



CRD | REGIONAL WATER SUPPLY SERVICE - LEECH WATER SUPPLY AREA

Welcome

Management of the
Leech Water Supply Area of the
Greater Victoria Water Supply Service
Public Open House

Welcome

“Water is the most critical resource issue of our lifetime and our children’s lifetime. The health of our waters is the principal measure of how we live on the land.”

- Luna Leopold

What is the Purpose of This Open House?

We want to:



- Provide information on the current situation in the Leech Water Supply Area (WSA)



- Explain the necessity for updating the Greater Victoria WSA Protection Bylaw to restrict unauthorized access to the Leech WSA



- Provide information on the restoration of the Leech WSA and the management of the Greater Victoria WSA as a whole

Can I be heard?

Yes, this Open House is an opportunity for interested residents to review information and speak directly with Capital Regional District Integrated Water Services (IWS) staff.

We welcome your comment on the information and plans. Any written comments received will be provided to Integrated Water Services staff, the Water Advisory Committee and the Regional Water Supply Commission for consideration.

Introduction to the Leech Water Supply Area

Acquisition and History

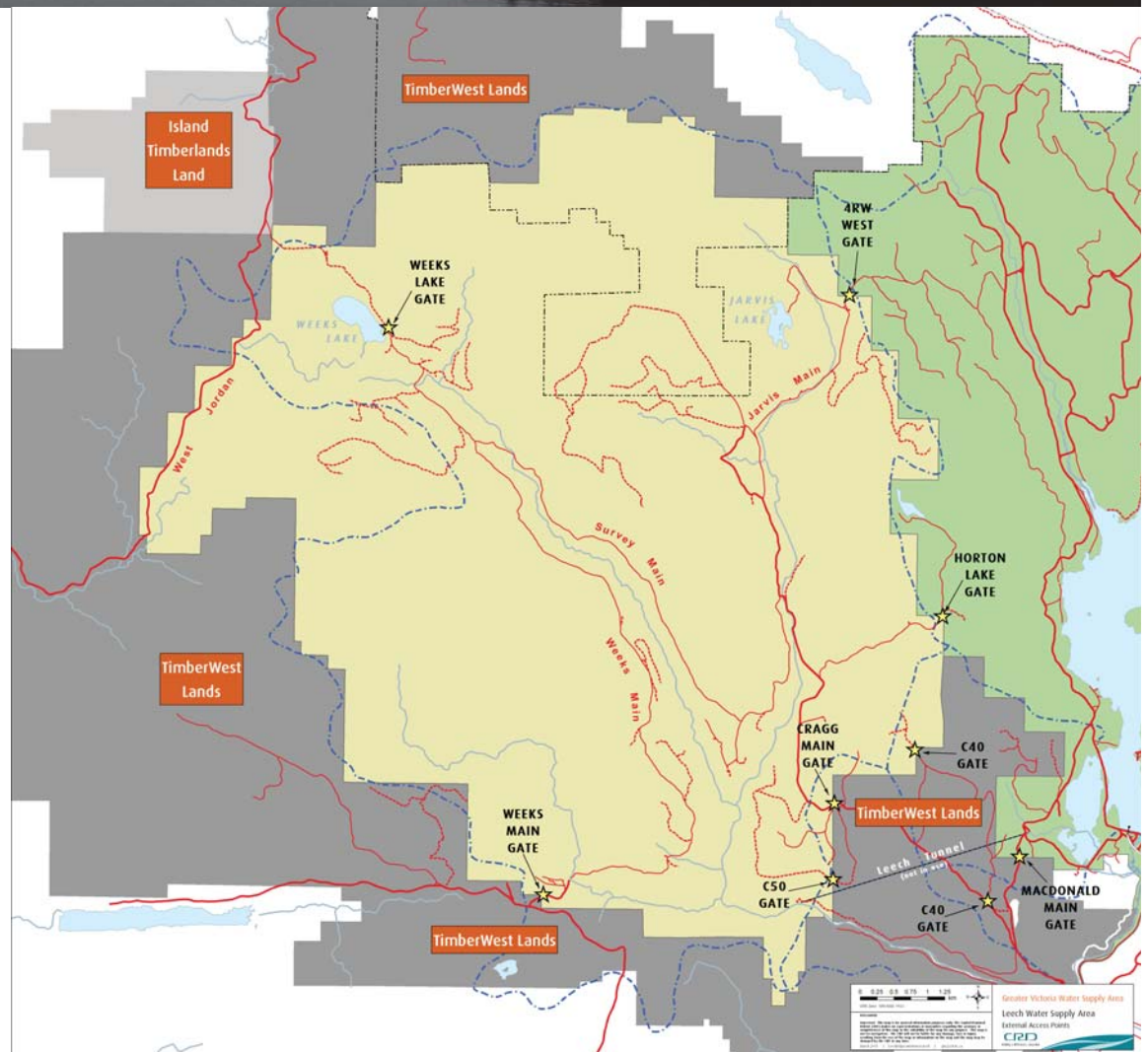
The Leech Water Supply Area (WSA) which is adjacent to the Sooke WSA was acquired by the CRD through two purchases to protect future water supply:

1. 8,791 hectares purchased from TimberWest in 2007 (\$59 million)
2. 832 hectares purchased from Western Forest Products in 2010 (\$3 million)

9,623 hectares total (\$62 million)

95% of the timber in the Leech WSA was harvested with an extensive road network of more than 400 kilometres.

