Silver Star Water Utility
2024 Annual Report

Regional District of North Okanagan
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ACRONYMS

BPD	Backflow Prevention Device
BWN	Boil Water Notice
Caro	Caro Analytical Services
CCCP	Cross Connection Control Program
CFU	Colony Forming Units

COP	Conditions on Permit
CT	Contact Time
DBP	Disinfection By-Product
DWO	Drinking Water Officer
DWPA	Drinking Water Protection Act
DWPR	Drinking Water Protection Regulation
DWTO	Drinking Water Treatment Objectives (Microbiological) for Ground Water Supplies
E. coli	Escherichia coli
EOCP	Environmental Operator Certification Program
ERP	Emergency Response Plan
GCDWQ	Guidelines for Canadian Drinking Water Quality
IH	Interior Health
MOE	Ministry of Environment
NTU	Nephelometric Turbidity Units
OP	Operating Permit
RDNO	Regional District of North Okanagan
SCADA	Supervisory Control and Data Acquisition
SS	Sample Site
SSW	Silver Star Water
Teale's	Teale's Water Utility Service
THM	Trihalomethanes
UV	Ultraviolet
WTP	Water Treatment Plant
WQA	Water Quality Advisory

INTRODUCTION

As required by the *Drinking Water Protection Act* (DWPA) of BC, the Regional District of North Okanagan (RDNO) provides the following annual report in accordance with Conditions on Permit (COP) for the Silver Star Water Utility (SSW).

This report provides an overview of the following for 2024:

- the water system of SSW
- the operations of the water utility, including the management, Environmental Operator Certification Program (EOCP) classification, and operations programs
- source assessment and watershed protection
- the annual water quality monitoring program and a summary of water quality analysis
- water consumption
- emergency response
- reporting requirements
- annual completed works
- long-term plans.

The annual reports are available to the public on the RDNO website.

WATER SYSTEM OVERVIEW

1.1. SYSTEM OVERVIEW

Most of the SSW system was constructed in the 1980s and was operated as a private utility owned by Silver Star Mountain Resort Ltd. until 1992, when it became a service of the RDNO.

SSW provides potable water to 18 commercial and 944 residential connections and is considered a large water utility by Interior Health (IH). The majority of connections are seasonal and are only occupied during the winter ski season. There is a limited summer season where summer activities are promoted; however, the flows observed are only a fraction of the winter season. The rates bylaw defines the peak season from December 1 to March 31 and low season from April 1 to November 30. The total population during peak season is estimated to be 10,161. All connections are metered.

The SSW is supplied by seven (7) groundwater wells, and two (2) open water reservoirs. The distribution system has 19.4 km of pipeline, two (2) pump stations, one (1) pressure reducing station, and two (2) concrete “enclosed” reservoirs.

The following provides a summary of SSW with an overview map of the utility provided in Appendix A:

- The source water for the SSW utility comes from both surface and ground water:
    - There are currently seven (7) operational bedrock wells. Wells 1, 2, 3, 4, 5, 10, and 12.

    - Surface water is collected during snowmelt and stored in the Paradise Lake and Vance Creek reservoirs.

- All water from the groundwater and surface water sources (with the exception of Well 4) is directed to the Mid-T Water Treatment Plant (MTWTP) where it is treated with UV and chlorine, then directed to the Mid-T reservoir for storage. From here, it is supplied by gravity to customers.
- Well 4 is designated as an emergency backup well and has not been used since 2011.
- The Mid-T reservoir is an enclosed reservoir with four (4) cells. The treated water is supplied by gravity through the distribution system to the majority of residential and commercial customers in the Village and on the Knoll.
- A booster station located at the first switch back of Cathedral Drive pumps water to the Ridge reservoir which stores water for distribution to residents of the Ridge and Alpine Meadows subdivisions.
- The MTWTP has a backup generator to supply power during short-term outages.

1.2. WATER SOURCE

The source water for the SSW utility comes from seven (7) ground water wells and two (2) surface sources. The two (2) surface sources are Paradise Lake (Paradise) and Vance Creek (Vance) open water reservoirs, which are filled by runoff collected from snow melt. Appendix A provides maps of the seven (7) wells and two (2) surface sources.

1.3. TREATMENT REQUIREMENTS

The treated water quality (WQ) objectives for all BC water systems using a surface water source need to meet the Drinking Water Treatment Objectives (Microbiological) for Surface Water Supplies (DWTO) in BC, which include the following:

- 4 log removal or inactivation for viruses
- 3 log removal or inactivation for protozoa (*Giardia* and *Cryptosporidium*)
- 2 treatment processes for surface water
- 1 Nephelometric turbidity units (NTU) maximum turbidity
- 0 Escherichia coli (*E. coli*).

The treatment levels at SSW are compliant with these standards.

Source water is chlorinated and UV treated at the MTWTP. Chlorination of the water is completed to ensure sufficient contact time (CT) to provide 4 log inactivation of viruses. UV treatment of the water is completed to inactivate protozoa. Chlorination and UV provide two (2) treatment barriers. Appendix B provides the SSW CT calculation.

OPERATIONS

1.4. MANAGEMENT

SSW is owned and managed by the RDNO. The Manager, Small Utilities, is responsible for the operation and management with oversight provided by the General Manager, Utilities and the RDNO Board of Directors. The water quality monitoring program is coordinated and monitored by the water quality staff of the RDNO. The RDNO employs an EOCP certified contract operator to complete day-to-day operation and maintenance tasks. The operator is also required to respond to emergencies, 24 hours a day, seven (7) days a week, and have a backup operator available to respond if necessary.

Interior Health (IH) is the regulator of water utilities and is responsible for ensuring compliance with legislation and provincial standards. IH also issues the Operating Permit (OP) (Appendix C) and condition on permit (COP) (Appendix D). The IH representative is a Drinking Water Officer (DWO) who works closely with the water utility to ensure the COP are met.

1.5. EOCP CLASSIFICATION

The SSW distribution system is certified through the EOCP as a Water Treatment Facility Level II (WT-II), and as a Water Distribution Facility Level II (WD-II) (EOCP Facility # 382).

The SSW operations is contracted to Aberdeen Electric Ltd., see Table 1 for the list of operators certified through the EOCP. The contracted operator is responsible for operating and maintaining the source, treatment, and distribution system as well as sampling as outlined by the water quality monitoring program.

The operator duties include on-site checks of the facilities at least three (3) times per week, with continual monitoring by the SCADA system with set alarms. The operators are also required to check the system via SCADA at least once per day. All alarms are responded to by an operator. If immediate attention is required, the operator will proceed to the site to respond. If required, the system operator will contact management for guidance or assistance.

1.6. OPERATIONS PROGRAMS

1.6.1. FLUSHING AND HYDRANT MAINTENANCE

Water main flushing and fire hydrant maintenance is completed annually and was contracted out to Teale's Water Utility Service (Teale's) of Vernon in 2024. Maintenance records are retained on file.

To maintain water quality, blow offs are installed on the distribution system at dead-ends so flushing can be completed by the system operator on a regular maintenance schedule. These blow offs are located at: Silver Queen Road, Monashee Road, Odin Road, Silver Lode Lane, Cathedral Drive, Purcell Drive, and Spencer Lane.

1.6.2. CROSS CONNECTION CONTROL PROGRAM

The RDNO has a Cross Connection Control Program (CCCP) for all water utilities owned by the RDNO, including SSW. The CCCP is focused on identifying high and medium backflow risks and

ensuring annual compliance of Backflow Prevention Device (BPD) testing for these facilities. At this time, SSW has 18 commercial and 944 residential connections. The commercial customers are considered high or moderate risk, while residential are generally considered low risk. An ongoing assessment of the high and medium-hazard facilities at Silver Star is in progress. *Regional District of North Okanagan Cross Connection Control Regulation Bylaw No. 2651, 2014* applies to all RDNO operated water utilities.

SOURCE ASSESSMENT AND WATERSHED PROTECTION PLANNING

The following reports provide the basis of the Groundwater Protection Plan (GWPP) and the Source Water Protection Plan for SSW:

- Golder Associates Ltd (Golder) - April 18, 2008, Initial Phases in the development of a Groundwater Protection Plan for Silver Star Resort area, (File #07-1440-0092). Prepared for the RDNO.
- TRUE Consulting Group (TRUE) - August 2011, Source Water Assessment and Groundwater Protection Plan, Silver Star Water Utility. Prepared for the RDNO.

Both reports can be found on the RDNO website: https://www.rdno.ca/ssw

Golder completed the initial phase of the GWPP in 2008. TRUE was retained to prepare a Source Water Assessment (SWA) and complete the GWPP. The SWA project was initiated in September 2010 and included input from a Technical Advisory Committee (TAC). The TAC consisted of RDNO staff, the SSW DWO, Silver Star Ski Resort Staff, Provincial Staff, and Local Interest Groups. The SWA Final Report was completed on August 31, 2011.

As SSW is within a Controlled Recreational Area (CRA) with limited land use, only low and moderate risks were identified and are being addressed.

WATER QUALITY MONITORING

The goal of the water quality program at SSW is to monitor the quality of the raw water and treated water within the distribution system to detect the presence of microorganisms or other issues that can degrade water quality. As issues are found, operations staff can respond to correct any issues or appropriately notify customers as required.

1.7. PROGRAM AND SCHEDULE

Water quality monitoring for SSW is based on the requirements of the Drinking Water Protection Regulation (DWPR) Schedules A and B (Government of BC, 2003), the *Guidelines for Canadian Drinking Water Quality* (GCDWQ) (Health Canada, 2022), the *British Columbia Source Drinking Water Quality Guidelines* (SDWQG) (MOE, 2022), and the *Drinking Water Treatment Objectives* (DWTO) *(microbiological) for Ground Water Supplies in British Columbia* (Ministry of Health, 2015).

The Water Quality Monitoring Program for SSW is reviewed and updated annually in January. The updated sampling program and schedules for 2024 are provided in Appendix E. The RDNO provides an updated Water Quality Monitoring Plan (WQ Plan) to IH at the beginning of each year after the program is developed. Included in the WQ Plan submitted is the monitoring schedule, parameters, and frequency of samples taken at different times of the year.

To meet Schedule B in the DWPR for populations 5,000 to 90,000, a minimum of one (1) microbiological sample per 1,000 people is required per month. The total population during peak season is estimated to be 10,161; therefore, SSW requires 11 samples per month in the peak season. In 2024, SSW exceeded this requirement, taking 20 samples per month in the peak season and 12 samples per month in the low season.

The contracted operator collects bacterial samples and delivers them to the RDNO where RDNO staff process the samples for shipment to Caro Analytical Services (Caro). Caro sends results to IH. The RDNO uploads results to a third-party online database the RDNO utilizes to store data.

1.8. SOURCE

This section outlines the source water testing with results completed for 2024. Parameters include bacterial, turbidity, pH, temperature, and annual chemical analysis. SSW uses five (5) of seven (7) groundwater wells and two (2) surface water reservoirs: Vance Reservoir and Paradise Reservoir. There are two (2) sample sites for source water within the MTWTP. The surface and groundwater intake is a blend of all sources that are entering the treatment process. The surface water intake is a blend of the two (2) surface sources.

Surface sources are used during peak and shoulder season: January, February, March, April, November, and December. Prior to bringing the surface sources online for the peak season, the surface sources transmission mains are flushed, usually starting in October. The pipes flushed include the water main from Vance Reservoir to Paradise Reservoir, and from Paradise Reservoir to the MTWTP.

In 2024, the surface sources were turned off on May 3, 2024. For the 2024 peak season, the surface sources were turned on October 29, 2024.

1.8.1. BACTERIA

At least one (1) weekly source water sample is collected for *E. coli* and Total Coliform from the surface and groundwater intake. The surface water intake is also sampled weekly when the surface sources are on. *E. coli* and Total Coliform are monitored as an indicator to assess changes in source water.

The DWTO criteria for filtration exclusion requires that *E. coli* in raw water does not exceed 20/100 mL in at least 90% of the weekly samples from the previous six (6) months (or if *E. coli* data are not available, less than 100/100 mL of Total Coliform). Although the RDNO does not plan to pursue filtration exclusion, the RDNO uses the filtration exclusion criteria as a standard to measure the current water quality and monitor for changes that may indicate that the water quality is degrading to an unacceptable level. The SSW system has a good microbial history and did not have any deviations in these parameters in 2024 (Figure 1 and Figure 2).

In 2024, the surface and groundwater intake had 50 bacterial samples taken. All samples had <1 MPN/100 mL *E. coli* and <100 MPN/100 mL Total Coliform. The surface water intake water had 25 bacterial samples taken while the surface source was in use. All samples had <1 MPN/100 mL *E. coli* and <100 MPN/100 mL Total Coliform (Figure 1 and Figure 2). Therefore, no samples exceeded 100 MPN/100 mL Total Coliform and were well within the DWTO Criteria.

1.8.2. TURBIDITY

Turbidity measurements relate to the optical properties of water. Turbidity is caused by suspended matter such as clay, silt, and finely divided organic and inorganic matter, soluble coloured organic compounds, plankton and other microscopic organisms. Excessively high turbidity can have a negative effect on disinfection techniques. A provincial guidance document issued in April 2013, the *Decision Tree for Responding to a Turbidity Event in Unfiltered Drinking Water* (BC Ministry of Health, 2013) assists RDNO during turbidity events and communication with the water customers.

In 2024, the surface water source was on from May 6 to October 29. During that time, the online daily average for turbidity from SCADA for the surface water intake ranged from 0.14 to 1.57 NTU with an average of 0.35 NTU. There was one (1) day with a turbidity count greater than 1 NTU, which occurred during the flushing period when Vance reservoir was being brought online. The online daily average for turbidity from SCADA for the surface and groundwater intake ranged from 0.05 to 0.72 NTU with an average of 0.14 NTU (Figure 3). This is the water that enters the treatment process. Raw turbidity levels in 2024 were consistent with previous years (Figure 4).

1.8.3. MANGANESE

Since 2016, manganese has been monitored due to naturally elevated manganese levels found in the groundwater and its accumulation in the Vance and Paradise surface water reservoirs. Manganese is monitored at the surface sources, after blending with groundwater, and following treatment. Monitoring is essential for detecting changes in the raw water sources and enabling a proactive response if manganese concentrations are increasing. Managing manganese levels in this system involves balancing the use of multiple sources to ensure concentrations remain within acceptable limits.

The GCDWQ maximum acceptable concentration (MAC) for manganese is 0.12 mg/L and the aesthetic objective (AO) is ≤0.02 mg/L. All samples were below the MAC guideline, indicating compliance with health-based standards; however, the AO was exceeded at the surface and groundwater intake with an average concentration of 0.029 mg/L (Table 2). The AO guideline is intended for treated drinking water and to address aesthetic concerns, primarily related to water discolouration.

