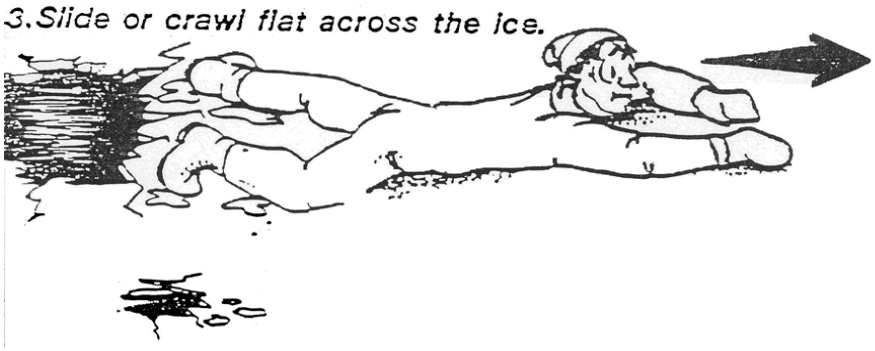
If you can't climb onto the ice, float in the water and continue calling for help loudly & clearly.

1. Don't panic



2. Reach forward on ice as far as possible

and kick your feet



3. Slide or crawl flat across the ice.

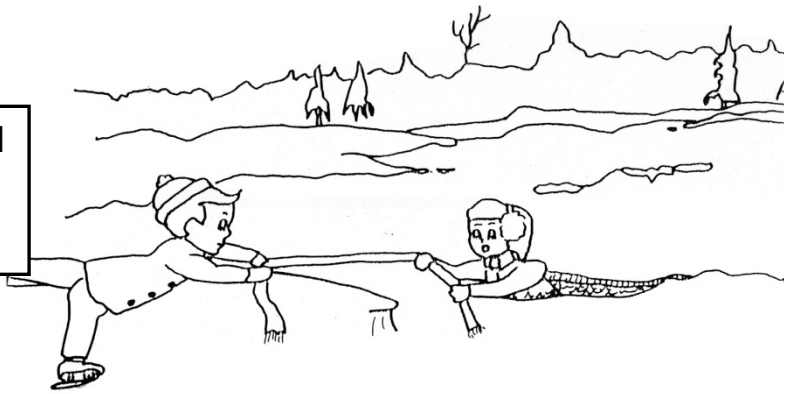
RESCUE TIPS

Children should never attempt to physically rescue anyone! Rescue attempt should ONLY be done by an adult! A rescue attempt can result in two victims instead of one.

Instead of attempting to pull out a victim, help them rescue themselves.

- Phone 9-1-1 for help.
- Call out the Self-Rescue Steps to the victim.
- DON'T GO ON THE ICE! Push or throw something (like a long stick, a branch, a rope or floating aid) to the victim that they themselves can use to get out of the water or to float on until expert help arrives.

STAY LOW, REACH & THROW . . . BUT DON'T GO!!!



HOW TO RESCUE SOMEONE WHO HAS FALLEN THROUGH ICE
(use only with students in upper grades as younger children should be discouraged from attempting a rescue)

Rescuing another person from ice can be dangerous. The safest way to perform a rescue is from shore.

- Call for help. Consider whether you can quickly get help from trained professionals (police, fire fighters or ambulance) or bystanders.
- Check if you can reach the person using a long pole or branch from shore – if so, lie down and extend the pole to the person.
- If you go onto ice, wear a PFD and carry a long pole or branch to test the ice in front of you. Bring something to reach or throw to the person (e.g. pole, weighted rope, line or tree branch).
- If you must go onto the ice, lie down to distribute your weight and slowly crawl toward the hole.
- Remaining low, extend or throw your emergency rescue device (pole, rope, line or branch) to the person.
- Have the person kick while you pull them out.

Get the person to a safe position on shore. Signal for help!

SEEK MEDICAL HELP!