92% of the watershed of the Leech River above the diversion tunnel is now owned and managed by the CRD for water supply.



What is the Current Situation?

The Leech lands acquired in 2007 from TimberWest have been closed to the public for several years, but trespass continues to occur. The Leech lands acquired in 2010 from Western Forest Products in the Weeks Lake area have not yet been closed and secured. The lack of enforcement authority in the Leech Water Supply Area and incomplete closure of the lands to public access have led to a number of issues:

- Stolen vehicles driven into Weeks Lake (twice), abandoned vehicles burned on site
- Discharge of firearms and fireworks during high and extreme fire danger
- Burning and abandoned campfires during high and extreme fire danger
- Rutting (soil damage), erosion and damage to streams
- Vandalism of infrastructure (gates and signs)
- Dumping and littering (including large items such as televisions, computers, a camper and canoe)
- Sanitation concerns (there are no facilities)
- Tree cutting and theft of rock
- Illegal hunting
- Illegal grow operations



Why is the Current Situation a Problem?



History of Illegal Use:

The Leech Water Supply Area (WSA) has never been “open” to public access while held by TimberWest and Western Forest Products or the CRD, but a long history of trespass has led to a perception that public access is permitted.



Poor Environmental Stewardship:

Though the number of people accessing the Leech WSA without authorization is relatively small, the environmental impact is significant and long lasting – in particular damage from vehicles driving off-road and spread of invasive species.



Trespass across TimberWest Private Forest Land:

In order to reach the Leech WSA, you must first pass through private forest land owned by TimberWest. Passing through TimberWest private lands without permission is trespass and illegal.



Risk to Investment:

The Leech WSA was purchased for \$62 million and significant funds are being expended (\$5.8 million over 17 years) to rehabilitate the land for the purposes of water supply. The investment in protection and rehabilitation of the lands for best water quality may reduce the future need for expensive filtration facilities.



Wildfire Risk to Sooke WSA:

Public access and the activities currently occurring greatly increase the likelihood of a fire start. During dry summer conditions a human caused fire could spread rapidly through the young forest in the Leech WSA and burn into the Sooke WSA. Such an event could be catastrophic to the drinking water supply for Greater Victoria.



Public Safety and Allowing Illegal Activities to Continue:

The Leech WSA has never been managed for public access or use. Steep slopes and poorly maintained roads with failing drainage structures pose a public safety hazard. There are no facilities, few warning signs and unexpected hazards. The CRD may face liability should serious injury occur. Further, illegal activities such as hunting in a no hunting zone, dumping, and burning during campfire bans cannot be allowed to continue.

What Needs to Change & How will this be Done?

What needs to change?

Human activities that are illegal, cause damage and place the Leech WSA and the Sooke WSA at risk need to stop.

How will this be done?

- **Update the Greater Victoria Water Supply Area (GVWSA) Protection Bylaw** to include the Leech WSA. The Bylaw already protects the Sooke and Goldstream WSAs. The Bylaw spells out that unauthorized access and unauthorized activities in the GVWSA are illegal and enforceable with fines.
- **Place additional signage** providing information and delineating boundaries. Signage is important to let people know the location of the property boundaries and that unauthorized access is not permitted.
- **Install 1 additional gate and additional fencing** in the northwest corner of the Leech WSA near Weeks Lake. Existing access from the south and east is already blocked by gates and fencing.
- **Expand public communication** – by posting notices and articles regarding restoration and the need to restrict public access to the Leech WSA to protect our future water supply.
- **Conduct additional ground patrols** to educate and enforce the Protection Bylaw in the Leech. Currently a ground patrol monitors the Leech WSA daily with more frequent patrols when wildfire danger is elevated.

