



Annual Water System Report

**Overlander Ski Club
Stake Lake Trails Water System
Facility #14-215-00031
Box 1191 Kamloops, BC, V2C 6H3
250-372-5514**

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Acknowledgments:

The Overlander Ski club (the club) would like thank the many volunteers and club members who provided countless hours working towards getting the building and water system together, and especially Luc Guilherme who lead the project from infancy to completion.

We would also like to thank the Kamloops Sports Legacy fund, without whose financial support this project would not have been completed, and Delta Irrigation, for providing their expertise and support in getting the water system up and running.

Overview:

The journey to potable water at Stake Lake was a long one. Early stages and planning happened long before 2014 when our restroom building was finished and non-potable water began to flow.

With the help of many individuals along the way, and preliminary testing of the raw water, a water treatment system was designed and installed over the winter of 2016 into 2017.

In November of 2017, after all installation and permitting was completed, the club began testing of the treatment system to prove efficiency. After three consecutive months of passing metals analysis, the club was granted a permit to operate the drinking water system and our water fountain was opened January 31st 2018!

From that date, till the 2017/18 season ended March 25th, the club used approximately 30,000 liters of water in the washroom building as a whole, and approximately 1000 liters passed through the water fountain without incident.

Source Protection:

The well head and aquifer for the Stake lake water system resides with-in a Ministry of Forests, Lands and Natural Resource Operations recreational site and with-in a vehicle closure area. This provides protection from potential industrial or agricultural run-off, hazardous material spills, and vehicular fluid leakage that could potentially enter the source otherwise.

Over the next year, the club board of directors will appoint a committee to look further into source protection, and what, if any, measures may need to be taken. Their recommendations and any actions taken, will be included in next seasons report.

Cross connection, or the entrance of non-potable water into the treated water supply, is, at this time, a very minimal risk, as the treatment system, and all treated water are located in the same building. All equipment was installed according to manufactures specifications along with backflow / syphon protection.

Monitoring and Sampling:

All sampling was conducted in accordance to the club's sampling plan (appendix A) and our permit requirements.

Weekly sampling for coliforms started November 20th 2017, with the final sample of the season being submitted March 19th 2018.

The club was also required to conduct three total metals analysis prior to receiving a permit to operate the drinking water system, and a final sample at the end of the season.

This monitoring ensures the system is operating as designed and that safe water is being provided to our patrons. All analytical results can be found in appendix B.

System Maintenance and Incidents:

The system operated with-out incident over the season. Pressures and digital displays were monitored through-out the season with no indications of issue.

The softening system was refilled with approximately sixty kilograms of salts over the course of the season.

Over the off season, the system will be flushed and maintained according to the manufactures recommendations. These actions will be recorded in the log book, and reported in next season's annual report.

Emergency Response and Contingency Plan:

As we are a new, very small water system and have operated without drinking water since the club began operating the Stake lake ski trails decades ago, it may seem odd to consider the loss of our drinking fountain as an 'Emergency'; however, as our water system matures and possibly grows, having a clear and concise plan in place to deal with water loss will prove invaluable.

The current plan (which can be found in appendix C), is a basic response plan covering the most likely potential incidents, and provides the framework to expand as needed. The plan will be reviewed prior to the start of the next ski season, and revised as needed to reflect the most current conditions.

Long range plans:

At this time, there are no long range (with-in five years) plans for development of the system; however, the board review long range and strategic plans annually and any change will be reflected in the next report.

In closing, our first season of operation was a welcome success and we look forward to many more seasons to come.



Appendix A

Sampling Plan



Water Quality Monitoring Plan

Overlander Ski Club
Stake Lake Trails Water System
Facility #14-215-00031
Box 1191 Kamloops, BC, V2C 6H3
250-372-5514

Overview

The raw water from the Stake Lake well does not meet safe drinking water guidelines as set out by both Interior Health Authority (IHA), and the Canadian Council of Ministers of Environment.