1.8.4. UV TRANSMISSIVITY

RDNO water quality staff monitor raw water UV Transmissivity (UVT) manually from samples from the surface water intake when the surface sources are in use. UVT represents the percent of light transmitted through the water. Current UV treatment technologies are validated to be effective down to a minimum UVT measurement of 70%; hence, UVT measurements provide an indication if UV is an acceptable treatment method for this source water.

The lowest UVT observed in 2024 was 95.1% which is above the minimum UVT requirement.

1.8.5. ALGAE DENSITY

Algae density sampling is completed at a frequency of at least once per month at the surface water sources when they are in-use. This sampling is being completed to monitor raw water quality and have a historical database to track changes in raw water quality.

1.8.6. FIELD PARAMETERS

The GCDWQ operational guideline (OG) for pH is a range of 7.0 to 10.5 to maximize treatment effectiveness. In 2024, the average pH of the raw source water was 6.9, slightly below the recommended operational range (Table 3); however, the GCDWQ guidelines apply to treated drinking water, not raw water. Therefore, the average raw pH does not represent a direct guideline exceedance but may have implications for treatment effectiveness and is monitored accordingly.

1.8.7. ANNUAL COMPREHENSIVE

Comprehensive sampling is completed on all water sources annually. The annual sampling is rotated between spring and fall to ensure the source water meets water quality guidelines during different times of the year. The 2024 comprehensive samples were taken in June and July (Appendix F).

All parameters were within the GCDWQ maximum acceptable concentration (MAC) guidelines, indicating compliance with health-based standards; however, some raw water sources exceeded aesthetic objective (AO) and operational guidelines (OG) in 2024. Well 5 exceeded the AO for iron, manganese, and total dissolved solids, as well as the OG for turbidity. Well 1 and Well 12 exceeded the OG for pH. The Vance Reservoir intake exceeded the AO for manganese and the OGs for pH and turbidity. The Paradise Reservoir intake exceeded the OG for turbidity. It is important to note that these results are raw water samples and the GCDWQ guidelines are intended for treated drinking water. These parameters are monitored closely throughout the year.

Iron, manganese, turbidity and total dissolved solids are reduced to acceptable levels at the MTWTP once the water is blended with other sources. The blended source water is then treated with UV and chlorine.

1.9. TREATMENT PROCESS

SSW is sourced from seven (7) groundwater wells and two (2) surface source reservoirs. The source water is blended at the MTWTP, where the water is treated with chlorination and UV.

1.9.1. CHLORINE

Under normal operations, the target residual after chlorine injection is normally between 1.50 to 2.00 mg/L to achieve the minimum target chlorine residual of 0.20 mg/L at the end of the distribution system.

Continuous online chlorine monitoring is completed with an analyzer that monitors the free chlorine just past the injection point in the MTWTP. In the event of a low-level chlorine alarm, the system is programmed through SCADA to automatically shut off the MTWTP water pumps to ensure that raw water is not pumped into the Mid T Reservoir and to notify the operator via an alarm.

See the monthly reports in Appendix G for the monthly SCADA free chlorine data.

1.9.2. UV TRANSMISSIVITY

The MTWTP has two (2) UV reactors. UVT is continuously monitored online at two (2) analyzers, immediately after UV treatment but before chlorination. UVT is alarmed so that the operator can react immediately if the process is not sufficiently working. See monthly reports (Appendix G) for more information.

1.10. DISTRIBUTION

Distribution sampling follows the specifications outlined in the COP and as directed by IH, see Sections 3.1 and 3.3. Additional parameters and monitoring can occur for individual projects. See Appendix E for the detailed schedule.

1.10.1. BACTERIA

Schedule A of the DWPR requires the following criteria be met for potable water:

1. **No detectable Escherichia coli (E.coli) per 100 ml.**

   In 2024, there were 191 samples analyzed using the CFU/100mL method and all samples were non-detect for E.coli in the SSW distribution system.

2. **At least 90% of samples have no detectable Total Coliform bacteria per 100 ml.**

   In 2024, there were 191 samples analyzed using the CFU/100mL method and all samples were non-detect for Total Coliform in the SSW distribution system.

3. **No sample has more than 10 Total Coliform per 100 ml.**

   In 2024, no samples had more than 10 Total Coliform.

See monthly reports (Appendix G) for more information.

1.10.2. TURBIDITY

Turbidity is monitored with a handheld turbidity meter at five (5) distribution sites a minimum of once per week. Operators record field parameters on an electronic operator log sheet, which is backed up to the RDNO system by water quality staff monthly. Field parameters are also recorded on worksheets when samples are taken and the RDNO enters this data into the RDNO database.

There were 182 turbidity tests of the distribution sites in 2024, and all were within compliance at <1 NTU (Table 4). See monthly reports (Appendix G) for more information.

1.10.3. CHLORINE

Total and free chlorine is monitored with a handheld chlorine meter concurrently with the turbidity readings. There were 195 samples with all results greater than the operational target of 0.2 mg/L free chlorine (Table 4). See monthly reports (Appendix G) for more information.

1.10.4. FIELD PARAMETERS

171 samples across all distribution sites were sampled for pH in 2024. There were four (4) instances where pH was below the 7.0 GCDWQ operational guideline (OG). This guideline is in place to prevent erosion and leeching of pipes as well as to ensure effective treatment. All bacteria

samples associated with low pH were non-detect so no bacterial health impact was observed. Though there is no guideline for temperature in the distribution system, it is monitored as it can influence microbial growth and system performance (Table 4).

1.10.5. MANGANESE

Distribution samples for manganese are collected at the Mid T Reservoir Outlet, the first distribution sampling site after the MTWTP. The GCDWQ MAC for manganese is 0.12 mg/L and the AO is ≤0.02 mg/L. All samples were below the MAC guideline, indicating compliance with health-based standards; however, the AO was exceeded at the Mid T Reservoir Outlet in 32 out of 52 samples in 2024, with an average concentration of 0.023 mg/L (Table 2). The AO guideline is intended to address aesthetic concerns, primarily water discolouration. Managing manganese levels in this system involves balancing the use of multiple sources with ongoing monitoring to detect changes in water quality.

1.10.6. DISINFECTION BY-PRODUCTS

Trihalomethanes (THMs) are disinfection by-products formed when organic compounds naturally present in the source water react with chlorine. The level of THMs in treated water depends on numerous factors including TOC, temperature, pH, water age, and chlorine dose. Ten distinct THM compounds are possible, but only four (4) occur to any significant degree in treated drinking water:

- Chloroform
- Bromodichloromethane
- Dibromochloromethane
- Bromoform.

Collectively, the above THM compounds are referred to as total trihalomethanes (TTHMs). Further in this text, TTHMs will refer to the sum of all four (4) compounds for that sample site, not the individual parameters.

The GCDWQ MAC for TTHMs is 0.1 mg/L and is based on a locational running annual average of a minimum of quarterly samples taken at the point in the distribution system with the highest potential TTHM levels. Two (2) SSW sites are sampled quarterly for THMs, 357 Monashee Road and 9675 Silver Star Road. Figure 5 provides the TTHM results for 2024, which were well below the GCDWQ MAC.

Figure 6 demonstrates that TTHMs have been consistently below the MAC since THM sampling began in 2011.

WATER CONSUMPTION

Table 5 provides the monthly consumption for SSW in 2024. Figure 7 provides a graph of the daily consumption for 2024, previous years' minimum and maximum flow rates, and daily average from 2020-2024. Figure 8 provides a graph of the daily consumption trend data from 2020 to 2024.

The typical water consumption trend for SSW shows high winter water use, with a significant increase starting in December and peak flows usually observed in January and February. Lowest flows are observed in spring and fall, with a slight increase in the summer months (Figure 7 and 8). Water consumption is highly dependent on weather and seasonal visitors. 2024 data shows that water consumption from January through March is slightly elevated compared to the previous years' average. The month of August shows an overall slightly lower water use than the previous years' average.

EMERGENCY RESPONSE PLANNING

1.11. THE ERP

A comprehensive update of the SSW Emergency Response Plan (ERP) was completed in 2024, and a review is completed annually. Sampling methodology and RDNO utility ERP training for the operators also occurs annually.

RDNO Utilities staff and the operators are instructed on how to use the following supporting documents in times of water quality changes or emergencies:

1. SSW Emergency Response Plan
2. SSW Water Quality Deviation Response Plan

The above documents contain the contacts, criteria, and procedures necessary to assist operators and staff to make timely, informed decisions.

SSW must inform customers when their drinking water does not meet standards, with the appropriate notifications based on risk. A Water Quality Advisory (WQA) is released when the water poses a modest health risk. A Boil Water Notice (BWN) is released when there is a known or higher risk of a possible health impact to the customer.

An advisory or notice is delivered as quickly and efficiently as possible. Notification may include WQA or BWN road signs, radio, email, website, Facebook, and/or media releases. Under specific circumstances, notification is hand-delivered. Customers are advised to subscribe to the Silver Star Water Mailing List by going to www.rdno.ca/subscribe and subscribe for Silver Star Water email updates (shown on next page).

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- ☐ Greater Vernon Water Agricultural Customers
- ☐ Greater Vernon Water Source Changes
- ☐ GVW Non-Potable Water Updates
- ☐ Delcliffe Water
- ☐ Grindrod Water
- ☐ Mabel Lake Water and Sewer
- ☐ Outback Water
- ☑ Silver Star Water
- ☐ Whitevale Water
- ☐ Area B News
- ☐ Area C News
- ☐ Area D News
- ☐ Area E News
- ☐ Area F News
- ☐ Swan Lake Residential Infill Project
- ☐ Wastewater Recovery Project

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1.12. INCIDENT TRACKING AND NOTIFICATION

RDNO Emergency Response Procedures require that incidents are reported. An incident is defined when there is a deviation from normal operating procedure or there is a water quality issue. Incident reporting allows staff to track and review issues to assess if improvements could be made to reduce the same type of incident to occur again or to reduce the risks to the system or customers.

Public notifications issued in 2024 were related to a water service break and repair that affected a localized area (Table 6).

REPORTING REQUIREMENTS

Monthly and annual reports are submitted to IH as per the COP and are available to the public at the RDNO website (www.rdno.ca). Monthly reports for the last 12 months are available on the website. If historical reports are wanted, please contact the RDNO at 250-550-3700.

WORKS COMPLETED IN 2024

- Confined Space Assessments – required by Work Safe.
- Dam Safety Review of Vance and Paradise dams – this review is a requirement by Dam Safety and was mostly completed in 2023, with the remainder completed in 2024.
- Hydrant repairs – during annual hydrant maintenance, several hydrants were identified as requiring maintenance, which was completed in 2024.
- Genset at Vance Reservoir Pump Station – the electrical engineer was hired and the electrical design is in progress.

- Installed Encoder-Receiver-Transmitters (ERTs) – ERTs were installed on most water meters and more than 50% of meters that were past life expectancy were replaced. The program entailed replacing the current "touch pad" manual meter reading technology with Automatic Meter Reading (AMR) technology.

PLANNED WORKS

1.13. 2025 WORK PLANS

Works planned for 2025 include:

- Purchase seacan for storage – storage is limited at SSW and more is needed for equipment and supplies that is easily accessible year-round.
- Paradise valve house drainage – this building had drainage issues in 2024, which were resolved. Additional money was budgeted to further investigate and complete any necessary repairs if the 2024 repairs were not sufficient.
- Seal MTWTP wet well – this wet well needs to be fully sealed to eliminate any contribution to downstream water surfacing.
- Install aluminum covers on Vance weirs – this is a safety concern.
- Attridge Reservoir fence replacement – the fence is damaged from snow and equipment working in the area. A portion of the fence will be re-located to try and prevent further damage.
- ERT installs – Install remaining ERTs and replace remaining meters that were not completed in 2024.
- Vance Reservoir improvements – The Vance Reservoir liner needs improvements to extend the liner. A long-term liner replacement design is required for Dam Safety and to assist staff in planning.
- Upgrade Vance Creek dam spillway – The Dam Safety Review completed in 2023 provided a recommendation to line the Vance Creek Dam spillway. There is a drain system through the dam constructed to capture seepage water, but water is currently being diverted through this drain via an unlined section of the spillway which it was not designed for and is a dam safety concern. Lining the spillway will prevent this spillway water from being diverted through the dam seepage collection system.

1.14. LONG-TERM PLANS

SSW needs to update its Master Water Plan (MWP) as it was last updated in 2005 and significant changes have occurred based on water quality and a dramatic increase in development potential. SSW is a resort community that has historically seen the highest water usage during the winter. It is currently experiencing growth within the community, including during the summer months, and is experiencing water quality issues as outlined below.

The update to the MWP will address significant issues that have surfaced in recent years that are or will impact SSW, such as the following:

- Silver Star Mountain Resort (SSMR) updated their Resort Master Plan which is proposing to double the number of residential houses.

- SSMR has aggressively marketed their summer season activities, resulting in a drastic increase in summer water use. The water supply for SSW is based on peak winter water use and does not contemplate high summer use.
- Degradation in water quality with manganese increases in both wells and surface sources and algae blooms on surface sources.
- Filtration installation may be required to treat for manganese and algae. Filtration is the only known method to treat these two (2) water quality concerns; however, the MWP will provide recommendations.

The MWP will review how to address the issues identified and develop a long-term plan with cost estimates to assist staff to ensure they can sustainably service the area.

CLOSING

The RDNO has made significant strides in fulfilling the RDNO program objectives, meeting provincial standards and requirements outlined by IH, and in implementing BC's DWPA and DWPR at SSW. The RDNO will continue to move forward on implementation of system improvements within the constraints of the SSW budget and through applications for grant funding.