Following the rescue, SEEK MEDICAL HELP! If the victim shows stiffness, slurred speech or is unconscious, they could be hypothermic, which mean a loss of body core heat, and it can be fatal. Know how to recognize signs of hypothermia! Hypothermia occurs when the body loses heat faster than it can produce it

HYPOTHERMIA

SYMPTOMS & SIGNS OF HYPOTHERMIA

FIRST SYMPTOMS INCLUDE:

Lack of coordination
Absentmindedness
Difficulty in speaking
Uncontrolled shivering
Dazed, confused and careless behaviour
Slowed or slurred speech
Slow to response to questions
Dilated pupils
Decreased attention span

AND THE MORE ADVANCED SYMPTOMS INCLUDE:

Muscle Stiffening
Lack of shivering
Irrational Behaviour
Slowing of pulse and breathing

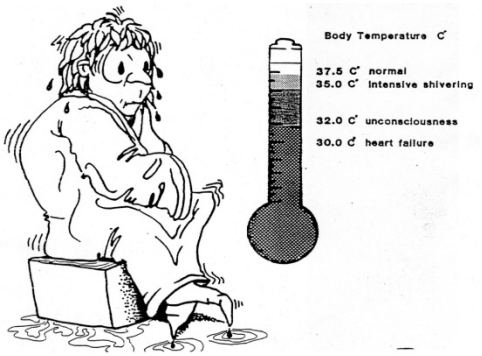
HOW TO HELP A VICTIM

1. Get a victim to a warm place
2. Give them warm sweet liquids
3. Huddle close together to help restore body heat
4. CALL 911! Get an adult!

Water is an excellent conductor of heat, so a human body will lose heat up to twenty times faster in water than on dry land. Hypothermia is a life threatening condition that must be treated immediately. The victim should be taken out of the cold wind/and/or to a warm place. Medical help should be requested immediately.

WHEN SOMEONE HAS HYPOTHERMIA:

Their skin and blood temperature in their arms and legs drops quickly
They begin to shiver
They may have trouble breathing and be unable to use their hands
The temperature of their heart, brain, and other organs drops gradually
They may become unconscious, and if in the water, they may drown
If their body temperature drops further, they may die of heart failure



Public Safety Around Dams

Quinte Conservation operates 39 dams, also known as water control structures. It is important for everyone to educate themselves on the hazards created by dams.

What is a dam? A dam is defined as "a structure of work forwarding, holding back or diverting water".

Historically dams were built for industrial uses such as mills, logging and navigation. Currently, Quinte Conservation dams are used for flood management, wetland habitat management, and low flow augmentation. One dam in Belleville has a secondary purpose, hydroelectricity generation (McLeod Dam in Belleville).

Hazards Associated with Dams *(Source: Ontario Ministry of Natural Resources, Public Safety around Dams)*

- While low head weirs may appear insignificant, they pose considerable dangers to those around them. Water that continuously re-circulates at the base of low head weirs creates underwater hydraulics which can easily trap someone at the base of the dam, commonly referred to as the "drowning machine".

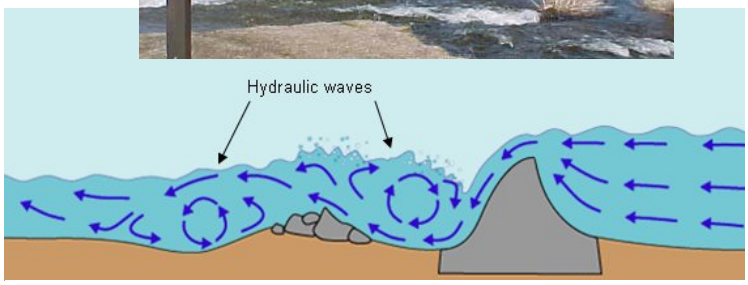


Figure: Low Head Weir underwater hydraulics, "drowning machine".
Sourced from Ministry of Natural Resource: Public Safety around Dams

- Upstream dam leakage between and around stop logs may suck in a swimmer and hold the person below the water level with such force they cannot escape.