This sampling program is designed to ensure that the water treatment system set-up by the Overlander Ski Club is effectively treating the raw water to both meet safety guidelines, and meet or exceed regulatory testing. All sampling needs to be taken from a treated source, the water fountain is the easiest to sample from.

Sampling

Bacteriological: Coliform sampling must be submitted weekly from the first week in November until ski operations close.

Coliform bottles and sampling chain of custodies are obtainable from IHA at 519 Columbia St. Kamloops.

Samples should be taken Monday or Tuesday, and must be returned to the IHA office between 09:00 – 13:30 the day of sampling. Samples may also be taken on Wednesday, but this should not be normal practice.

Total metals / Turbidity: Metals and turbidity should be sampled three times; once late October, once late January and lastly at the end of ski season. This schedule not only meets our permit requirements, but also our equipment manufactures recommendations.

Sample supplies can be picked up from ALS Environment at 1445 McGill Road Kamloops.

Once sampled, these should be returned as soon as possible to ALS for analysis. These samples can be taken anytime during the labs open hours.

Reporting:

All reports, once reviewed, need to be forwarded to our assigned IHA Drinking Water Officer, currently Diana. Her e-mail: diana.tesic-nagalingam@interiorhealth.ca

Conclusion

This plan meets both our regulated, and recommend sampling requirements in order to ensure the safety of our drinking water supply.

This plan doesn't supersede any ordered changes to parameters, or cover unexpected changes in conditions.

If there are any changes to the water system during operations, additional testing maybe required.



Appendix B

Sample Test Results

Interior Health Authority
Drinking Water - Bacteriological

April 3, 2018

Collection Date	Sample Number	Facility Name (Sample Site)	Submission Type	Sample Type	Sample Date	Total Severity Weight	Acceptable?
19-Mar-2018	8031443-09	Overlander Ski Club (Stake Lake Restroom)	Non-Audit	Drinking Water - Bacteriological	20-Mar-2018	Normal	Acceptable
12-Mar-2018	8030884-09	Overlander Ski Club (Stake Lake Restroom)	Non-Audit	Drinking Water - Bacteriological	13-Mar-2018		Acceptable
05-Mar-2018	8030318-12	Overlander Ski Club (Stake Lake Restroom)	Non-Audit	Drinking Water - Bacteriological	06-Mar-2018		Acceptable
26-Feb-2018	8021760-06	Overlander Ski Club (Stake Lake Restroom)	Non-Audit	Drinking Water - Bacteriological	27-Feb-2018		Acceptable
19-Feb-2018	8021313-07	Overlander Ski Club (Stake Lake Restroom)	Non-Audit	Drinking Water - Bacteriological	20-Feb-2018		Acceptable
13-Feb-2018	8021041-3	Overlander Ski Club (Stake Lake Restroom)	Non-Audit	Drinking Water - Bacteriological	15-Feb-2018		Unacceptable
05-Feb-2018	8020298-4	Overlander Ski Club (Stake Lake Restroom)	Non-Audit	Drinking Water - Bacteriological	06-Feb-2018		Acceptable
29-Jan-2018	8012032-6	Overlander Ski Club (Stake Lake Restroom)	Non-Audit	Drinking Water - Bacteriological	30-Jan-2018		Acceptable
22-Jan-2018	8011528-7	Overlander Ski Club (Stake Lake Restroom)	Non-Audit	Drinking Water - Bacteriological	23-Jan-2018		Acceptable
15-Jan-2018	L2044844-1	Overlander Ski Club (Stake Lake Restroom)	Non-Audit	Drinking Water - Chemical	19-Jan-2018		Acceptable
15-Jan-2018	8011038-11	Overlander Ski Club (Stake Lake Restroom)	Non-Audit	Drinking Water - Bacteriological	16-Jan-2018		Acceptable
08-Jan-2018	8010461-11	Overlander Ski Club (Stake Lake Restroom)	Non-Audit	Drinking Water - Bacteriological	09-Jan-2018		Acceptable
18-Dec-2017	L2036496-1	Overlander Ski Club (Stake Lake Restroom)	Non-Audit	Drinking Water - Chemical	29-Dec-2017		Acceptable
18-Dec-2017	9962	Overlander Ski Club (Stake Lake Restrooms)	Non-Audit	Drinking Water - Bacteriological	19-Dec-2017		Acceptable
11-Dec-2017	9761	Overlander Ski Club (Stake Lake Restroom)	Non-Audit	Drinking Water - Bacteriological	12-Dec-2017		Acceptable
05-Dec-2017	9614	Overlander Ski Club (Stake Lake Restroom)	Non-Audit	Drinking Water - Bacteriological	06-Dec-2017		Acceptable
27-Nov-2017	9317	Overlander Ski Club (Stake Lake Restroom)	Non-Audit	Drinking Water - Bacteriological	28-Nov-2017		Acceptable
20-Nov-2017	L2024538-1	Overlander Ski Club (Stake Lake Restroom)	Non-Audit	Drinking Water - Chemical	24-Nov-2017		Acceptable
20-Nov-2017	9117	Overlander Ski Club (Stake Lake Restroom)	Non-Audit	Drinking Water - Bacteriological	21-Nov-2017		Acceptable