TABLES

Table 1: Contracted Operators

Contracted Operators			
Last Name	First Name	Certification #	Certification Held
McKim	Warren	1336	WDIII, WTII, WWCI, WWTII
McKim	Nicholas	9341	WDI, WTII

Table 2: Raw and Treated Water Manganese Results

2024 Manganese Summary			
Sample Site	Min (mg/L)	Max (mg/L)	Average (mg/L)
Surface Water Intake	0.002	0.019	0.011
Surface and Groundwater Intake	0.004	0.066	0.029
Mid T Reservoir Outlet	0.005	0.043	0.023

Table 3: Raw Water Field Parameters

2024 Raw Water Field Parameters				
	Min	Max	Average	Count
pH	6.5	7.8	6.9	101
Temperature (C)	3.9	15.6	6.2	91

Table 4: Distribution Field Parameters Stats

2024 Distribution Field Sampling Chemistry Summary						
	Min	Max	Average	# Samples	Chlorine <0.2 mg/L Turbidity >1 NTU but <5 NTU	Turbidity >5 NTU
Free Chlorine (mg/L)[1]	0.32	2.02	1.51	195	---	---
Total Chlorine (mg/L)	0.40	2.11	1.59	182	---	---
Turbidity (NTU)[1]	0.07	0.42	0.21	182	---	---
pH	6.80	7.30	7.14	171	---	---
Temperature	6.10	14.80	11.50	181	---	---

[1]WQ Deviation Response Plan triggered when Free Chlorine <0.20 mg/L; Turbidity > 1.0 NTU

Table 5: Consumption Data

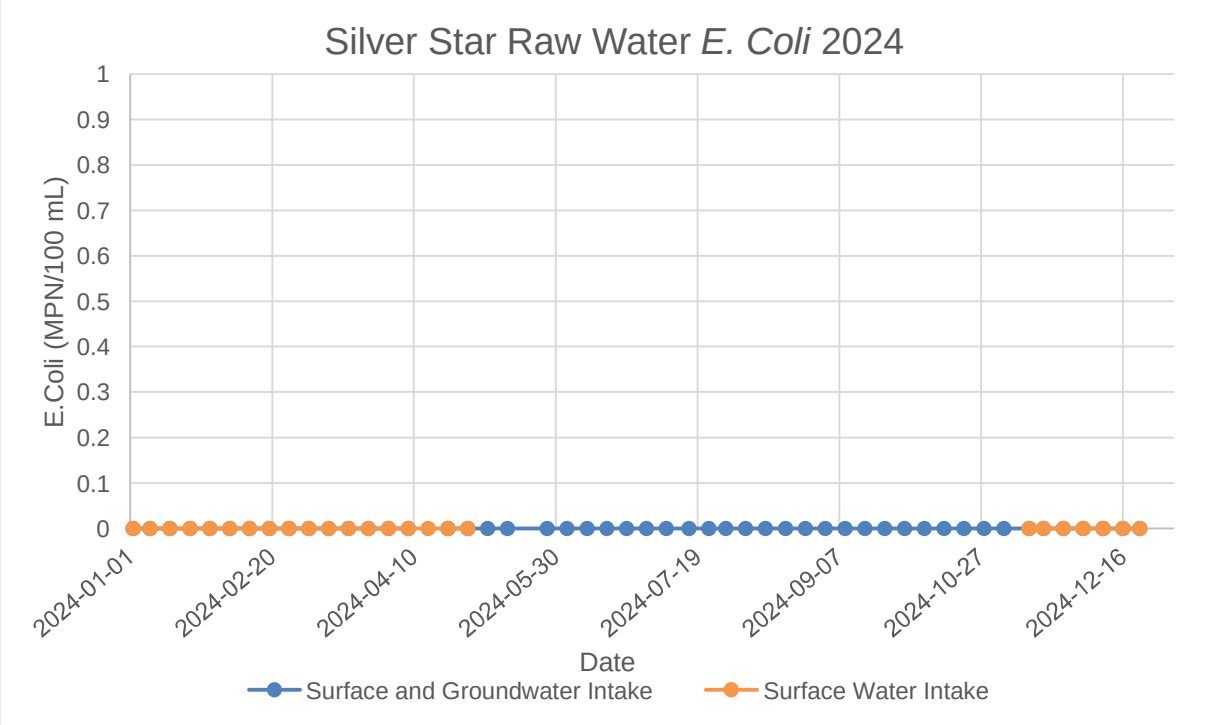
2024 Customer Consumption		
Month	Average Daily Consumption (m^3)	Total Monthly Consumption (m^3)
January	553	17,146
February	534	15,491
March	470	15,977
April	225	6,312
May	201	6,232
June	234	6,799
July	290	8,714
August	298	9,522
September	248	7,432
October	221	6,839
November	277	8,321
December	508	15,748
Annual Min	**201**	
Annual Max	**553**	
Annual Average	**338**	
Annual Total		**124,532**

Table 6: Incident Summary

2024 Incidents			
Cause	Date Reported	Trigger Event	Actions Completed
Service Break	Nov. 8	Break Detected	Customers were issued a service interruption notice for the day of repair and a precautionary WQA. Following the repair, customers were informed that the repair was completed without interruption to water service and therefore the WQA was rescinded.