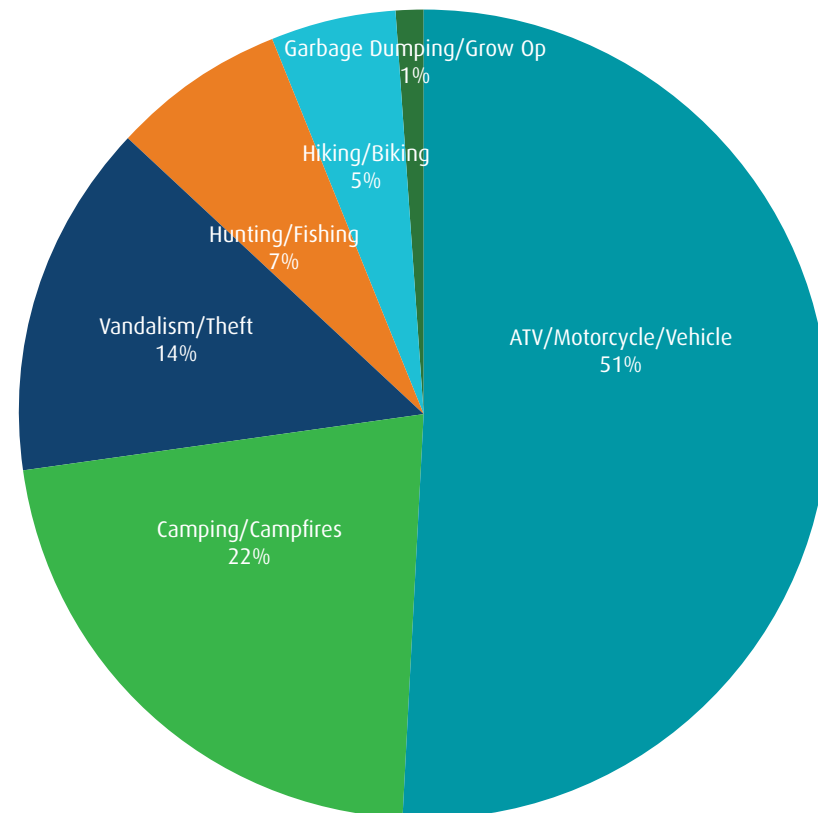
Who is Affected?

There have been approximately 60 trespass incidents (approximately 200 people) detected in the Leech WSA each year since the CRD purchased the lands in 2007 and 2010. Some incidents involve the same individuals who trespass repeatedly. Restricting unauthorized access to the Leech WSA will only affect a relatively small number of people given the population of the Region.

The main trespass activities are:

- 51 % ATV/Motorcycle/Vehicle
- 22 % Camping/Campfires
- 14 % Vandalism/Theft
- 7 % Hunting/Fishing
- 5 % Hiking/Biking
- 1 % Dumping/Grow Operations

LEECH WSA TRESPASS INCIDENTS
2008-2014



What Activities Can or Could be Allowed in the Leech WSA?

The following activities are currently allowed:

Research and Other CRD Initiatives

Researchers presenting proposals that are consistent with restoration efforts are considered on a case-by-case basis. Access for initiatives in the interest of the region may be considered.

Cultural Use

First Nations cultural access can be accommodated provided such activities are consistent with watershed protection and restoration efforts and public safety considerations.

Mining

The Leech Water Supply Area has a long history of placer mining and mineral exploration that pre-dates the CRD purchase of the lands. Provincial legislation currently requires the CRD to grant miners with valid tenures access to their claim areas.

The following activities could be allowed:

Non-Motorized Recreation

Once the Leech is in active use as a drinking water supply area, it will be fully closed to public access, consistent with the Sooke and Goldstream Water Supply Areas. However, it may be several decades before water from the Leech is needed.

Requests from sanctioned organizations for non-motorized recreation consistent with watershed protection and restoration efforts could be considered on a case-by-case basis. Appropriate insurance, orientation and permission to travel through adjacent private forest land (TimberWest) would be required.

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Benefits of Closing the Leech Water Supply Area to Public Access



The benefits of fully closing the Leech Water Supply Area (WSA) to public access are:

- Protection of a major financial investment in our future water supply
- Reduced risk of fire starts and wildfire that could affect our current drinking water source
- Improved environmental stewardship - reduced risk of environmental damage and spread of invasive species
- Protection of public health by reducing risk of contamination from spills associated with unauthorized vehicles, and from poor sanitation of people and pets
- Restoration efforts not hindered or damaged by foot and off road traffic
- Consistent security approach with surrounding landowners
- Public not encouraged to trespass across TimberWest lands
- Consistent approach to watershed protection throughout the Greater Victoria Water Supply Area (controlled authorized access only)

Leech Water Supply Area - Further Issues & Recommendations

In 2009, the condition of the Leech Water Supply Area was assessed by a team of consultants and CRD staff. The following main issues and recommendations were noted, which informed the long-term restoration program:



Roads

Issue: Existing road network has terrain stability and sedimentation concerns placing risk on Leech River water quality.

Recommendations:

- Inventory and assess all roads and drainage structures
- Develop access management plan for the area
- Upgrade roads and drainage structures of water quality concern
- Deactivate and/or rehabilitate roads on unstable terrain or that are no longer needed



Wildfire

Issue: Wildfire represents a major threat and risk to Greater Victoria water supply. Integrated Water Services has a well established wildfire management program, but the Leech represents additional wildfire protection challenges (less access, more trespass, dense forest fuels, large area)

Recommendations:

- Incorporate the Leech watershed into the wildfire management program for the GWWSA
- Evaluate fuel reduction opportunities and options
- Develop a wildfire fuel management plan

Leech Water Supply Area - Issues & Recommendations



Soil Erosion and Slope Stability

Issue: The Leech watershed contains areas of highly unstable terrain as evidenced by historic landslides. Further landslides into the Leech River system could have devastating impacts on water quality.