Report Total: 19

Page 1 of 1



Water sampling bottles.

Metals analysis results:

Date:

	15-Jan- 2018	27-Dec- 2017	20-Nov- 2017	27- Mar- 2018
Physical Tests (Water)				
Hardness (as CaCO ₃)	302	19	17.8	0.95
Turbidity	0.45			

Total Metals (Water)

Aluminum (Al)- Total	<0.010	<0.010	<0.010	<0.010
Antimony (Sb)-Total	<0.00050	<0.00050	<0.00050	<0.00050
Arsenic (As)-Total	<0.00010	<0.00010	<0.00010	<0.00010
Barium (Ba)-Total	<0.020	<0.020	<0.020	<0.020
Boron (B)-Total	<0.10	<0.10	<0.10	<0.10
Cadmium (Cd)-Total	<0.00020	<0.00020	<0.00020	<0.00020
Calcium (Ca)-Total	84.7	6.65	6.12	0.38
Chromium (Cr)-Total	<0.0020	<0.0020	<0.0020	<0.0020
Copper (Cu)-Total	0.0173	0.0055	0.0145	0.0647
Iron (Fe)-Total	<0.030	<0.030	<0.030	<0.030
Lead (Pb)-Total	<0.00050	<0.00050	<0.00050	<0.00050
Magnesium (Mg)-Total	21.9	0.75	0.61	<0.10
Manganese (Mn)- Total	<0.0020	<0.0020	<0.0020	<0.0020
Mercury (Hg)-Total	<0.00020	<0.00020	<0.00020	
Potassium (K)- Total	11.2	302	286	2.46
Selenium (Se)-Total	<0.0010	0.0026	0.0027	<0.0010
Sodium (Na)-Total	16.4	2.8	2.6	154
Uranium (U)-Total	0.0169	0.0077	0.00388	0.00095
Zinc (Zn)-Total	<0.050	<0.050	<0.050	<0.050

Analysis conducted by ALS Environment



Appendix C

Emergency Response and Contingency Plan



Emergency Response

And

Contingency Plan

Overlander Ski Club

Stake Lake Trails Water System

Facility #14-215-00031

Box 1191 Kamloops, BC, V2C 6H3

250-372-5514

Emergency Contact Information

Operators:

Name	Phone	E-mail
Lee Card	250-372-5514	info@overlanderskiclub.com
R. Matt Bruce	250-372-5515	info@overlanderskiclub.com

Owners:

Name	Phone	E-mail
Luc Guilherme	250-372-5514	
Vesta Giles	250-372-5514	

Health Contacts

Name / Office	Phone	E-mail
Drinking Water Officer - Diana	250-851-7410 / 250-320-0492	diana.tesic-nagalingam@interiorhealth.ca
Public Health Eng.	250-851-7320	
After Hours Emergency Line	1-866-457-5648	

Other Government Contacts

Agency	Phone	E-mail
EMA BC	1-800-663-3456	
MoFL&NR	250 371-6528	Michel.Woodman@gov.bc.ca

Emergency Lab Contacts

Name	Parameters	Phone	E-mail	Shipping Address
ALS Environment	Biological / Chemical	250-372-3588	Amanda.Lampreau@alsglobal.com	1445 McGill Rd #2b, Kamloops, BC V2C 6K7
Caro Analytical	Biological / Chemical	(250) 765-9646	Kelowna@caro.ca	3677 BC-97, Kelowna, BC V1X 5C3

Emergency Services Contacts

9-1-1

Logan Lake Non-Emergency RCMP : 250-523-6222

Royal Inland Hospital: 250- 374-5111

Repair Services:

Company	Contact	Phone
Electrical Issues	Klaus Voss	250-372-5514
Twin Rivers Plumbing		250-376-0221
JR Drilling		1-866-711-8118
Delta Irrigation (treatment supplier)	Kelvin Turpin	250.372.9424
General Troubleshooting	Luc G.	250-372-5514

Overview:

The Stake Lake water system is a small system, with a single main potable water access point being the water fountain in the restroom building. All access to the water system is from Overlander Ski Club members and trail users on the Stake Lake ski trails.

In any event causing an issue with the water system, staff will post a 'Do Not Consume' notice in the restroom, and remove the fountain from commission. Notice will also go out via our social media outlets, and verbally as users enter the trail system through the ticket booth.

Staff will notify the appropriate government agencies (at a minimum our Drinking Water Officer), and the board director contact (Luc) who will begin (or direct staff to) coordinating repair.

In the event of a total water loss, the restroom building will be locked, notices sent out as above, and users directed to the outhouse buildings if required.

More specific details for individual situations can be found on the following pages, for detailed information on equipment operation the manufactures instructions, found in the water treatment room, should be referenced.

GENERAL EMERGENCY SHUT-DOWN AND START-UP PROCEDURES

In case of any emergency in which the water is not safe for consumption or general use:

1. Issue a Boil Water Notice or Do Not Use Notice.
2. Shut off water supply (if necessary) to drinking fountain.
3. Staff (Lee or Matt) will contact the drinking water officer Diana Tesic-Nagalingram or other health authority contact(s) (as per specified emergency procedures).
4. Staff will notify affected water users as they enter the trail system and via social media.
5. Staff will notify appropriate government agencies (as per specified emergency procedures).
6. Staff will post warning signs in public spaces and other necessary locations.
7. Luc or Staff will coordinate repairs.
8. Staff will arrange for alternate source of safe drinking water.

START-UP PROCEDURE

1. Identify and correct the source of contamination.
2. The entire system should be flushed and disinfected (as per attached procedures).
3. Send water sample(s) to the appropriate approved lab for testing. For bacteriological contamination, three consecutive sampling results must be negative.
4. Contact the drinking water officer or delegate for approval to resume normal operations of the water supply system (e.g., lifting the Boil Water Notice).

CHEMICAL CONTAMINATION OF SOURCE: SPILL, VEHICLE ACCIDENT, ETC.

ACTIONS

- Shut down pump.
- Notify health authority.
- Notify all users.
- Contact government agencies (see below) for advice and assistance.
- Contact local media for public service announcement (where all customers cannot be notified by phone).
- Arrange alternate source if necessary—i.e., bottled water, bulk hauler and storage tank.

CONTACTS

- Drinking water officer
- Local government's emergency program coordinator
- Emergency Management BC
- Police
- Ministry of Forests, Lands and Natural Resource Operations
- Others as necessary, depending on severity.

LOSS OF SOURCE: INTAKE DAMAGED, WELL DRIED UP, ETC.