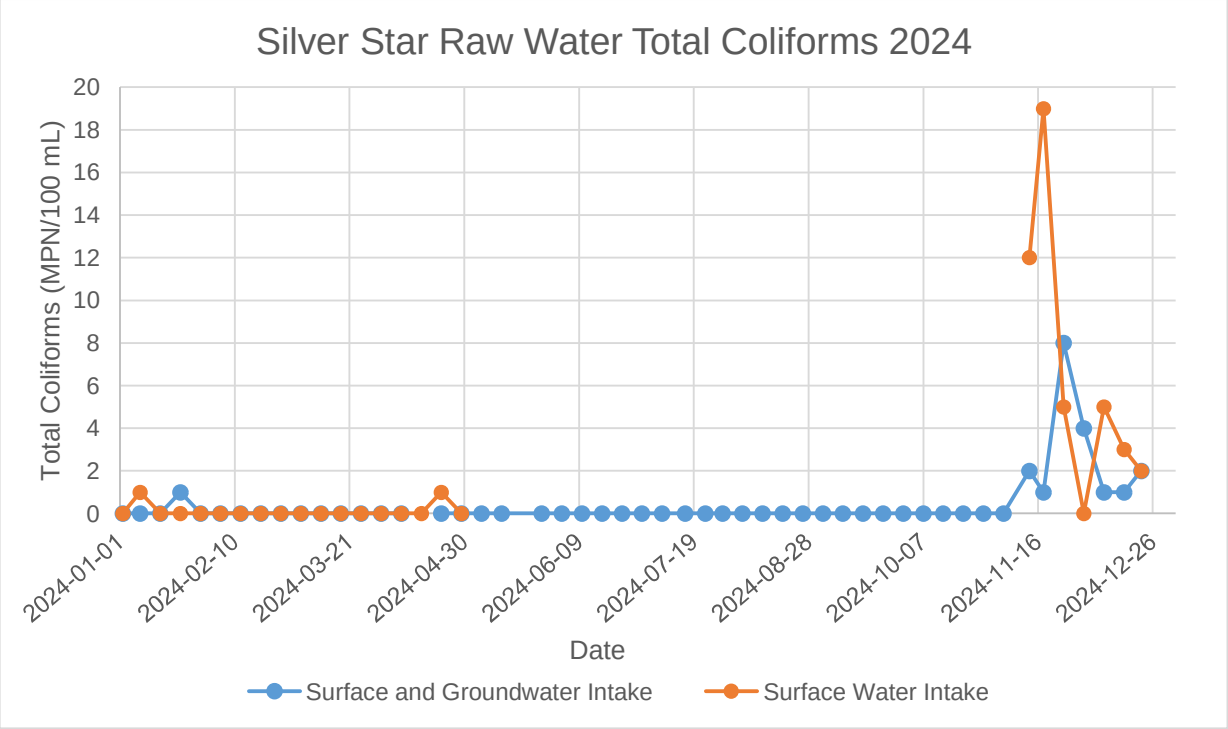
FIGURES

Figure 1: 2024 Raw Water *E. coli* Results



Note: <1 E.coli are shown on the graph as 0 E. coli

Figure 2: 2024 Raw Water Total Coliform Results



Note: <1 Total Coliform are shown on the graph as 0 Total Coliforms

Figure 3: 2024 SCADA Raw Water Turbidity

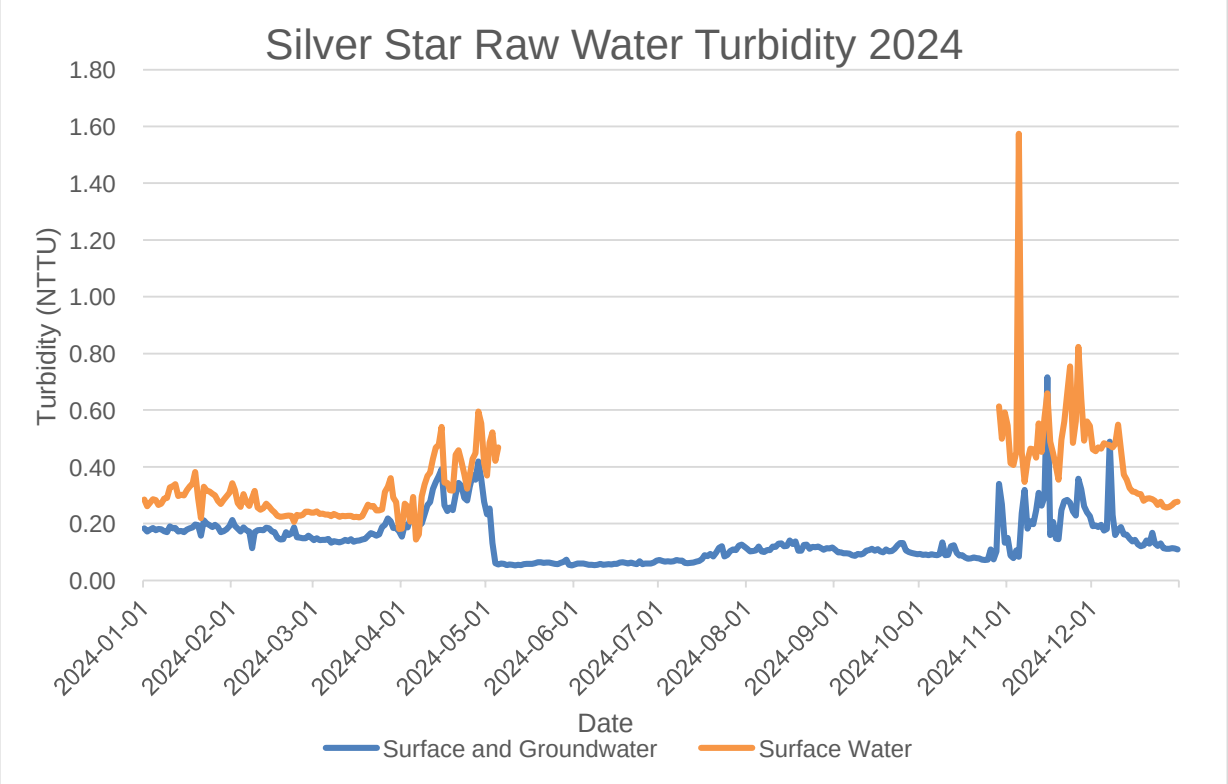


Figure 4: 2022-2024 SCADA Raw Water Turbidity

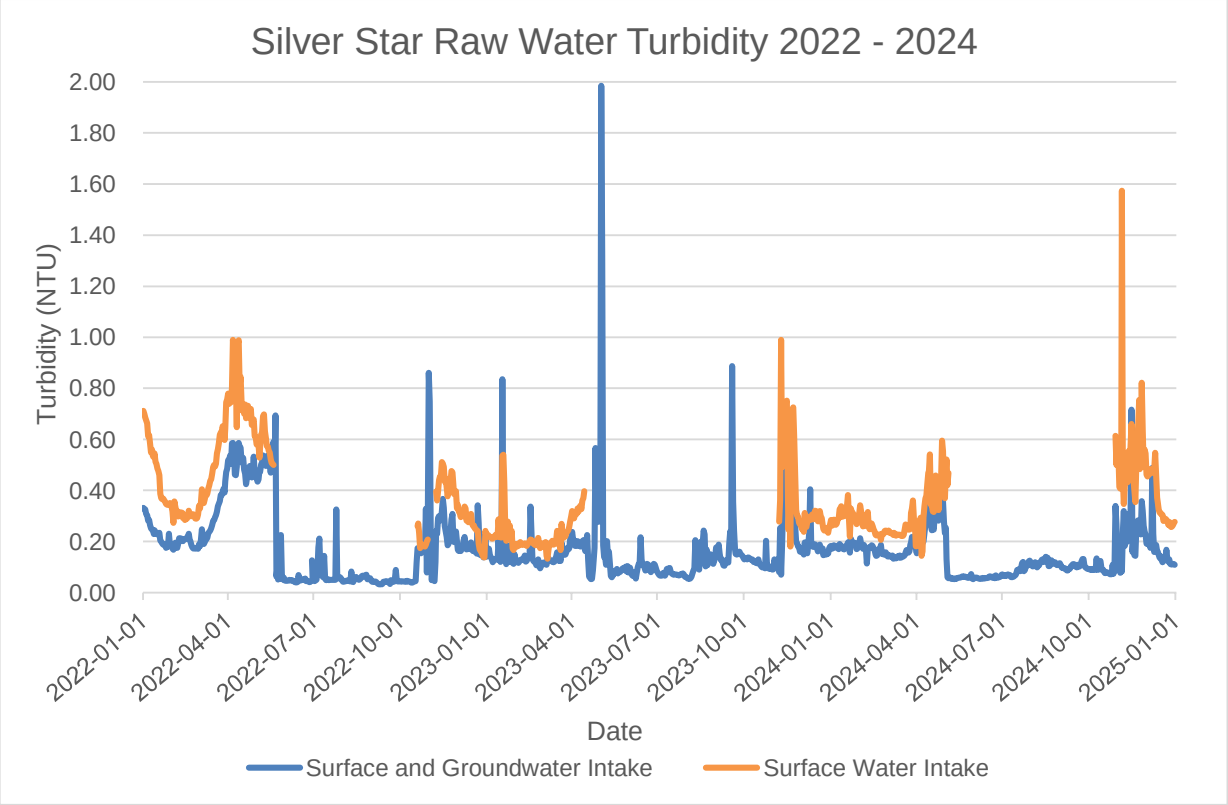


Figure 5: 2024 TTHM's

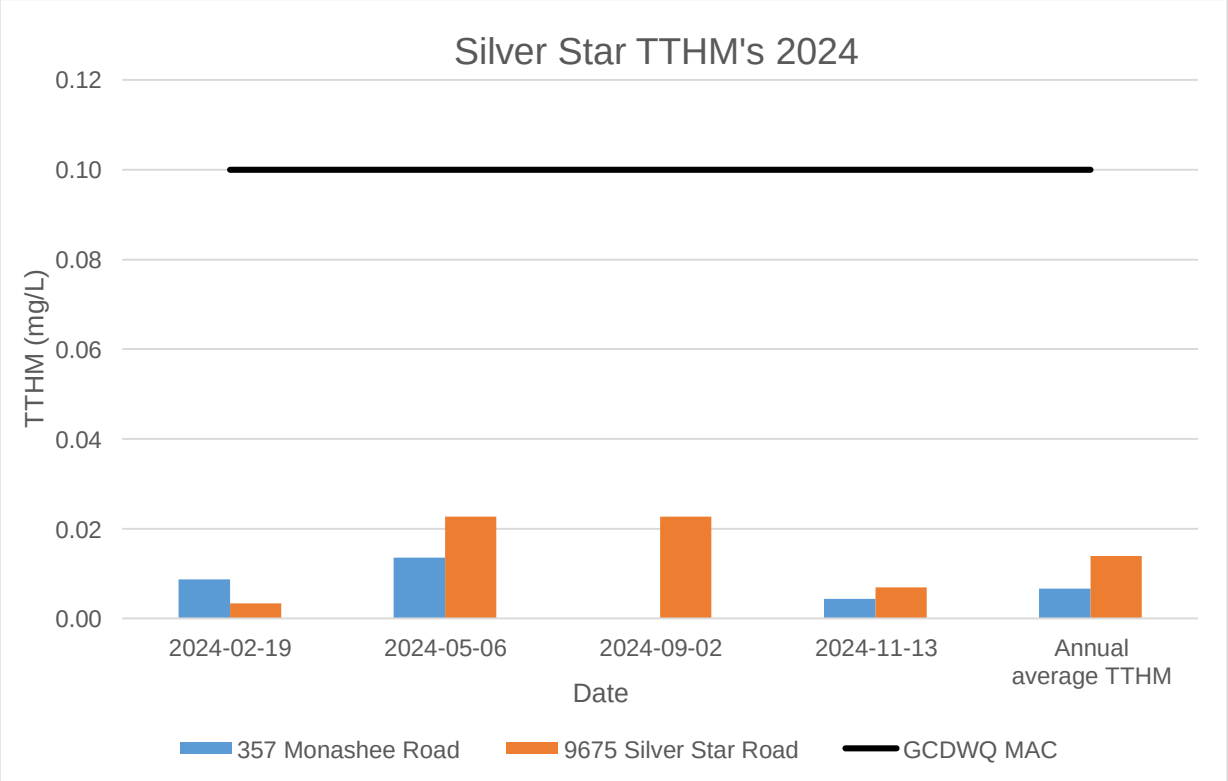


Figure 6: Historical Annual Average TTHM's

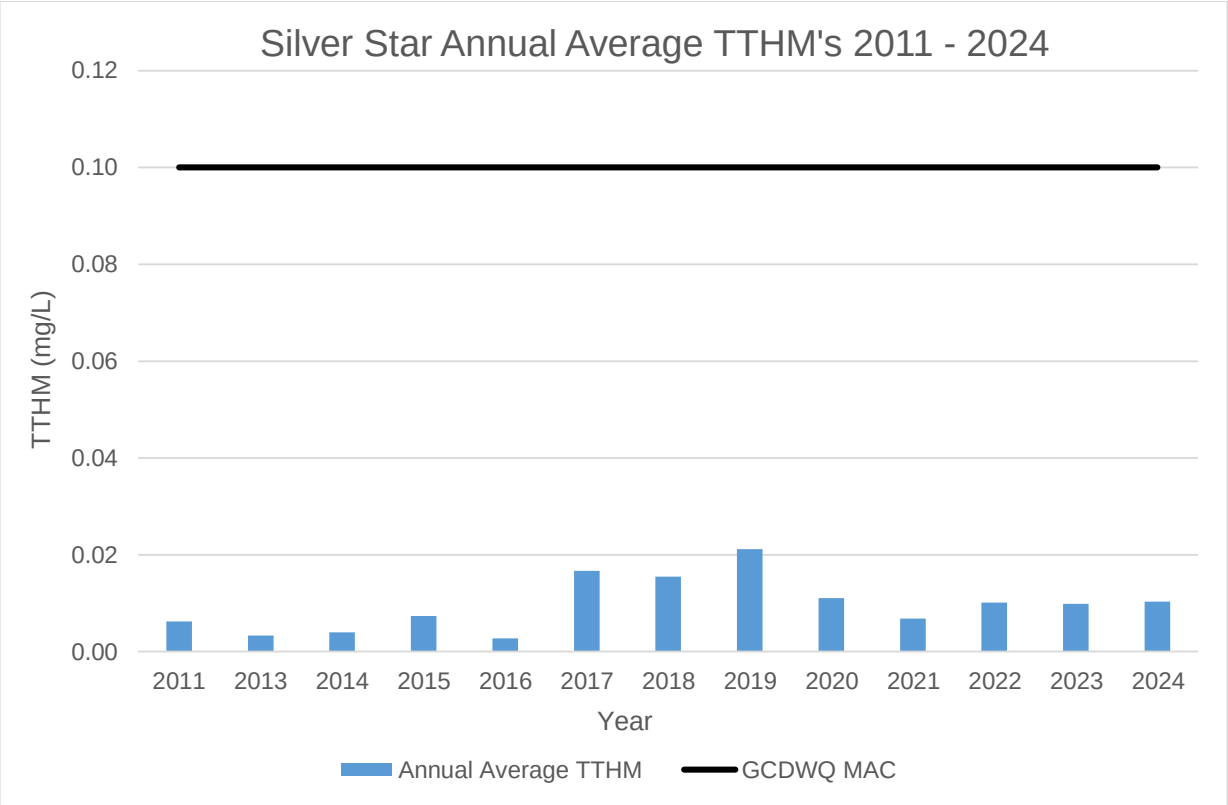


Figure 7: Daily Water Consumption for 2024 vs Historical Average

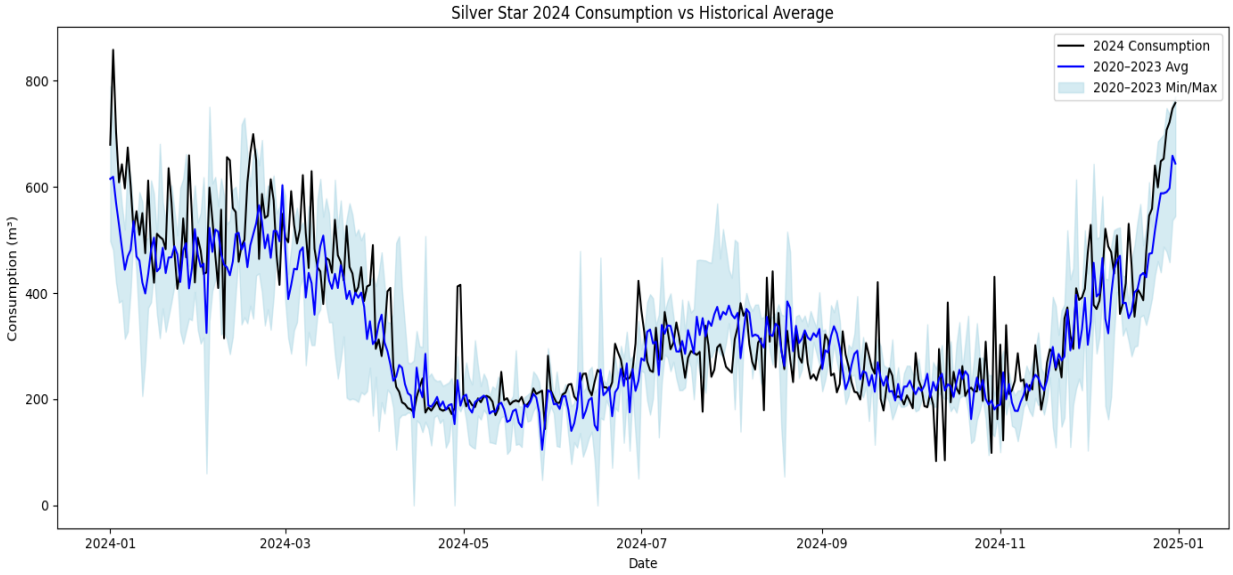
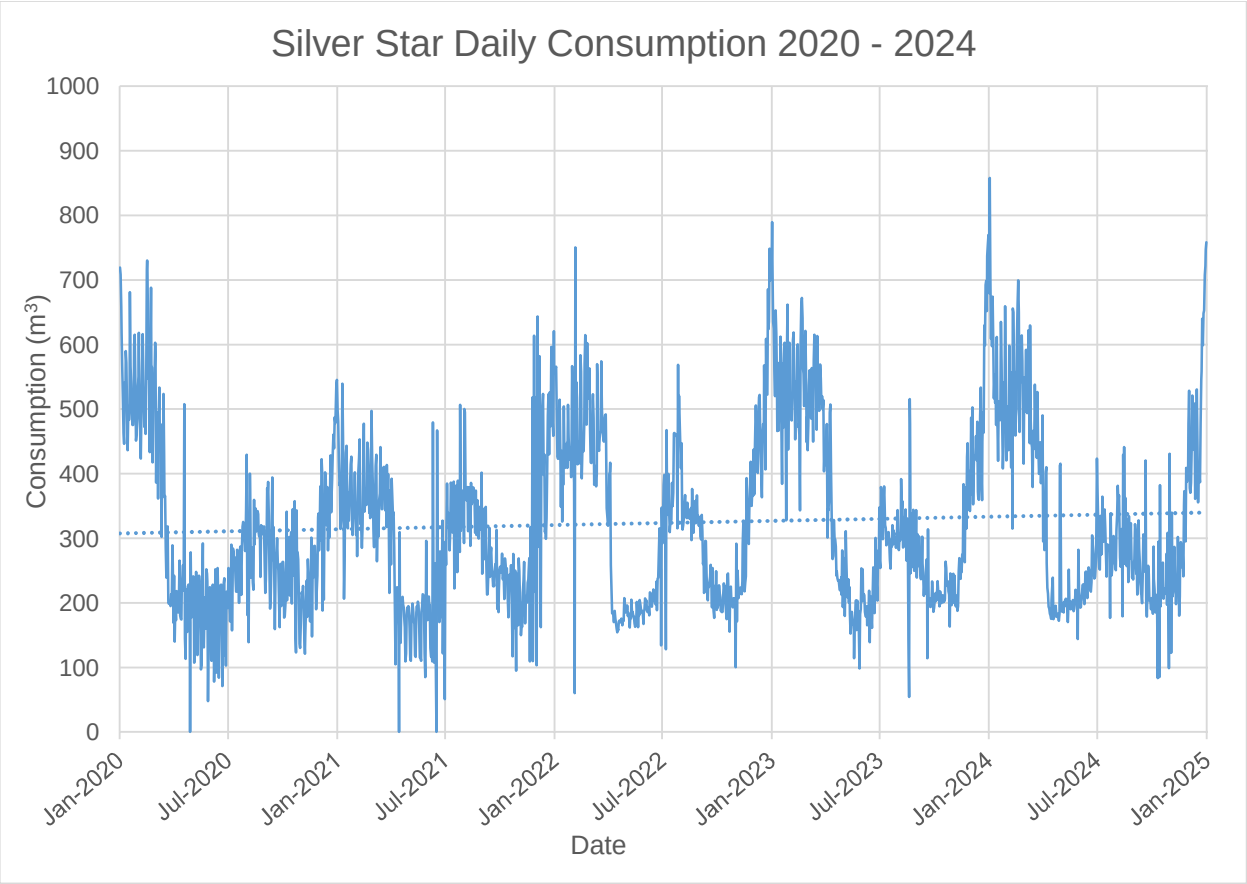


Figure 8: Daily Water Consumption from 2020 to 2024



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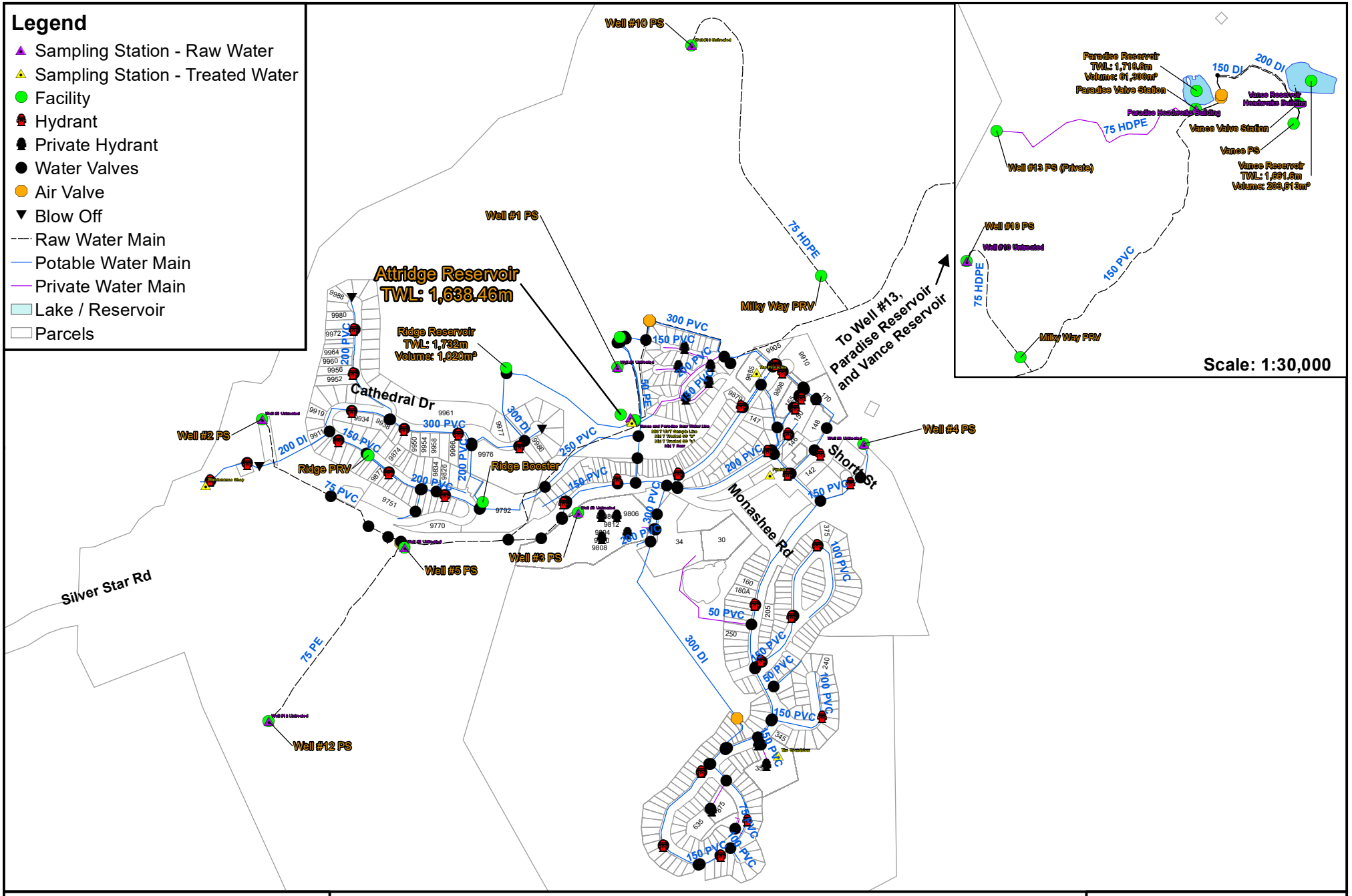
APPENDIX A
SSW WATER SYSTEM MAP



This map was compiled by RDNO, using data believed to be accurate; however, a margin of error is inherent in all maps. This product is distributed without warranties of any kind, either express or implied, including but not limited to warranties of sustainability or particular purpose or use.