Recommendations:

- Assess existing landslides for rehabilitation
- Conduct detailed terrain mapping
- Assess sediment sources, sinks and movement within the watershed
- Conduct rehabilitation where necessary



Forest Health

Issue: The Leech watershed has been heavily logged, adequate healthy reforestation must be achieved to meet water quality goals over time. Invasive species represent a challenge to restoration and a possible threat to ecological integrity.

Recommendations:

- Collect forest inventory information for the Leech Water Supply Area
- Assess forest plantations and fill plant or brush to achieve reforestation objectives
- Conduct annual forest insect and disease surveys to monitor for trends

Leech Water Supply Area - Issues & Recommendations

Other Recommendations

Water Quality and Restoration Program Monitoring:

- Implement a network of monitoring sites to gauge existing water quality and the effect that restoration activities will have on water quality in future years.

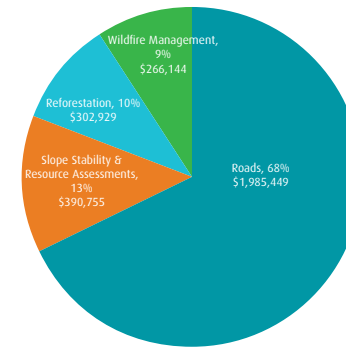
Cultural Assessment of the Leech Water Supply Area:

- Conduct an assessment of the cultural values of the Leech Water Supply Area and use the information to guide future management decisions.



Leech Water Supply Area - Restoration Program

In 2009, a 17-year \$5.8 million capital plan was approved by the Regional Water Supply Commission to rehabilitate the Leech Water Supply Area. The graph to the right summarizes the work completed to date.



Leech Restoration Projects Completed (\$2,945,277)
2009 - 2014

Highlights of restoration work completed:

Roads:

- Piling and removal of cables, old culverts and scrap metal
- Removal or replacement of failing bridges: Jarvis Main, West Leech, Survey Main
- Upgrade of Survey Mountain Main and Cragg Main roads
- Re-routing of Survey Main and Jarvis Main roads

Slope Stability:

- Classification and mapping of geology, terrain, landslides, terrain stability and soil erosion potential
- Road rehabilitation prescriptions for roads on unstable terrain

Reforestation:

- Planting of 137,186 tree seedlings – Douglas fir, western red cedar, white pine
- Brushing for tree seedling release
- Pruning white pine to reduce susceptibility to white pine blister rust

Wildfire Management Program:

- Piling and burning of remaining logging slash
- Installation of two fire weather stations
- Identification and development of water pumping stations, fire vantage points, helicopter landing sites
- Removal of a derelict cabin at Jarvis Lake



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Opportunity for Comment

Now it's your turn to tell us what you think!

If you would like to leave us with any comments, please take a comment form, fill it out and leave in the comment box.

If you have a short comment, feel free to write it on a post-it and stick it in the box on the right.

All written comments received will be provided to Integrated Water Services staff, the Water Advisory Committee and Regional Water Supply Commission for their consideration.

Thank you for engaging with us about the management of the Leech Water Supply Area and the protection of our drinking water.

YOUR COMMENTS:



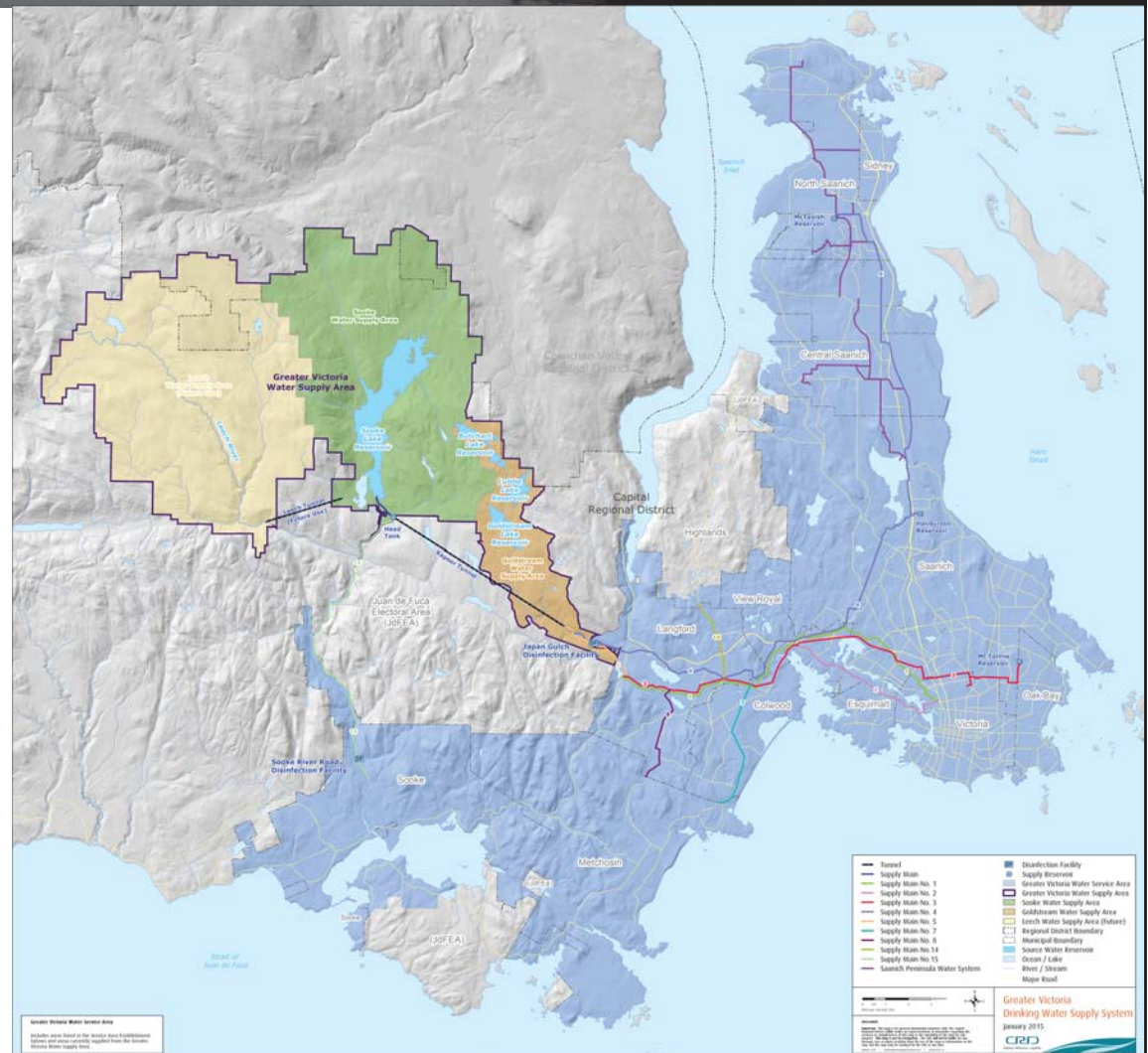
Greater Victoria Water Supply Area & Water Supply System

The Greater Victoria Water Supply Area (GVWSA) provides source drinking water for approximately 350,000 residents of the Greater Victoria area.

Includes:

- Leech Water Supply Area - 9,623 hectares
- Sooke Water Supply Area - 8,620 hectares
- Goldstream Water Supply Area - 2,307 hectares

Total GVWSA - 20,550 hectares



3 Watersheds & 2 Reservoir Systems

The Greater Victoria Water Supply Area is made up of three main watersheds feeding two reservoir systems.

The Sooke Water Supply Area feeds Sooke Lake Reservoir that has been used for water supply since 1915.

- Provides all of Greater Victoria's drinking water other than a short period for annual maintenance of the Kapoor Tunnel
- Stores 160 million m³ of water, of which 93 million m³ is available for drinking water

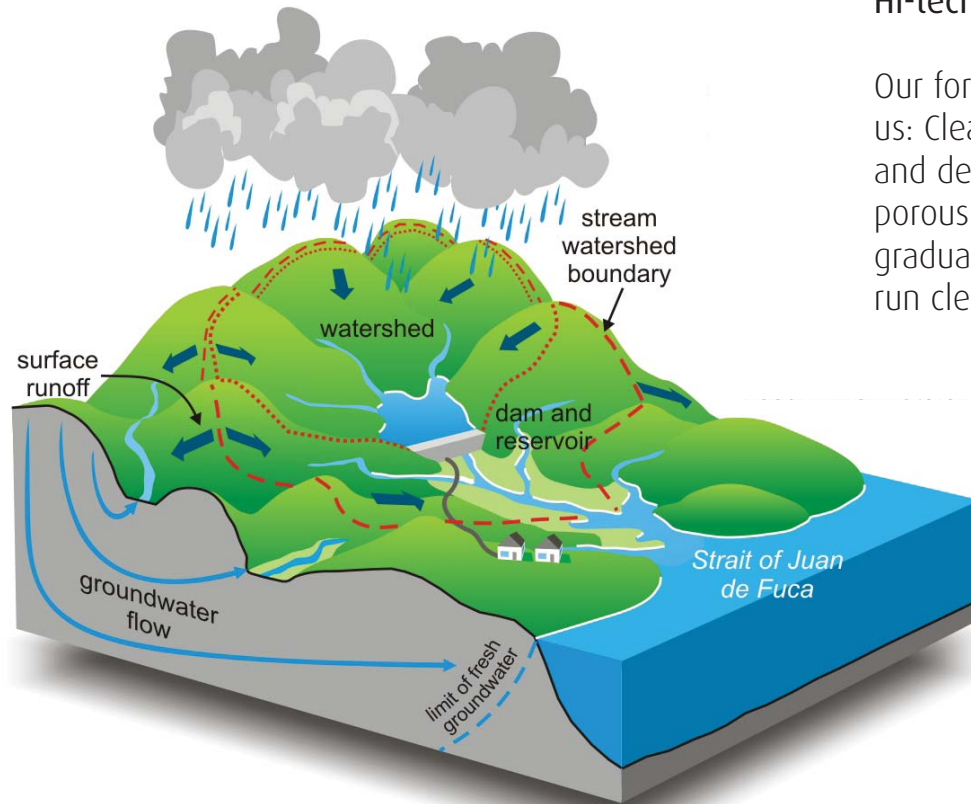
The Goldstream Water Supply Area feeds a series of four reservoirs that have been used for water supply since 1905.