ACTIONS

- Ensure pump is shut off (to protect pump).
- Notify all users.
- Contact government agencies (see below) for advice and assistance.
- Arrange alternate source (e.g., bottled water, bulk hauler and storage tank)

CONTACTS

- Drinking water officer
- Ministry of Forests, Lands and Natural Resource Operations
- Local government's emergency program coordinator

PUMP FAILURE

ACTIONS

- o Notify all users of interruption of service.
- o Call for repairs: pump manufacturer.
- o Advise drinking water officer (if interruption not short-term).
- o Arrange alternate source if necessary (e.g., bottled water, bulk hauler, etc.).

CONTACT

Drinking Water Officer

POWER FAILURE

ACTIONS

- o Call BC Hydro.
- o Start back-up generator.
- o Notify all users about interruption of service if back-up not capable of maintaining supply.
- o Advise drinking water officer.
- o Arrange alternate source if necessary (e.g., bottled water, bulk hauler, etc.).

CONTACT

- Drinking water officer

BROKEN WATER MAIN

ACTIONS

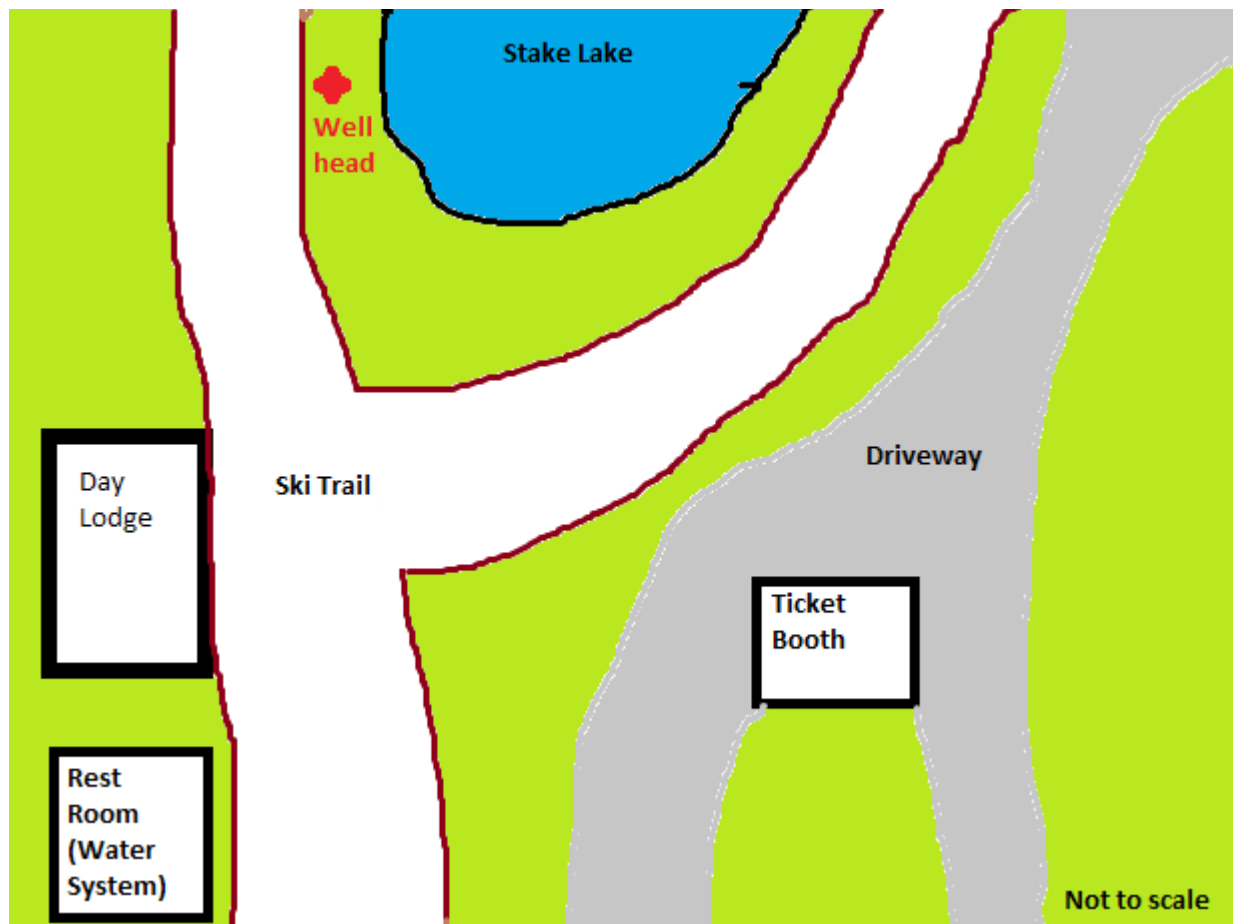
- o Reduce pressure (but maintain enough pressure to prevent backflow).
- o Call for repairs (e.g., plumber, excavator).
- o Notify all users of interruption of service.
- o Advise local drinking water officer
- o Arrange alternate source if necessary (e.g., bottled water, bulk hauler, etc.).