Silver Star Water Utility

REGIONAL DISTRICT NORTH OKANAGAN

RDNO

Plot Date: Jan 13, 2022

Scale: 1:12,500

Plot Size: 11" x 8.5"

Meters

0 300 600 1,200

APPENDIX B
CHLORINE CONTACT TIME

Silver Star Water Utility Contact Time Calculation

0.25	m	Contact Pipe - inside diameter
225	m	Contact Pipe - Length
11	m^3	Contact Pipe - Total Volume (V_p)
160	USgpm	maximum flow rate through contact pipe
10.1	L/s	maximum flow rate through contact pipe = Q_p
1816	m^3	Reservoir volume (all 4 cells full)
454	m^3	Reservoir volume (all 4 cells 25% full) = V_r
2000	USgpm	maximum flow rate peak operating conditions through reservoir (incl. fire flow)
126.2	L/s	maximum flow rate peak operating conditions through reservoir (incl. fire flow) = Q_r
18	minutes	Theoretical Detention Time in pipe (TDT_p) = V_p/Q
60	minutes	Theoretical Detention Time in reservoir (TDT_r) = V_r/Q
0.3		Reservoir Baffling Factor (poor) = F_{sc}
36	minutes	Contact Time (CT) during peak flow rate = $TDT_p+F_{sc}*TDT_r$

CT calculation for 1st customer - sampling point after the reservoirs (Mid-T Treated SS "c")

	Cl_2 Residual mg/L (free)	Cl_2 Injection mg/L	pH raw water	Raw Water temp °C	CT_a (achieved) = (Cl_2 * CT)	CT_r (required for virus)	CT_a/CT_r (virus)	CT (Virus) % Achieved
	Minimum	Avg	Average	Average	min-mg/L	min-mg/L		
Peak Flow, Avg. Temp	0.50	1.26	7.60	9.0	18.1	**8.0**	2.26	100
Peak Flow, Winter Temp	0.50	1.26	7.60	3.0	18.1	**12.0**	1.51	100
Peak Flow, Summer Temp	0.50	1.26	7.60	12.0	18.1	**6.0**	3.02	100

Notes:

1. Normal residual Cl2 range at 1st customer is 1.26 to 1.69 mg/L.
2. Temperature average is about 9°C with lows of near 3°C in Winter months, and highs near 12°C in Summer.
3. Peak Flow Rates occur normally in Winter when water temperatures are coldest.
4. From CT Values Table B-2 of US EPA Guidance Manual LT1ESWTR Disinfection Profiling and Benchmarking

virus log inactivation = $4*(Ct_a/CT_r)$ log

virus percent achieved =$100-(100/(10^{(4*CT_a/CT_r)}))$ $\log(x)=4*CT_a/CT_r \Rightarrow x=10^{(4*CT_a/CT_r)}$ x_{virus} = 1.00E+00

APPENDIX C
OPERATING PERMIT

PERMIT VALIDATION

Interior Health

ACCOUNTS RECEIVABLE
12-945 Columbia St W, Kamloops, BC V2C 1L5
Toll Free: 1-844-868-5200 ext. 10365 – Local Calls: 778-362-6810 ext. 10365
Email: hp.billing@interiorhealth.ca

TO VALIDATE your operating permit, immediately affix this decal in the designated location on the permit. The Health Act Fees Regulation states that an operation permit is valid only if it bears an unexpired decal.

Regional District of North Okanagan
Silver Star Water Utility
9848 Aberdeen Rd
Vernon BC V1B 2K9
Canada

Permit Number:	**006176**
Issue Date:	19-Mar-2024
Expiry Date:	31-Mar-2025
Facility Number:	0411496
Facility Name:	Silver Star Water Utility

Drinking Water System 301 - 10,000 Connections

APPENDIX D
CONDITIONS ON PERMIT

March 25th, 2019

Regional District of North Okanagan
9848 Aberdeen Road
Coldstream, BC V1B 2K9

Attention: James de Pfyffer, Small Utilities Manager

Re: 2019 Silver Star Water Utility Conditions on Permit

The following terms and conditions are included in the Silver Star Water Utility operating permit pursuant to Section 8 of the Drinking Water Protection Act. These terms and conditions replace any previous terms and conditions included in the operating permit.

1. **Provide a Source Protection Plan for Each Water Source** (Groundwater Supplies, Paradise and Vance Creek Reservoirs)
   Status: IN COMPLIANCE
   - The Source Water Assessment and Ground Water Protection Plan was completed by True Consulting and submitted August 31, 2011
   - Satisfactory progress reports on the implementation of the recommendations highlighted in Module 8 of the Comprehensive Source to Tap Assessment were included in both the 2011/2012 and 2013 Annual Reports.
   - An Assessment Response Plan or Drinking Water Risk Management Plan has been completed by RDNO and reviewed and updated annually. A summary is included in the Silver Star Water Annual Report.
   - As the surface water and groundwater sources are within a Controlled Recreation Area, the main participants on the TAC are RDNO and Silver Star Mountain Resort (SSMR). As there are not many tasks to complete according to the Action Plan and there is a good relationship between RDNO staff and SSMR staff, contact is made if any issues arise.

   Objectives:
   - Continue to monitor current Source & Groundwater protection/assessment response plan activities and implement any new or amended response activities.
   - Continue to work with SSMR as required.

   Target date:
   - Continue to provide updates on plan and program implementation within the required Annual Report.

2. **Provide a Certified Operator to Operate the System**
   Status: IN COMPLIANCE
   - System is currently EOCP classified as WD-II.
   - Warren McKim is the contracted principal operator and currently EOCP WD-II certified.

   Objective:
   - Please confirm current EOCP system classification and provide new classification as required.

   Target date:
   - Provide update on EOCP Classification when changes in staffing occur and report within the Annual Report

Bus: (250) 851-7322
Fax: (250) 851-7341
Email: Jessy.Bhatti@interiorhealth.ca
Web: www.interiorhealth.ca

INTERIOR HEALTH
Health Protection
519 Columbia Street
Kamloops, BC, V2C 2T8

3. **Operate According to your Water Quality Monitoring Program**
   Status: IN COMPLIANCE
   - Interior Health receives annual updates for the SSW Drinking Water Quality Monitoring Program.

   Objective:
   - Provide an annual update of Silver Star's Drinking Water Quality Monitoring Program with established schedules for systematic, routine sampling, including locations (raw water & treated/distribution sampling) and frequency for both bacteriological and chemical sampling that are representative of the entire water system.
   - Include a table of what is being monitored by SCADA in the next annual report (parameters and location).

   Target date:
   - Provide program update prior to **January 31st** and include summary of changes within the Annual Report.

4. **Operate According to your Cross-Connection Control Program**
   Status: IN COMPLIANCE
   - Formal Cross Connection Assessment began in 2012 and a working inventory of Backflow Prevention Devices was established with implementation of a tagging system.
   - In June 2014 the "Regional District of North Okanagan Cross Connection Control Regulation By-law No. 2651, 2014" was formally adopted and applied to all RDNO Drinking Water System including the Silver Star Water Utility.

   Objective:
   - RDNO will provide public education to commercial and residential customers in annual billing.
   - Objective to have all commercial properties assessed for CCC by 2020.

   Target date:
   - Provide CCCP update in annual report.

5. **Provide a Turbidity Monitoring Program – Including Continuous On-line Turbidity Monitoring**
   Status: IN COMPLIANCE
   - There are four (4) turbidity meters on-line turbidity meters that monitor the system by SCADA and alarmed for dial out.

   Objective:
   - Provide SCADA summary data in monthly report.

   Target Date: On-going monthly report.

6. **Provide Continuous On-line Monitoring of the Water Disinfection Process**
   Status: IN COMPLIANCE
   - Continuous on-line chlorine monitoring is functioning on SCADA.
   - 24 hour monitored alarms indicate when critical limits have been exceeded for treated water.

   Objective:
   - Provide SCADA summary data in monthly report.

   Target Date:
   - On-going monthly report.

7. **Provide long-term plans for source, treatment and distribution system improvements taking into account the goal of meeting the Drinking Water Treatment Objectives (Microbiological) for Surface Supplies in BC.**
   Status: IN PROGRESS
   - UV was installed and brought on line at the Mid-T facility in 2010/2011.
   - True Consulting completed a Strategic Water Plan Update for the SSW in 2011.
   - An update to the Strategic Water Plan is not planned at this time as there are no significant changes planned for the SSW.

- RDNO plans to pursue Exclusion of Filtration in 2019 that will include the results of the protozoan sampling program completed on the surface water sources.
- Conceptual plans, the necessary land foot print, and an acceptable financial strategy have all been identified for the acquisition and installation of filtration technology when necessary.

Objectives:
- RDNO will apply for the Filtration Exclusion in 2019.

Target date:
- Provide submission for Filtration Exclusion by **September 30th 2019**.

8. Review and Update the Emergency Response Plan Annually
Status: IN COMPLIANCE
- Interior Health receives a copy of SSW Emergency Response Plan annually.

Objective:
- Provide Emergency Response and Contingency Plans that conform to industry Best Management Practices and include adequate provisions for public notification and appropriate corrective measures to respond to emergency situations.

Target Date:
- Provide Emergency Response Plan update prior to **June 31st** annually.

9. Provide Monthly Reports and an Annual Summary
Status: IN COMPLIANCE
- Monthly reports are routinely submitted in satisfactory condition.
- Interior Health has received and reviewed the 2017 Silver Star Water Utility Annual Report which was accepted.

Objective:
Monthly reporting should include (as applicable):
- Daily water consumption.
- Microbiological test results.
- Continuous chlorine residuals.
- Comments on source, treatment, distribution system events. Any variances from normal operations for the facility are commented on and explained in written text.
- Records of customer complaints and response.
- Operational activities.

Annual Reports should include:
- Annual consumption data.
- Updates to Water System Assessment and Capital Works Plan.
- Updates to Water Monitoring Plan.
- Updates to Emergency Response Plan.
- Updates to Cross Connection Control Program.
- Provide Environmental Operators Certification Program updates.

Target Date:
- Monthly reports to be submitted by the 15th day of the subsequent month.
- Annual reports must be submitted by July 1st annually.
- Please send via email to: jessybhatti@interiorhealth.ca

Thank you for your continuing cooperation and success in providing the SilverStar area with Clean, Safe and Reliable tap water. I look forward to working with you over the coming year.

If you have any questions please call me directly at 250-851-7322.

Sincerely,

Jessy Bhatti, CPHI (C)
Specialist Environmental Health Officer
Interior Health

JB/jb

APPENDIX E
2024 SAMPLING PROGRAM and SCHEDULES

2024 Silver Star Water Utility Water Quality Monitoring Program

Silver Star Water Quality Monitoring Program

Operator Tasks		
Sampling	Weekly	Mondays (potential exceptions due to holidays)
Chlorine	Weekly	At all distribution sites use handheld meter and log data
Turbidity	Weekly	At all distribution sites use handheld meter and log data
pH	Weekly	At all distribution sites use handheld meter and log data
Bottle drop off	Bring bottles to RDNO to send to Caro for analysis	
Instument cleaning and calibration	Bring instruments to RDNO according to instrument schedule	
Turbidity (online) meter cleaning	Flush, clean, and calibrate online turbidity meter quarterly (March, June, September and December) and write when flushed, cleaned, calibrated and any other comments in online operator's log.	

Sample Sites	
Site Type	**Sample Site Name**
Source	Surface and Groundwater Intake
Source	Surface Water Intake
Source	Well 1
Source	Well 2
Source	Well 3
Source	Well 5
Source	Well 10
Source	Well 12
Source	Paradise Reservoir Intake
Source	Vance Reservoir Intake
Mid T WTP	Mid T Reservoir Outlet
Distribution	9885 Pinnacles Road
Distribution	357 Monashee Road
Distribution	Firehall
Distribution	9675 Silver Star Road

Revision Date: January 11, 2024 by JF

2024 Silver Star Water Utility Water Quality Monitoring Program

Handheld Instrument Calibration by RDNO		
Parameter	**Instrument Name**	**Frequency**
Chlorine	Hach Pocket colorimeter	Annually
Turbidity	HACH 2100Q	Quarterly
pH	Oakton pH Testr	Monthly
Conductivity	Oakton ECO Testr	Monthly

Revision Date: January 11, 2024 by JF

2024 Silver Star Water Utility Water Quality Monitoring Program

Silver Star Water Quality Sampling Schedule

Source Analysis			
Sample Sites	**Frequency**	**RDNO Lab Parameters**	**Caro Lab Parameters**
Surface Water Intake	Weekly (when in use)	Total Manganese	
	Weekly (when in use)	UVT (Unfiltered)	
	Weekly (when in use)		Bacteria
Vance Reservoir Intake	Weekly	Total Manganese	
	Weekly	Algae	
Paradise Reservoir Intake	Weekly	Total Manganese	
	Weekly	Algae	
Surface and Groundwater Intake	Weekly	Total Manganese	
	Weekly		Bacteria

Treatment Analysis			
Sample Sites	**Frequency**	**RDNO Lab Parameters**	**Caro Lab Parameters**
Mid T Reservoir Outlet	Weekly	Total Manganese	
	Weekly		Bacteria

Distribution Analysis			
Sample Sites	**Frequency**	**RDNO Lab Parameters**	**Caro Lab Parameters**
9885 Pinnacles Road	Weekly (peak season)		Bacteria
	Bi-weekly (low season)		Bacteria
357 Monashee Road	Weekly (peak season)		Bacteria
	Bi-weekly (low season)		Bacteria
	Quarterly		THM's
Firehall	Weekly (peak season)		Bacteria
	Bi-weekly (low season)		Bacteria
9675 Silver Star Road	Weekly (peak season)		Bacteria
	Bi-weekly (low season)		Bacteria
	Quarterly		THM's

Revision Date: January 11, 2024 by JF

2024 Silver Star Water Utility Water Quality Monitoring Program

SSW sample sites follow a 4 week rotating schedule all year, as per the small utilites sampling calendar.