- Provides backup water supply when Sooke Lake Reservoir is taken off line
- Stores 10 million m³ or two months of winter water supply for Greater Victoria

The Leech Water Supply Area feeds the Leech River which will supplement Sooke Lake Reservoir through an existing tunnel.



What is a Watershed? How does it Work?

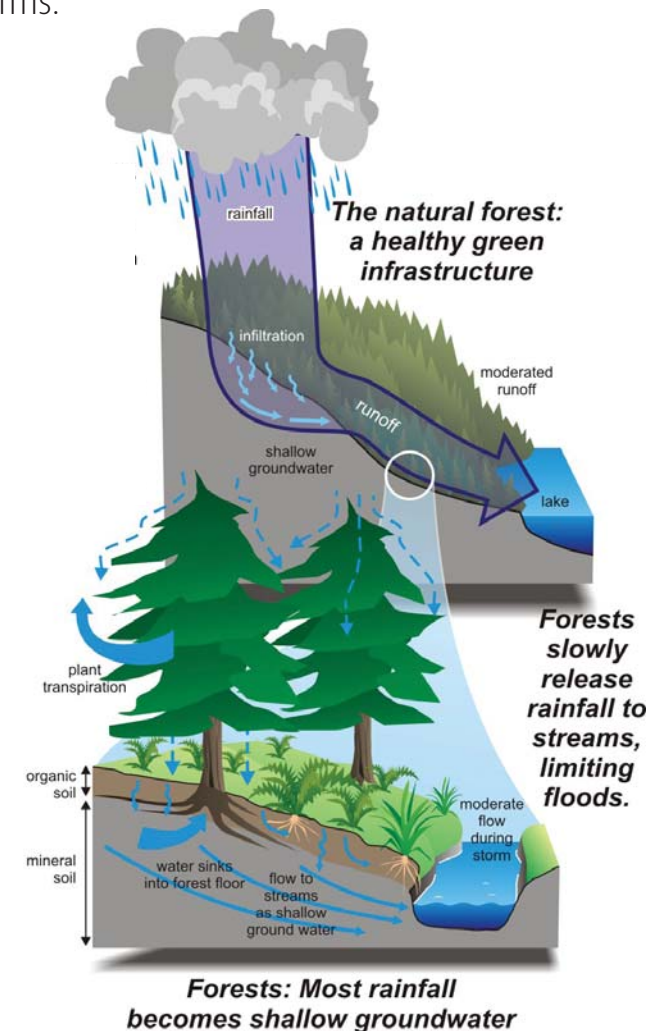


Watersheds are everywhere!

All the land area that drains into a stream system is called a watershed. Most areas of Greater Victoria drain into streams, so it is likely that you live in a watershed. A water supply watershed is the land upstream of a water supply intake. The Greater Victoria Water Supply Area is made up of the Sooke, Goldstream and Leech River watersheds.

Hi-tech forests? How they work for us.

Our forests, streams, lakes and wetlands provide an amazing service to us: Clean water! They have evolved after millions of years of “research and development.” Forests act as a giant filter. Rain infiltrates the porous organic soil layer and percolates slowly to streams where it is gradually released as clear water. As a result, forest streams commonly run clear even during storms.



The Need for Watershed Protection



MAINTAINING FOREST COVER



PROTECTING NATURAL DRAINAGE PATTERNS



REDUCING ROAD & HUMAN IMPACTS

Good drinking water starts with healthy forest ecosystems.

Healthy forest ecosystems are maintained by:

- Restricting development and maintaining forest cover
- Keeping contaminants away from watercourses and the watershed
- Preventing large scale natural disturbances like wildfire, insect and disease outbreaks
- Maintaining natural drainage patterns
- Reducing the impacts of roads (source of sedimentation)
- Careful oversight of human activities (possible through land ownership)

CRD Integrated Water Services ensures that drinking water quality is the primary consideration in all planning, design and operational decisions in the Greater Victoria Water Supply Area.

Threats to Watersheds and Water Quality and CRD Protection Programs



2012 WILDFIRE NEAR SHAWNIGAN LAKE
1.5 KM FROM SOOKE WATER SUPPLY AREA



EROSION, SEDIMENT AND NUTRIENT FLUSH
INTO A WATERCOURSE FROM THE 2012
SHAWNIGAN FIRE

Threat: Wildfire

Large forest fires in the Greater Victoria Water Supply Area are a significant risk to water quality and the ability to supply drinking water.