CONTACT

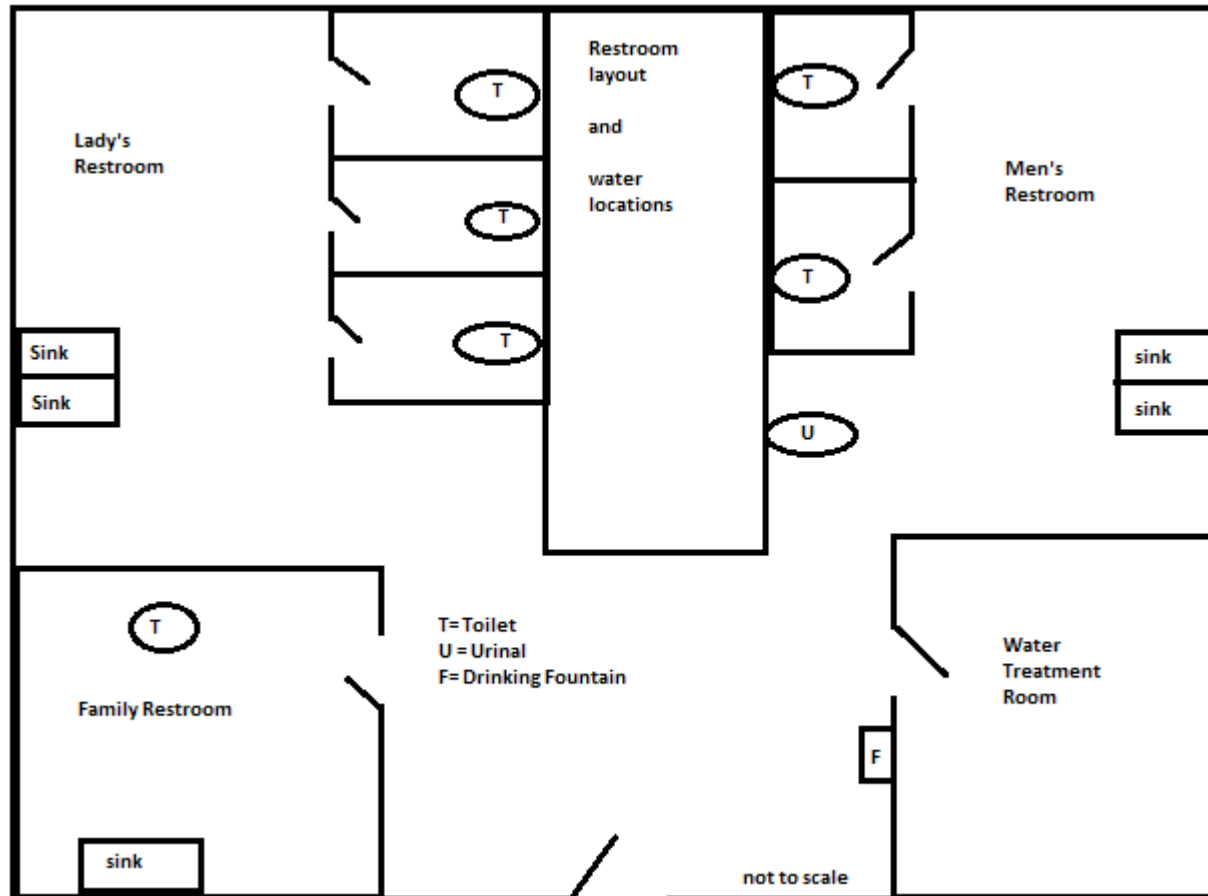
- Drinking water officer