Distribution Bacterial Samples Per Month	
Peak Season (Dec. 1st - Mar. 31st)	20
Low Season (Apr. 1st - Nov. 30th)	12

Revision Date: January 11, 2024 by JF

2024 Silver Star Water Utility Water Quality Monitoring Program

Silver Star Water Quality Sampling Bottles

Source Sampling		
Sites	**Bottles**	**Parameters**
Surface Water Intake	1 - 500 mL in house	Manganese, UVT (Unfiltered)
	1 - Caro Bacterial (when in use)	Total Coliform, E.Coli
Vance Reservoir Intake	1 - 500 mL in house	Manganese
	1 - 1 L in house	Algae
Paradise Reservoir Intake	1 - 500 mL in house	Manganese
	1 - 1 L in house	Algae
Surface and Groundwater Intake	1 - 500 mL in house	Manganese
	1 - Caro Bacterial	Total Coliform, E.Coli

Mid T WTP		
Sites	**Bottles**	**Parameters**
Mid T Reservoir Outlet	1 - Caro Bacterial	Total Coliform, E. Coli
	1 - 500 mL in house	Manganese

Distribution Sampling		
Sites	**Bottles**	**Parameters**
9885 Pinnacles Road	1 - Caro Bacterial	Total Coliform, E. Coli
357 Monashee Road	1 - Caro Bacterial	Total Coliform, E. Coli
	2 - THM bottles	THM's
Firehall	1 - Caro Bacterial	Total Coliform, E. Coli
9675 Silver Star Road	1 - Caro Bacterial	Total Coliform, E. Coli
	2 - THM bottles	THM's

Revision Date: January 11, 2024 by JF

2024 Silver Star Water Utility Water Quality Monitoring Program

Silver Star Annual Comprehensive Source Sampling

Surface Source Comprehensive Analysis Schedule		
Sample Site	**Frequency**	**When**
Paradise Reservoir Intake	Annually	October
Vance Reservoir Intake	Annually	October
Annual sampling rotates between June and October each year		
Bottles for Annual Surface Water Source Sampling		
1 - 1 L Caro		
1 - 125 mL Metals		
1 - 100 ml Glass metals (Mercury)		
1 - Cyanide		
1 - Caro Bacterial		
1 - TOC		
1 - 4L Chlorophyll A		

Groundwater Source Comprehensive Analysis Schedule		
Sample Site	**Frequency**	**When**
Well 1	Annually	October
Well 2	Annually	October
Well 3	Annually	October
Well 5	Annually	October
Well 10	Annually	October
Well 12	Annually	October
Annual sampling rotates between June and October each year		
Bottles for Annual Groundwater Source Sampling		
1 - 1 L Caro		
1 - 125 mL Metals		
1 - 100 ml Glass metals (Mercury)		
1 - Cyanide		
1 - Caro Bacterial		
1 - Caro Bacteria for IRB/SRB		

APPENDIX F
2024 RAW WATER COMPREHENSIVE ANALYSIS

Silver Star Source Water Quality 2024

Sampling Point	Paradise Reservoir Intake	Vance Reservoir Intake	Well 1	Well 2	Well 3	Well 5	Well 12		
Date of Sample	**31-Jul**	**31-Jul**	**20-Jun**	**20-Jun**	**20-Jun**	**20-Jun**	**31-Jul**		
Parameter	**Result**							**Guideline**	**Unit**
Alkalinity (Bicarbonate, as $CaCO_3$)	105	61.6	112	111	156	201	108	N/A	mg/L
Alkalinity (Carbonate, as $CaCO_3$)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	N/A	mg/L
Alkalinity (Hydroxide, as $CaCO_3$)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	N/A	mg/L
Alkalinity (Phenolphthalein, as $CaCO_3$)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	N/A	mg/L
Alkalinity (Total, as $CaCO_3$)	105	61.6	112	111	156	201	108	N/A	mg/L
Aluminum (Total)	0.0149	0.0252	<0.005	<0.005	<0.005	<0.005	<0.005	OG < 0.1, MAC = 2.9	mg/L
Antimony (Total)	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	MAC = 0.006	mg/L
Arsenic (Total)	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	MAC = 0.01	mg/L
Barium (Total)	0.0176	0.022	0.0172	0.0274	0.0292	0.0418	0.0326	MAC = 2	mg/L
Boron (Total)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	MAC = 5	mg/L
Cadmium (Total)	0.000044	0.000258	<0.00001	0.00004	0.000066	0.000075	<0.00001	MAC = 0.007	mg/L
Calcium (Total)	38.3	29.4	50.5	54.1	93.1	169	28.1	N/A	mg/L
Chloride	0.33	0.57	0.8	1.9	50.8	176	4.89	AO ≤ 250	mg/L
Chlorophyll a	1.35	11.3						N/A	µg/L
Chromium (Total)	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	MAC = 0.05	mg/L
Cobalt (Total)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0024	<0.0001	N/A	mg/L
Colour (True)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	AO ≤ 15	TCU
Conductivity	231	175	267	315	634	1120	309	N/A	µS/cm
Copper (Total)	0.00327	0.00159	<0.0004	0.00074	0.00055	0.00193	0.00148	MAC = 2	mg/L
Cyanide (Total)	<0.002	<0.002	<0.002	0.0045	<0.002	<0.002	<0.002	MAC = 0.2	mg/L
Dissolved Organic Carbon	2.64	2.63						N/A	mg/L
Fluoride	<0.1	<0.1	<0.1	0.11	<0.1	<0.1	0.11	MAC = 1.5	mg/L
Hardness (Total, as $CaCO_3$)	122	82.4	137	160	278	474	130	N/A	mg/L
Iron (Total)	0.031	0.056	<0.01	<0.01	0.015	**0.268**	0.015	AO ≤ 0.1	mg/L
Iron Reducing Bacteria			<1.0	2200	<1.0	<1.0	<1.0	N/A	CFU/mL
Langelier Index	-0.2	-1.6	-0.9	-0.8	-0.005	0.5	-1.1	N/A	-
Lead (Total)	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.00032	<0.0002	MAC = 0.005	mg/L
Magnesium (Total)	6.25	2.19	2.5	5.98	11.1	12.6	14.4	N/A	mg/L
Manganese (Total)	0.0136	**0.0299**	<0.0002	<0.0002	0.0176	**0.207**	0.0135	MAC = 0.12, AO ≤ 0.02	mg/L
Mercury (Total)	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	MAC = 0.001	mg/L
Molybdenum (Total)	0.0006	0.0004	0.0003	0.00425	0.00085	0.00046	0.00118	N/A	mg/L
Nickel (Total)	0.0011	0.00115	<0.0004	<0.0004	0.00135	0.00313	0.00052	N/A	mg/L
Nitrate	0.014	0.063	0.098	0.015	<0.01	<0.01	<0.01	MAC = 10	mg N/L
Nitrite	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	MAC = 1	mg N/L
Phosphorus (Total Dissolved)	0.0092	0.0116						N/A	mg/L
Phosphorus (Total)	0.0195	0.0569	0.0219	0.0282	0.0112	0.01	0.031	N/A	mg/L
pH	7.75	**6.65**	**6.92**	7.03	7.45	7.6	**6.97**	OG = 7.0-10.5	pH units
Potassium (Total)	0.44	0.57	1.38	2.39	1.49	7.23	1.75	N/A	mg/L
Selenium (Total)	0.00199	0.00225	0.00213	0.00871	<0.0005	<0.0005	<0.0005	MAC = 0.05	mg/L
Sodium (Total)	0.74	0.51	1.2	2.03	21.1	43.5	12.7	AO ≤ 200	mg/L
Strontium (Total)	0.174	0.188	0.371	0.451	1.52	3.58	3.42	MAC = 7	mg/L
Sulfate Reducing Bacteria			<5.0		<5.0	<5.0		N/A	
Sulphate	17	25.9	24	45.7	86.7	90.4	44.1	AO ≤ 500	mg/L
Total Dissolved Solids (Computed)	127	97	149	180	360	**622**	172	AO ≤ 500	mg/L
Total Kjeldahl Nitrogen	0.229	0.298						N/A	mg/L

Total Organic Carbon	2.85	3.16						N/A	mg/L
Turbidity	**1.15**	**2.29**	0.12	0.26	0.38	**2.51**	<0.1	OG < 1	NTU
Uranium (Total)	0.000251	0.000114	0.000254	0.00176	0.00364	0.00151	0.000463	MAC = 0.02	mg/L
UV Transmittance (Filtered)	94.6	95.1	99.4	99.6	99.6	99.4	99.8	N/A	% T
Zinc (Total)	<0.004	0.0102	<0.004	<0.004	0.0081	0.0808	0.0295	AO ≤ 5	mg/L

"<" = Less than the detection limit shown

N/A = No current guideline

OG = Operational Guideline

MAC = Maximum Acceptable Concentration Guideline

AO = Aesthetic Objective Guideline

Guidelines are for treated drinking water - these samples are untreated water

APPENDIX G
2024 MONTHLY REPORTS

REGIONAL DISTRICT
NORTH OKANAGAN

Silver Star Water (SSW) Water Quality Report for January 2024

The following is the water quality summary for the Silver Star Water (SSW) Utility.

1. Sources

Not all of Silver Star's water sources are utilized year-round; the system is constructed so that the sources can be brought online based on demand. As Silver Star is primarily a winter resort, the highest water demands occur from November to March. SSW has nine water sources used for domestic use: Well 1, Well 2, Well 3, Well 4, Well 5, Well 10, Well 12, Paradise Reservoir and Vance Reservoir.

The surface water sources, Paradise and Vance Reservoirs, are metered in the Mid T Water Treatment Plant (MTWTP) as one volume; it is not possible to separate the volumes of each reservoir.

Table 1 summarizes the results of the raw water entering the treatment process. This is a blend of sources depending on demands in the system. This results in data variation throughout the year. Table 2 summarizes the results for the untreated water from the wells. Table 3 summarizes the results for the untreated water from Paradise and/or Vance Reservoirs.

Wells 4 and 10 have not been used this season. Vance Reservoir was brought online on November 7, 2023.

Table 1 Mid T Raw Water Monitoring

Parameter	Laboratory		# of Samples	# of Deviations[1]	Min	Max	Average
E.coli	Caro	MPN/100 mL	5	-----	<1	<1	<1
Total Coliform	Caro	MPN/100 mL	5	-----	<1	1	0.2
Turbidity	Grab sample	NTU	22	-----	0.15	0.27	0.20
Turbidity	SCADA[2] Daily Average	NTU	31	-----	0.16	0.21	0.18

[1]SSW WQ Deviation Response Plan – Turbidity >1.0 NTU
[2]SCADA: Supervisory Control and Data Acquisition.

Table 2 Mid T Raw Water Monitoring – Wells

Parameter	Laboratory		# of Samples	# of Deviations[1]	Min	Max	Average
Turbidity	SCADA[2] Daily Average	NTU	31	-----	0.29	0.86	0.49

[1]SSW WQ Deviation Response Plan – Turbidity >1.0 NTU
[2]SCADA: Supervisory Control and Data Acquisition.

Table 3 Mid T Raw Water Monitoring – Surface Sources

Parameter	Laboratory		# of Samples	# of Deviations[1]	Min	Max	Average
E.coli	Caro	MPN/100 mL	5	-----	<1	<1	<1
Total Coliform	Caro	MPN/100 mL	5	-----	<1	1	0.2
Turbidity	Grab sample	NTU	5	-----	0.19	0.50	0.30
Turbidity	SCADA[2] Daily Average	NTU	31	-----	0.22	0.38	0.30
UVT - Unfiltered	RDNO Lab	%	5	-----	96.0	97.6	96.6

[1]SSW WQ Deviation Response Plan – Turbidity >1.0 NTU
[2]SCADA: Supervisory Control and Data Acquisition.

2. Treatment Plant

SSW has a treatment plant, the Mid T Water Treatment Plant (MTWTP). The MTWTP uses a dual disinfection process of Ultra-violet (UV) disinfection and chlorine. Chlorine is added after UV treatment to ensure contact time for the removal of viruses. Tables 4, 5 and 6 summarize the results for chlorine, bacterial, turbidity, manganese, calculated contact time, and UV transmittance (UVT).

Table 4 Mid T Water Treatment Plant

Parameter	Laboratory		# of Samples	# of Deviations[1]	Min	Max	Average
Free Chlorine	SCADA[2] Daily Average	mg/L	31	-----	1.57	1.71	1.63
Free Chlorine	Grab sample	mg/L	5	-----	1.60	1.67	1.64
Total Chlorine	Grab sample	mg/L	5	-----	1.68	1.75	1.72
E.coli	Caro	CFU/100 mL	5	-----	<1	<1	<1
Total Coliform	Caro	CFU/100 mL	5	-----	<1	<1	<1
Turbidity	SCADA[2] Daily Average	NTU	31	-----	0.14	0.14	0.14
Turbidity	Grab sample	NTU	5	-----	0.14	0.19	0.16
Manganese	RDNO Lab	mg/L	5	-----	0.005	0.013	0.009

[1]SSW WQ Deviation Response Plan – Free Chlorine <0.20 mg/L, Turbidity >1.0 NTU, Manganese >0.12 mg/L
[2]SCADA: Supervisory Control and Data Acquisition.

Table 5 Contact Time (CT)

Parameter	Days Monitored	Min	Max	Average
Days 99.9% achieved	5	100%	100%	100%

99.9% is 3-log removal for Giardia

Table 6 Ultra-violet (UV) Disinfection

Parameter	Laboratory	Days Monitored	Min	Max	Average
UVT	SCADA[1] Daily Average	31	85%	102%	99%

[1]SCADA: Supervisory Control and Data Acquisition.

3. Distribution

Table 7 summarizes the results for chlorine, turbidity and bacterial for the distribution system from the following sites: Pinnacles, Grandview, Firehall, and Maintenance Building. The monthly water volume used at Silver Star was 17,146 m^3.

Table 7 Distribution

Parameter	Laboratory		# of Samples	# of Deviations[1]	Min	Max	Average
Free Chlorine	Grab sample	mg/L	20	-----	0.64	1.64	1.41
Total Chlorine	Grab sample	mg/L	20	-----	0.81	1.73	1.49
E.coli	Caro	CFU/100 mL	20[2]	-----	<1	<1	<1
Total Coliform	Caro	CFU/100 mL	20[2]	-----	<1	<1	<1
Turbidity	Grab sample	NTU	20	-----	0.07	0.26	0.16

[1]SSW WQ Deviation Response Plan – Free Chlorine <0.20 mg/L, Turbidity >1.0 NTU
[2]Treatment Plant bacterial samples are included in the required monthly bacterial sampling amounts as per Drinking Water Protection Regulations Schedule B.

4. Customer Calls and Notifications

Customer calls within the Silver Star Water Utility service area are tracked and recorded. There were no customer calls this month.

5. Operational or Maintenance Activity

Operational activities within the Silver Star Water service area are tracked and recorded. Table 8 summarizes the operational activities this month.

Table 8 Monthly Operational Work and Maintenance

NUMBER OF LOCATIONS	TYPE OF WORK
0	Hydrant Maintenance
0	Water Service Locate
0	Water Main Break Repair
0	Water Service Install
2	Water Turn On/Off
0	Water Service and/or Curb Stop Repair
0	Water Meter/ERT Install
4	Water Meter/ERT Inspection
0	Water Meter/ERT Maintenance
0	Water Meter/ERT Replacement
0	Water Meter Manual Read
1	Water Investigation

REGIONAL DISTRICT
NORTH OKANAGAN

Silver Star Water (SSW) Water Quality Report for February 2024

The following is the water quality summary for the Silver Star Water (SSW) Utility.