- A large-scale fire has the potential to increase the amount of surface erosion and nutrients entering a reservoir, which could stimulate toxin producing algal growth, increase the amount of suspended sediment in the water and affect the colour and taste of the water.
- Existing water disinfection facilities would not filter out the suspended sediments and organic matter entering the water supply from a large scale wildfire near the reservoir. This would cause the primary and secondary disinfection processes to be ineffective, potentially putting public health at risk.

Threats to Watersheds and Water Quality and CRD Protection Programs

CRD Program: Wildfire Management

To protect the watersheds against the risk from a large scale wildfire, the Integrated Water Services Department implements an extensive wildfire management program:



Wildfire Prevention Practices:

- No fires allowed throughout the year,
- Operations restricted or shut down during high and extreme fire danger
- No recreational access



Early Wildfire Detection:

- Air and ground patrols during fire season based on fire danger



Management of Forest Fuels:

- Assessing and reducing forest fuels in key areas (facilities, fuel break corridors)
- Management of woody debris from road clearing by chipping or burning



Wildfire Suppression Readiness:

- Additional staff during fire season, training and practice in wildfire suppression
- Fire fighting equipment: 2 large water trucks, 2 small initial attack water trucks and 4 pickup trucks with tanks and all required supplies



Arrangements for Outside Assistance:

- Agreements and cooperation with Wildfire Management Branch and neighbouring landowners to provide firefighting assistance if needed



Planning for Post Fire Risks:

- Assessment of potential erosion and planning for mitigation of areas burned near water supply reservoirs (in progress)

Threats to Watersheds and Water Quality and CRD Protection Programs



CONTAMINATION FROM DUMPING



DAMAGE FROM OFF-ROAD VEHICLES



CONCERNS OF WATERBORNE DISEASE

Threat: Access & Human Activity

Humans and human activities have the potential for some of the greatest threats to water quality.

For example:

- Fire starts that lead to wildfires by careless use of fire or accidental ignition
- Introduction of contaminants into the watersheds such as hydrocarbons (oil, petroleum and solvents) while using vehicles and equipment
- Introduction and spread of undesirable plant or animal species into the watershed
- Erosion and environmental damage
- Introduction of waterborne diseases into water supply reservoirs from poor sanitation of people or pets
- Vandalism to water supply infrastructure or contamination of reservoir source water
- Encroaching residential development adjacent to the water supply area increases the likelihood of fire starts, complexity of wildfire suppression, recreational pressure, domestic animals straying into the watershed, introduction and spread of undesirable plant and animal species

Threats to Watersheds and Water Quality and CRD Protection Programs

CRD Program: Watershed Security

Public access has been controlled in the Sooke and Goldstream watersheds since their purchase in 1911-1915 and 1925 respectively. Watershed caretakers and their visitors required medical testing as early as the 1920s in order to ensure water quality was not compromised. To protect the watersheds against the risks from unauthorized human activities, the Integrated Water Services Department implements the following programs and measures:

	<p>Legal Protection:</p> <p>The Sooke and Goldstream watersheds are protected by the Greater Victoria Water Supply Area Protection Bylaw no. 2804. The bylaw prohibits and provides for enforcement of:</p> <ul style="list-style-type: none"> • Unauthorized entry, hunting, fishing, discharge of firearms • Dumping, damage to the environment or wildlife, vandalism • Unauthorized fire, tree cutting and fuel storage 		<p>Compliance and Enforcement:</p> <ul style="list-style-type: none"> • Watershed orientations and educational information for all authorized entrants • Property signs and inspections along property boundaries • Investigation of all security incidents • Warnings and bylaw tickets levied with assistance from CRD Bylaw Officers • Provincial Wildlife Conservation Officer participation in ground patrols during hunting season
	<p>Security Monitoring:</p> <ul style="list-style-type: none"> • Gatekeeper at the main entrance gate • Ground patrols throughout the year and air patrols during fire season • Video surveillance at critical infrastructure points • Cooperation with neighbouring property owners on security 		<p>Barriers to Unauthorized Access:</p> <ul style="list-style-type: none"> • Heavy duty gates at road access points into the watersheds • Boundary fencing where trespass most likely • Gatekeeper at the main entrance gate

Threats to Watersheds and Water Quality and CRD Protection Programs



SPILL BOOM AND REEL



SPILL RESPONSE TRAINING



SPILL RESPONSE

Threat: Contamination from Spills

Spills of toxic or hazardous substances are a risk to water quality, should these substances enter the reservoir, particularly near the water supply intake. Spills may occur from equipment, vehicles or aircraft that spill on land or directly into a stream or reservoir.

CRD Program: Spill Prevention and Response

To protect the watersheds and reservoirs from spills of toxic or hazardous substances, the Integrated Water Services Department implements the following programs and measures:

Controlled Access

- Access to the watersheds is restricted to those personnel and activities authorized. The authorization process includes screening for hazardous substances.