- Objects in foaming water are less buoyant than still water. Air trapped in water reduces the buoyancy and therefore persons caught in such conditions have greater difficulty staying afloat even with the aid of personal floatation gear.

- Changing water levels and flows below a dam can occur rapidly and without warning. Never camp, picnic or sunbathe in an area below a dam which may become flooded.

Seasonal Dam Safety Tips

(Sourced from Ontario Ministry of Natural Resources, Public Safety around Dams)

- **Summer:**
    - Always stay outside booms and away from all dam structures.
    - Never swim above a dam or dive from a dam structure. Currents can pull you through the dam or pull you against flow structures with such force that you could not escape.
    - Never fish, boat, or swim below a dam. Water levels and flows can change very quickly and you may not be able to react in time to avoid the danger.
    - Personal water craft and boats should always stay clear from dams. Never tie or anchor your boat below a dam.
    - Never sunbathe, picnic or camp in an area which may become flooded due to dam operations.

- **Autumn:**
    - ATVs should be used with caution around water. Operators should be aware of possible changes in water flows or levels from dam operations.
    - Always obey posted signs, and do not enter fenced areas to hike, or access hunting or nature viewing areas.

- **Winter:**
    - Beware of thin ice that may develop due to dam operations. Never venture out on the ice alone. Always wear a floatation suit and carry a throw rope.
    - Dam operations often result in lowering of water levels throughout the winter and spring. However, this can result in ice collapsing onto lower water levels and then water seeping up under the snow. Persons venturing out on the ice should always be aware of the potential of slush under the snow over ice. Travel in slush conditions is very difficult regardless of the mode of travel.

- **Spring:**
    - Persons fishing should stay clear of dams. Water flows and levels can change quickly.
    - Canoers and kayakers should always stay clear of dams.

- **General:**
    - Stay off the dam structures unless the area is clearly marked for public travel.
    - Be alert to changes in water levels.

Quinte CONSERVATION

2061 OLD HIGHWAY 2, RR#2, BELLEVILLE, ON, K8N 4Z2
PHONE: (613) 968-3434 • **FAX:** (613) 968-8240
www.quinteconservation.ca

Dear Parent or Guardian,

Your child has just participated in the Spring Water Awareness & Safety Around Dams Program. This program has been developed by Quinte Conservation and delivered by your child's teacher. It is designed to make children aware of the dangers associated with the spring water runoff.

Please, this winter and spring season remind your child(ren);

- To stay away from fast cold flowing waters including rivers, creeks, streams, ditches and culverts!
- To stay off the ice (unless accompanied by an adult).
- To never play near dams.
- To never play near or on ice without adult supervision.

Quinte Conservation, as the lead flood warning agency and its related interest in public safety, created this program in order to make children aware of the grave dangers that exist at this time of year. For more information please visit www.quinteconservation.ca

Let's all work together through education and awareness and prevent a tragedy this spring!

Wishing you and your family a safe and enjoyable spring season,

Quinte Conservation
613-968-3434
www.quinteconservation.ca

Spring Water Awareness Program (SWAP) Evaluation

In order to assist Quinte Conservation in evaluating the Spring Water Awareness Program (SWAP), please fill in an evaluation form and return it by fax, 613-968-8240, or regular mail to:

Quinte Conservation
RR#2 2061 Old Highway #2
Belleville, Ontario
K8N 4Z2

School: _____
Teacher: _____
Grade: _____

If you used the video "Safety Says" in your classroom please rate the video?

Poor Fair Good Very Good Excellent

Were there an adequate variety of activities included in the SWAP kit?

YES NO

In what ways could Quinte Conservation improve this package?

_____
_____
_____

Will you use the SWAP kit another year?

YES NO

If no, why? _____
_____
_____

Suggestions

_____
_____
_____
_____
_____