1. Sources

Not all of Silver Star's water sources are utilized year-round; the system is constructed so that the sources can be brought online based on demand. As Silver Star is primarily a winter resort, the highest water demands occur from November to March. SSW has nine water sources used for domestic use: Well 1, Well 2, Well 3, Well 4, Well 5, Well 10, Well 12, Paradise Reservoir and Vance Reservoir.

The surface water sources, Paradise and Vance Reservoirs, are metered in the Mid T Water Treatment Plant (MTWTP) as one volume; it is not possible to separate the volumes of each reservoir.

Table 1 summarizes the results of the raw water entering the treatment process. This is a blend of sources depending on demands in the system. This results in data variation throughout the year. Table 2 summarizes the results for the untreated water from the wells. Table 3 summarizes the results for the untreated water from Paradise and/or Vance Reservoirs.

Wells 4 and 10 have not been used this season. Vance Reservoir was brought online on November 7, 2023.

Table 1 Mid T Raw Water Monitoring

Parameter	Laboratory		# of Samples	# of Deviations[1]	Min	Max	Average
E.coli	Caro	MPN/100 mL	4	-----	<1	<1	<1
Total Coliform	Caro	MPN/100 mL	4	-----	<1	<1	<1
Turbidity	Grab sample	NTU	21	-----	0.17	0.25	0.21
Turbidity	SCADA[2] Daily Average	NTU	29	-----	0.11	0.21	0.17

[1]SSW WQ Deviation Response Plan – Turbidity >1.0 NTU
[2]SCADA: Supervisory Control and Data Acquisition.

Table 2 Mid T Raw Water Monitoring – Wells

Parameter	Laboratory		# of Samples	# of Deviations[1]	Min	Max	Average
Turbidity	SCADA[2] Daily Average	NTU	29	-----	0.35	0.67	0.47

[1]SSW WQ Deviation Response Plan – Turbidity >1.0 NTU
[2]SCADA: Supervisory Control and Data Acquisition.

Table 3 Mid T Raw Water Monitoring – Surface Sources

Parameter	Laboratory		# of Samples	# of Deviations[1]	Min	Max	Average
E.coli	Caro	MPN/100 mL	4	-----	<1	<1	<1
Total Coliform	Caro	MPN/100 mL	4	-----	<1	<1	<1
Turbidity	Grab sample	NTU	4	-----	0.22	0.28	0.26
Turbidity	SCADA[2] Daily Average	NTU	29	-----	0.21	0.34	0.25
UVT - Unfiltered	RDNO Lab	%	4	-----	95.8	96.7	96.3

[1]SSW WQ Deviation Response Plan – Turbidity >1.0 NTU
[2]SCADA: Supervisory Control and Data Acquisition.

2. Treatment Plant

SSW has a treatment plant, the Mid T Water Treatment Plant (MTWTP). The MTWTP uses a dual disinfection process of Ultra-violet (UV) disinfection and chlorine. Chlorine is added after UV treatment to ensure contact time for the removal of viruses. Tables 4, 5 and 6 summarize the results for chlorine, bacterial, turbidity, manganese, calculated contact time, and UV transmittance (UVT).

Table 4 Mid T Water Treatment Plant

Parameter	Laboratory		# of Samples	# of Deviations[1]	Min	Max	Average
Free Chlorine	SCADA[2] Daily Average	mg/L	29	-----	1.56	1.66	1.61
Free Chlorine	Grab sample	mg/L	4	-----	1.63	1.66	1.65
Total Chlorine	Grab sample	mg/L	4	-----	1.72	1.75	1.74
E.coli	Caro	CFU/100 mL	5	-----	<1	<1	<1
Total Coliform	Caro	CFU/100 mL	5	-----	<1	<1	<1
Turbidity	SCADA[2] Daily Average	NTU	29	-----	0.14	0.14	0.14
Turbidity	Grab sample	NTU	4	-----	0.15	0.24	0.18
Manganese	RDNO Lab	mg/L	4	-----	0.009	0.018	0.013

[1]SSW WQ Deviation Response Plan – Free Chlorine <0.20 mg/L, Turbidity >1.0 NTU, Manganese >0.12 mg/L
[2]SCADA: Supervisory Control and Data Acquisition.

Table 5 Contact Time (CT)

Parameter	Days Monitored	Min	Max	Average
Days 99.9% achieved	4	100%	100%	100%

99.9% is 3-log removal for Giardia

Table 6 Ultra-violet (UV) Disinfection

Parameter	Laboratory	Days Monitored	Min	Max	Average
UVT	SCADA[1] Daily Average	29	96%	100%	98%

[1]SCADA: Supervisory Control and Data Acquisition.

3. Distribution

Table 7 summarizes the results for chlorine, turbidity and bacterial for the distribution system from the following sites: Pinnacles, Grandview, Firehall, and Maintenance Building. The monthly water volume used at Silver Star was 15,491 m^3.

Table 7 Distribution

Parameter	Laboratory		# of Samples	# of Deviations[1]	Min	Max	Average
Free Chlorine	Grab sample	mg/L	15	-----	0.32	1.64	1.39
Total Chlorine	Grab sample	mg/L	15	-----	0.40	1.73	1.47
E.coli	Caro	CFU/100 mL	16[2]	-----	<1	<1	<1
Total Coliform	Caro	CFU/100 mL	16[2]	-----	<1	<1	<1
Turbidity	Grab sample	NTU	15	-----	0.12	0.25	0.20

[1]SSW WQ Deviation Response Plan – Free Chlorine <0.20 mg/L, Turbidity >1.0 NTU
[2]Treatment Plant bacterial samples are included in the required monthly bacterial sampling amounts as per Drinking Water Protection Regulations Schedule B.

4. Customer Calls and Notifications

Customer calls within the Silver Star Water Utility service area are tracked and recorded. Table 8 summarizes one customer call this month.

Table 8 Customer Calls

# of Calls	Type of Call	Issue/Inquiry	Investigation	Comments
1	Inquiry	Water Fee	Yes	Customer inquiring about fee

5. Operational or Maintenance Activity

Operational activities within the Silver Star Water service area are tracked and recorded. Table 9 summarizes the operational activities this month.

Table 9 Monthly Operational Work and Maintenance

NUMBER OF LOCATIONS	TYPE OF WORK
0	Hydrant Maintenance
0	Water Service Locate
0	Water Main Break Repair
0	Water Service Install
0	Water Turn On/Off
0	Water Service and/or Curb Stop Repair
0	Water Meter/ERT Install
1	Water Meter/ERT Inspection
0	Water Meter/ERT Maintenance
0	Water Meter/ERT Replacement
0	Water Meter Manual Read
0	Water Investigation

REGIONAL DISTRICT
NORTH OKANAGAN

Silver Star Water (SSW) Water Quality Report for March 2024

The following is the water quality summary for the Silver Star Water (SSW) Utility.

1. Sources

Not all of Silver Star's water sources are utilized year-round; the system is constructed so that the sources can be brought online based on demand. As Silver Star is primarily a winter resort, the highest water demands occur from November to March. SSW has nine water sources used for domestic use: Well 1, Well 2, Well 3, Well 4, Well 5, Well 10, Well 12, Paradise Reservoir and Vance Reservoir.

The surface water sources, Paradise and Vance Reservoirs, are metered in the Mid T Water Treatment Plant (MTWTP) as one volume; it is not possible to separate the volumes of each reservoir.

Table 1 summarizes the results of the raw water entering the treatment process. This is a blend of sources depending on demands in the system. This results in data variation throughout the year. Table 2 summarizes the results for the untreated water from the wells. Table 3 summarizes the results for the untreated water from Paradise and/or Vance Reservoirs.

Wells 4 and 10 have not been used this season. Vance Reservoir was brought online on November 7, 2023.

Table 1 Mid T Raw Water Monitoring

Parameter	Laboratory		# of Samples	# of Deviations[1]	Min	Max	Average
E.coli	Caro	MPN/100 mL	4	-----	<1	<1	<1
Total Coliform	Caro	MPN/100 mL	4	-----	<1	<1	<1
Turbidity	Grab sample	NTU	21	-----	0.16	0.31	0.23
Turbidity	SCADA[2] Daily Average	NTU	31	-----	0.13	0.22	0.16

[1]SSW WQ Deviation Response Plan – Turbidity >1.0 NTU
[2]SCADA: Supervisory Control and Data Acquisition.

Table 2 Mid T Raw Water Monitoring – Wells

Parameter	Laboratory		# of Samples	# of Deviations[1]	Min	Max	Average
Turbidity	SCADA[2] Daily Average	NTU	31	-----	0.09	1.00	0.68

[1]SSW WQ Deviation Response Plan – Turbidity >1.0 NTU
[2]SCADA: Supervisory Control and Data Acquisition.

Table 3 Mid T Raw Water Monitoring – Surface Sources

Parameter	Laboratory		# of Samples	# of Deviations[1]	Min	Max	Average
E.coli	Caro	MPN/100 mL	4	-----	<1	<1	<1
Total Coliform	Caro	MPN/100 mL	4	-----	<1	<1	<1
Turbidity	Grab sample	NTU	4	-----	0.22	0.26	0.24
Turbidity	SCADA[2] Daily Average	NTU	31	-----	0.18	0.36	0.25
UVT - Unfiltered	RDNO Lab	%	4	-----	96.5	97.4	97.0

[1]SSW WQ Deviation Response Plan – Turbidity >1.0 NTU
[2]SCADA: Supervisory Control and Data Acquisition.

2. Treatment Plant

SSW has a treatment plant, the Mid T Water Treatment Plant (MTWTP). The MTWTP uses a dual disinfection process of Ultra-violet (UV) disinfection and chlorine. Chlorine is added after UV treatment to ensure contact time for the removal of viruses. Tables 4, 5 and 6 summarize the results for chlorine, bacterial, turbidity, manganese, calculated contact time, and UV transmittance (UVT).

Table 4 Mid T Water Treatment Plant

Parameter	Laboratory		# of Samples	# of Deviations[1]	Min	Max	Average
Free Chlorine	SCADA[2] Daily Average	mg/L	31	-----	1.57	1.65	1.61
Free Chlorine	Grab sample	mg/L	4	-----	1.57	1.65	1.60
Total Chlorine	Grab sample	mg/L	4	-----	1.64	1.74	1.68
E.coli	Caro	CFU/100 mL	4	-----	<1	<1	<1
Total Coliform	Caro	CFU/100 mL	4	-----	<1	<1	<1
Turbidity	SCADA[2] Daily Average	NTU	31	-----	0.14	0.14	0.14
Turbidity	Grab sample	NTU	4	-----	0.17	0.27	0.22
Manganese	RDNO Lab	mg/L	4	-----	0.015	0.025	0.021

[1]SSW WQ Deviation Response Plan – Free Chlorine <0.20 mg/L, Turbidity >1.0 NTU, Manganese >0.12 mg/L
[2]SCADA: Supervisory Control and Data Acquisition.

Table 5 Contact Time (CT)

Parameter	Days Monitored	Min	Max	Average
Days 99.9% achieved	4	100%	100%	100%

99.9% is 3-log removal for Giardia

Table 6 Ultra-violet (UV) Disinfection

Parameter	Laboratory	Days Monitored	Min	Max	Average
UVT	SCADA[1] Daily Average	31	93%	100%	97%

[1]SCADA: Supervisory Control and Data Acquisition.

3. Distribution

Table 7 summarizes the results for chlorine, turbidity and bacterial for the distribution system from the following sites: Pinnacles, Grandview, Firehall, and Maintenance Building. The monthly water volume used at Silver Star was 14,727 m^3.

Table 7 Distribution

Parameter	Laboratory		# of Samples	# of Deviations[1]	Min	Max	Average
Free Chlorine	Grab sample	mg/L	12	-----	1.53	1.64	1.58
Total Chlorine	Grab sample	mg/L	12	-----	1.62	1.72	1.67
E.coli	Caro	CFU/100 mL	16[2]	-----	<1	<1	<1
Total Coliform	Caro	CFU/100 mL	16[2]	-----	<1	<1	<1
Turbidity	Grab sample	NTU	12	-----	0.17	0.28	0.22

[1]SSW WQ Deviation Response Plan – Free Chlorine <0.20 mg/L, Turbidity >1.0 NTU
[2]Treatment Plant bacterial samples are included in the required monthly bacterial sampling amounts as per Drinking Water Protection Regulations Schedule B.

4. Customer Calls and Notifications

Customer calls within the Silver Star Water Utility service area are tracked and recorded. There were no customer calls this month.

5. Operational or Maintenance Activity

Operational activities within the Silver Star Water service area are tracked and recorded. Table 8 summarizes the operational activities this month.

Table 8 Monthly Operational Work and Maintenance

NUMBER OF LOCATIONS	TYPE OF WORK
0	Hydrant Maintenance
0	Water Service Locate
0	Water Main Break Repair
0	Water Service Install
0	Water Turn On/Off
0	Water Service and/or Curb Stop Repair
0	Water Meter/ERT Install
5	Water Meter/ERT Inspection
0	Water Meter/ERT Maintenance
2	Water Meter/ERT Replacement
0	Water Meter Manual Read
0	Water Investigation

REGIONAL DISTRICT
NORTH OKANAGAN

Silver Star Water (SSW) Water Quality Report for April 2024

The following is the water quality summary for the Silver Star Water (SSW) Utility.

1. Sources

Not all of Silver Star's water sources are utilized year-round; the system is constructed so that the sources can be brought online based on demand. As Silver Star is primarily a winter resort, the highest water demands occur from November to March. SSW has nine water sources used for domestic use: Well 1, Well 2, Well 3, Well 4, Well 5, Well 10, Well 12, Paradise Reservoir and Vance Reservoir.

The surface water sources, Paradise and Vance Reservoirs, are metered in the Mid T Water Treatment Plant (MTWTP) as one volume; it is not possible to separate the volumes of each reservoir.

Table 1 summarizes the results of the raw water entering the treatment process. This is a blend of sources depending on demands in the system. This results in data variation throughout the year. Table 2 summarizes the results for the untreated water from the wells. Table 3 summarizes the results for the untreated water from Paradise and/or Vance Reservoirs.

Wells 4 and 10 have not been used this season. Vance Reservoir was brought online on November 7, 2023.

Table 1 Mid T Raw Water Monitoring

Parameter	Laboratory		# of Samples	# of Deviations[1]	Min	Max	Average
E.coli	Caro	MPN/100 mL	4	-----	<1	<1	<1
Total Coliform	Caro	MPN/100 mL	4	-----	<1	<1	<1
Turbidity	Grab sample	NTU	12	-----	0.21	0.57	0.33
Turbidity	SCADA[2] Daily Average	NTU	30	-----	0.15	0.42	0.28

[1]SSW WQ Deviation Response Plan – Turbidity >1.0 NTU
[2]SCADA: Supervisory Control and Data Acquisition.