Spill Prevention Practices

- Use of environmentally-friendly hydraulic oil
- No storage of fuel or oil within the watersheds without authorization and containment measures
- No low-level aircraft flights over Sooke Lake Reservoir
- Operational activities requiring contact with source water require a water quality protection plan

Spill Response

- Staff trained in spill response
- All spills reported and remedied, no matter how small
- Vehicles and work sites equipped with spill response supplies, additional supplies in spill depots
- Large spill boom for ready deployment on reservoirs if needed

Threats to Watersheds and Water Quality and CRD Protection Programs



DRINKING WATER RESOURCE



FOREST HEALTH MANAGEMENT

Threat: Ecosystem Health

Healthy forest ecosystems provide high-quality drinking water through slow filtration of precipitation through natural drainage processes into a receiving reservoir. Where environmental damage occurs, more sediment, nutrients and undesirable minerals and metals can enter water supply reservoirs and degrade water quality.

CRD Program: Environmental Protection

To safeguard the health of the forested ecosystems of the Greater Victoria Water Supply Area, the Integrated Water Services Department implements the following programs and measures:

Drinking water supply is the only resource extraction/use:

- No agriculture, forestry
- No recreation

No application of chemicals:

- No broad use of fertilizers or pesticides (a small targeted application may be considered where the benefit to ecosystem health significantly outweighs the risk to water quality)

Forest health management:

- Monitoring of insects, disease and windthrow
- Intervention where a large-scale disturbance may occur

Management of access roads and stream crossings:

- Roads are required to maintain access to water supply facilities and for management of watersheds
- Roads and stream crossings are managed to reduce their impact on natural drainage patterns and water quality

Threats to Watersheds and Water Quality and CRD Protection Programs



TESTING FOR PATHOGENS



AMERICAN BULLFROG



KNOTWEED OUTSIDE OF LEECH WSA

Threat: Undesirable Plants and Animals

Wildlife or domestic animals can be sources of pathogens in water in the form of parasites (giardia and cryptosporidium), viruses (hepatitis A, coxsackieviruses) and bacteria (E.coli, Salmonella, Shigella).

Although water from the reservoirs is treated, a high quantity of pathogens in the source water increases the risk of waterborne disease entering the drinking water system.

Newly invading plant and animal species present a threat to the watersheds by rapidly altering the existing species composition and ecosystem processes which can cause more pathogens, undesirable sediment, nutrients, metals and minerals from entering reservoirs.

Threats to Watersheds and Water Quality and CRD Protection Programs

CRD Program: Invasive Species Management

To protect the water quality and ecosystem health of the Greater Victoria Water Supply Area, the Integrated Water Services Department implements the following programs and measures:

Prevention	Management of American Bullfrog	Management of Canada Geese	Management of Beaver	Management of Invasive Plant Species
				
<ul style="list-style-type: none"> • Removal of dirt and soil from vehicles and equipment prior to entry • No live plants, animals, or soil brought in without risk review • Use of CRD watershed boats only, or dry dock requirements for other boats 	<ul style="list-style-type: none"> • Control of the invasive American bullfrog in the western communities to prevent spread into the GWWSA in collaboration with CRD Regional Parks 	<ul style="list-style-type: none"> • Control of Canada geese population (eggs added in spring) • Canada geese are scared away from the area where the intake tower is located • Canada geese scat is analyzed annually for presence of pathogens and bacteria 	<ul style="list-style-type: none"> • Beaver are prevented from establishing in the Sooke and Goldstream watersheds • Any trapped beaver is analyzed to detect the presence of any disease or pathogens • Beaver dams are removed where natural drainage patterns or infrastructure are adversely affected 	<ul style="list-style-type: none"> • Eradicating new species - e.g. knotweed • Containing spread of established species - e.g. gorse, English holly, English ivy, spurge laurel, Scotch Broom, thistle • Reducing established species by regaining mature forest cover - e.g. Scotch Broom, blackberry

Threats to Watersheds and Water Quality and CRD Protection Programs

Threat: Climate Change

Climate change poses a potential risk to forest ecosystem health, water supply and water quality. To date, the general predicted effects of climate change related to the Greater Victoria Water Supply Area include:

- Greater variation in weather between years
- Hotter and drier summers
- Warmer and wetter winters with more intense winter storms
- Less snow in coastal mountains

The predictions associated with climate change have a broad range of implications for the resources of the Greater Victoria Water Supply Area:

- Water quality and quantity in the source reservoirs
- Ecological processes and ecosystems
- The size of bridges, culverts and ditches along roads
- The operation and maintenance of water supply infrastructure



CRD Program: Climate Adaptation Strategy

Anticipating some of the effects climate change may have on the water supply areas and water supply system, the Integrated Water Services Department is undertaking the following programs and measures:

- Assess and prioritize the risks of climate change on the drinking water system (underway)
- Develop and implement adaptation strategies (underway)
- Continue implementing the water conservation bylaw between May-September to limit summer demand and maximize reservoir storage
- Assess and upgrade drainage structures in the watersheds to meet predicted 15% higher peak flows (underway)