Appendix A Maps & Lay outs

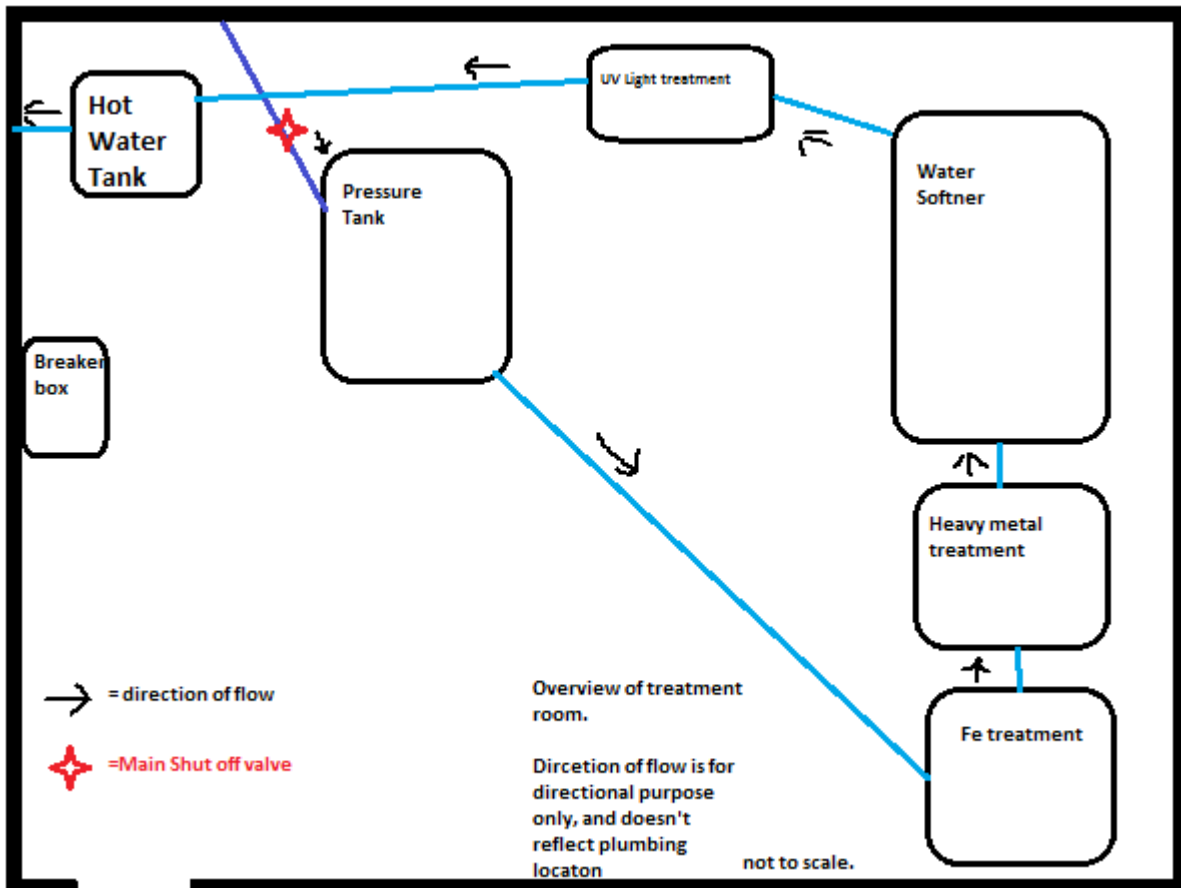
Overview and well placement:



Restroom building:



Water room layout and flow diagram:



Appendix

B

Advisory Notices


WATER QUALITY ADVISORY

Stake Lake Water System

has issued an advisory due to:

Unsafe water conditions

Until notified, users:

 with weakened immune systems, &/or wishing additional protection

Should take precautions when drinking, washing fruits & vegetables, making beverages or ice, or when brushing teeth

Boil water rapidly for a least 1 minute, or use an alternate, safe source of water

For more information contact Ticket Booth at 250-372-5514

HP-WQ-9068 September 2011

DO NOT USE WATER NOTICE

Stake Lake Water System

has issued this advisory effective immediately due to:
unsafe conditions

All water users are advised to use bottled water or an alternate source of water for drinking, making ice, washing dishes, brushing teeth, bathing, and food preparation until further notice.

Boiling the water will not make it safe. If alternate water sources are used, the water must be from an Interior Health approved sources only. The water in your hot water tank may also be unsafe. Please consult a qualified plumber before draining your hot water tank.

For more information contact ticket booth staff
at 250-372-5514

PLEASE SPREAD THE WORD TO YOUR NEIGHBOURS

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example; people in apartments, rental units, care facilities, schools, preschools, churches, and businesses). You can do this by phone calls, posting this notice in a public place or distributing copies by hand. Email and postal mail should only be used to supplement methods of direct communication.

BOIL WATER NOTICE

Stake Lake Water System
has issued this advisory effective immediately due to:
unsafe conditions

Boil water before using it for drinking, making ice, cooking, washing food,
or brushing teeth. Use a hand sanitizer after washing hands.

Until notified all users are advised to:

1. Bring water to a rolling boil for a least 1 minute, or
2. Use an alternate, safe source of water

For more information contact staff at 250-372-5514

HP-WQ-9067 October 2011



Appendix D

Permits



Interior Health

Waterworks Construction Permit

This is to certify that, in accordance with Section 7 of the Drinking Water Protection Act, the proposed works have been reviewed and may commence in accordance with the approved plans. See attached.

Water Supply System: Overlander Ski Club

Address: 5140 Lac Le Jeune Road, Kamloops BC

Facility Number: 14-215-00031

Permit Number: CP2016-32362

Agent of Record: Kelvin Turpin, Delta Irrigation Products Ltd.

Address: 444 Chilcotin Road, Kamloops BC

Project Location: 5140 Lac Le Jeune Road

Date of Issue: November 25, 2016

Date of Expiry: November 24, 2017





Interior Health

Health Protection

Permit To Operate

Drinking Water System 14 or Less Connections

Facility Number: 14-215-00031
Name of Facility: Overlander Ski Club
Address: 5140 Lac Le Jeune Rd
Kamloops BC V1S
Canada
Primary owner: Overlander Ski Club
Conditions: Seasonal Operation: December to March
See Conditions on Permit

April 01, 2017

Effective Date

Diana Tahir-Moghtadai
Environmental Health Officer

January 10, 2018

Issue Date

*This permit is nontransferable and must be displayed in a
conspicuous place*



807625 June 04



Appendix E

Training & Development

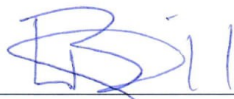
Certificate of
COMPLETION

WaterSafe

WTTP 020

6 hours

Lee Card



Dean, School of Trades & Technology



September 11, 2013

The club is committed to supporting staff and volunteers in furthering professional development to support the water system as needed.