Table 2 Mid T Raw Water Monitoring – Wells

Parameter	Laboratory		# of Samples	# of Deviations[1]	Min	Max	Average
Turbidity	SCADA[2] Daily Average	NTU	30	-----	0.11	0.32	0.21

[1]SSW WQ Deviation Response Plan – Turbidity >1.0 NTU
[2]SCADA: Supervisory Control and Data Acquisition.

Table 3 Mid T Raw Water Monitoring – Surface Sources

Parameter	Laboratory		# of Samples	# of Deviations[1]	Min	Max	Average
E.coli	Caro	MPN/100 mL	5	-----	<1	<1	<1
Total Coliform	Caro	MPN/100 mL	5	-----	<1	1	0.2
Turbidity	Grab sample	NTU	4	-----	0.26	0.56	0.39
Turbidity	SCADA[2] Daily Average	NTU	30	-----	0.14	0.59	0.36
UVT - Unfiltered	RDNO Lab	%	5	-----	95.1	97.9	97.0

[1]SSW WQ Deviation Response Plan – Turbidity >1.0 NTU
[2]SCADA: Supervisory Control and Data Acquisition.

2. Treatment Plant

SSW has a treatment plant, the Mid T Water Treatment Plant (MTWTP). The MTWTP uses a dual disinfection process of Ultra-violet (UV) disinfection and chlorine. Chlorine is added after UV treatment to ensure contact time for the removal of viruses. Tables 4, 5 and 6 summarize the results for chlorine, bacterial, turbidity, manganese, calculated contact time, and UV transmittance (UVT).

Table 4 Mid T Water Treatment Plant

Parameter	Laboratory		# of Samples	# of Deviations[1]	Min	Max	Average
Free Chlorine	SCADA[2] Daily Average	mg/L	30	-----	1.46	1.57	1.54
Free Chlorine	Grab sample	mg/L	5	-----	1.43	1.63	1.57
Total Chlorine	Grab sample	mg/L	5	-----	1.64	1.71	1.69
E.coli	Caro	CFU/100 mL	5	-----	<1	<1	<1
Total Coliform	Caro	CFU/100 mL	5	-----	<1	<1	<1
Turbidity	SCADA[2] Daily Average	NTU	30	-----	0.14	0.14	0.14
Turbidity	Grab sample	NTU	5	-----	0.26	0.42	0.31
Manganese	RDNO Lab	mg/L	5	-----	0.011	0.023	0.016

[1]SSW WQ Deviation Response Plan – Free Chlorine <0.20 mg/L, Turbidity >1.0 NTU, Manganese >0.12 mg/L
[2]SCADA: Supervisory Control and Data Acquisition.

Table 5 Contact Time (CT)

Parameter	Days Monitored	Min	Max	Average
Days 99.9% achieved	5	100%	100%	100%

99.9% is 3-log removal for Giardia

Table 6 Ultra-violet (UV) Disinfection

Parameter	Laboratory	Days Monitored	Min	Max	Average
UVT	SCADA[1] Daily Average	30	95%	99%	98%

[1]SCADA: Supervisory Control and Data Acquisition.

3. Distribution

Table 7 summarizes the results for chlorine, turbidity and bacterial for the distribution system from the following sites: Pinnacles, Grandview, Firehall, and Maintenance Building. The monthly water volume used at Silver Star was 7,139 m^3.

Table 7 Distribution

Parameter	Laboratory		# of Samples	# of Deviations[1]	Min	Max	Average
Free Chlorine	Grab sample	mg/L	11	-----	0.56	1.65	1.46
Total Chlorine	Grab sample	mg/L	10	-----	0.62	1.76	1.55
E.coli	Caro	CFU/100 mL	10[2]	-----	<1	<1	<1
Total Coliform	Caro	CFU/100 mL	10[2]	-----	<1	<1	<1
Turbidity	Grab sample	NTU	10	-----	0.17	0.34	0.27

[1]SSW WQ Deviation Response Plan – Free Chlorine <0.20 mg/L, Turbidity >1.0 NTU
[2]Treatment Plant bacterial samples are included in the required monthly bacterial sampling amounts as per Drinking Water Protection Regulations Schedule B.

4. Customer Calls and Notifications

Customer calls within the Silver Star Water Utility service area are tracked and recorded. There were no customer calls this month.

5. Operational or Maintenance Activity

Operational activities within the Silver Star Water service area are tracked and recorded. Table 8 summarizes the operational activities this month.

Table 8 Monthly Operational Work and Maintenance

NUMBER OF LOCATIONS	TYPE OF WORK
0	Hydrant Maintenance
0	Water Service Locate
0	Water Main Break Repair
0	Water Service Install
2	Water Turn On/Off
0	Water Service and/or Curb Stop Repair
0	Water Meter/ERT Install
1	Water Meter/ERT Inspection
0	Water Meter/ERT Maintenance
0	Water Meter/ERT Replacement
7	Water Meter Manual Read
1	Water Investigation

REGIONAL DISTRICT
NORTH OKANAGAN

Silver Star Water (SSW) Water Quality Report for May 2024

The following is the water quality summary for the Silver Star Water (SSW) Utility.

1. Sources

Not all of Silver Star's water sources are utilized year-round; the system is constructed so that the sources can be brought online based on demand. As Silver Star is primarily a winter resort, the highest water demands occur from November to March. SSW has nine water sources used for domestic use: Well 1, Well 2, Well 3, Well 4, Well 5, Well 10, Well 12, Paradise Reservoir and Vance Reservoir.

The surface water sources, Paradise and Vance Reservoirs, are metered in the Mid T Water Treatment Plant (MTWTP) as one volume; it is not possible to separate the volumes of each reservoir.

Table 1 summarizes the results of the raw water entering the treatment process. This is a blend of sources depending on demands in the system. This results in data variation throughout the year. Table 2 summarizes the results for the untreated water from the wells.

Wells 4 and 10 have not been used this season. Vance Reservoir was turned off on May 6, 2024.

Table 1 Mid T Raw Water Monitoring

Parameter	Laboratory		# of Samples	# of Deviations[1]	Min	Max	Average
E.coli	Caro	MPN/100 mL	3	-----	<1	<1	<1
Total Coliform	Caro	MPN/100 mL	3	-----	<1	<1	<1
Turbidity	Grab sample	NTU	13	-----	0.12	0.25	0.18
Turbidity	SCADA[2] Daily Average	NTU	31	-----	0.05	0.25	0.07

[1]SSW WQ Deviation Response Plan – Turbidity >1.0 NTU
[2]SCADA: Supervisory Control and Data Acquisition.

Table 2 Mid T Raw Water Monitoring – Wells

Parameter	Laboratory		# of Samples	# of Deviations[1]	Min	Max	Average
Turbidity	SCADA[2] Daily Average	NTU	31	-----	0.06	0.21	0.10

[1]SSW WQ Deviation Response Plan – Turbidity >1.0 NTU
[2]SCADA: Supervisory Control and Data Acquisition.

2. Treatment Plant

SSW has a treatment plant, the Mid T Water Treatment Plant (MTWTP). The MTWTP uses a dual disinfection process of Ultra-violet (UV) disinfection and chlorine. Chlorine is added after UV treatment to ensure contact time for the removal of viruses. Tables 3, 4, and 5 summarize the results for chlorine, bacterial, turbidity, manganese, calculated contact time, and UV transmittance (UVT).

Table 3 Mid T Water Treatment Plant

Parameter	Laboratory		# of Samples	# of Deviations[1]	Min	Max	Average
Free Chlorine	SCADA[2] Daily Average	mg/L	31	-----	1.47	1.75	1.70
Free Chlorine	Grab sample	mg/L	4	-----	1.63	1.71	1.67
Total Chlorine	Grab sample	mg/L	4	-----	1.70	1.82	1.77
E.coli	Caro	CFU/100 mL	4	-----	<1	<1	<1
Total Coliform	Caro	CFU/100 mL	4	-----	<1	<1	<1
Turbidity	SCADA[2] Daily Average	NTU	31	-----	0.14	0.14	0.14
Turbidity	Grab sample	NTU	4	-----	0.17	0.26	0.23
Manganese	RDNO Lab	mg/L	4	-----	0.017	0.030	0.023

[1]SSW WQ Deviation Response Plan – Free Chlorine <0.20 mg/L, Turbidity >1.0 NTU, Manganese >0.12 mg/L
[2]SCADA: Supervisory Control and Data Acquisition.

Table 4 Contact Time (CT)

Parameter	Days Monitored	Min	Max	Average
Days 99.9% achieved	4	100%	100%	100%

99.9% is 3-log removal for Giardia

Table 5 Ultra-violet (UV) Disinfection

Parameter	Laboratory	Days Monitored	Min	Max	Average
UVT	SCADA[1] Daily Average	31	93%	101%	98%

[1]SCADA: Supervisory Control and Data Acquisition.

3. Distribution

Table 6 summarizes the results for chlorine, turbidity and bacterial for the distribution system from the following sites: Pinnacles, Grandview, Firehall, and Maintenance Building. The monthly water volume used at Silver Star was 6,232 m^3.

Table 6 Distribution

Parameter	Laboratory		# of Samples	# of Deviations[1]	Min	Max	Average
Free Chlorine	Grab sample	mg/L	10	-----	0.64	1.65	1.42
Total Chlorine	Grab sample	mg/L	8	-----	0.71	1.72	1.45
E.coli	Caro	CFU/100 mL	8[2]	-----	<1	<1	<1
Total Coliform	Caro	CFU/100 mL	8[2]	-----	<1	<1	<1
Turbidity	Grab sample	NTU	8	-----	0.16	0.29	0.23

[1]SSW WQ Deviation Response Plan – Free Chlorine <0.20 mg/L, Turbidity >1.0 NTU
[2]Treatment Plant bacterial samples are included in the required monthly bacterial sampling amounts as per Drinking Water Protection Regulations Schedule B.

4. Customer Calls and Notifications

Customer calls within the Silver Star Water Utility service area are tracked and recorded. There were no customer calls this month.

5. Operational or Maintenance Activity

Operational activities within the Silver Star Water service area are tracked and recorded. Table 7 summarizes the operational activities this month.

Table 7 Monthly Operational Work and Maintenance

NUMBER OF LOCATIONS	TYPE OF WORK
0	Hydrant Maintenance
0	Water Service Locate
0	Water Main Break Repair
0	Water Service Install
0	Water Turn On/Off
2	Water Service and/or Curb Stop Repair
0	Water Meter and/or ERT Install
0	Water Meter Inspection
0	Water Meter Maintenance
0	Water Meter Replacement
0	Water Meter Manual Read
0	Water Meter Touch Pad Replacement
0	Water Investigation
0	Reservoir Cleaning
0	Vance Drainage Collection Maintenance

REGIONAL DISTRICT
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Silver Star Water (SSW) Water Quality Report for June 2024

The following is the water quality summary for the Silver Star Water (SSW) Utility.

1. Sources

Not all of Silver Star's water sources are utilized year-round; the system is constructed so that the sources can be brought online based on demand. As Silver Star is primarily a winter resort, the highest water demands occur from November to March. SSW has nine water sources used for domestic use: Well 1, Well 2, Well 3, Well 4, Well 5, Well 10, Well 12, Paradise Reservoir and Vance Reservoir.

The surface water sources, Paradise and Vance Reservoirs, are metered in the Mid T Water Treatment Plant (MTWTP) as one volume; it is not possible to separate the volumes of each reservoir.

Table 1 summarizes the results of the raw water entering the treatment process. This is a blend of sources depending on demands in the system. This results in data variation throughout the year. Table 2 summarizes the results for the untreated water from the wells.

Wells 4 and 10 have not been used this season.

Table 1 Mid T Raw Water Monitoring

Parameter	Laboratory		# of Samples	# of Deviations[1]	Min	Max	Average
E.coli	Caro	MPN/100 mL	4	-----	<1	<1	<1
Total Coliform	Caro	MPN/100 mL	4	-----	<1	<1	<1
Turbidity	Grab sample	NTU	12	-----	0.09	0.22	0.15
Turbidity	SCADA[2] Daily Average	NTU	30	-----	0.05	0.07	0.06

[1]SSW WQ Deviation Response Plan – Turbidity >1.0 NTU
[2]SCADA: Supervisory Control and Data Acquisition.

Table 2 Mid T Raw Water Monitoring – Wells

Parameter	Laboratory		# of Samples	# of Deviations[1]	Min	Max	Average
Turbidity	SCADA[2] Daily Average	NTU	30	-----	0.10	0.17	0.13

[1]SSW WQ Deviation Response Plan – Turbidity >1.0 NTU
[2]SCADA: Supervisory Control and Data Acquisition.

2. Treatment Plant

SSW has a treatment plant, the Mid T Water Treatment Plant (MTWTP). The MTWTP uses a dual disinfection process of Ultra-violet (UV) disinfection and chlorine. Chlorine is added after UV treatment to ensure contact time for the removal of viruses. Tables 3, 4, and 5 summarize the results for chlorine, bacterial, turbidity, manganese, calculated contact time, and UV transmittance (UVT).

Table 3 Mid T Water Treatment Plant

Parameter	Laboratory		# of Samples	# of Deviations[1]	Min	Max	Average
Free Chlorine	SCADA[2] Daily Average	mg/L	30	-----	1.71	1.76	1.74
Free Chlorine	Grab sample	mg/L	4	-----	1.71	1.79	1.74
Total Chlorine	Grab sample	mg/L	4	-----	1.86	1.88	1.87
E.coli	Caro	CFU/100 mL	4	-----	<1	<1	<1
Total Coliform	Caro	CFU/100 mL	4	-----	<1	<1	<1
Turbidity	SCADA[2] Daily Average	NTU	30	-----	0.14	0.14	0.14
Turbidity	Grab sample	NTU	4	-----	0.14	0.20	0.18
Manganese	RDNO Lab	mg/L	4	-----	0.016	0.030	0.024

[1]SSW WQ Deviation Response Plan – Free Chlorine <0.20 mg/L, Turbidity >1.0 NTU, Manganese >0.12 mg/L
[2]SCADA: Supervisory Control and Data Acquisition.

Table 4 Contact Time (CT)

Parameter	Days Monitored	Min	Max	Average
Days 99.9% achieved	4	100%	100%	100%

99.9% is 3-log removal for Giardia

Table 5 Ultra-violet (UV) Disinfection

Parameter	Laboratory	Days Monitored	Min	Max	Average
UVT	SCADA[1] Daily Average	30	76%	102%	96%

[1]SCADA: Supervisory Control and Data Acquisition.

3. Distribution

Table 6 summarizes the results for chlorine, turbidity and bacterial for the distribution system from the following sites: Pinnacles, Grandview, Firehall, and Maintenance Building. The monthly water volume used at Silver Star was 7,222 m^3.

Table 6 Distribution

Parameter	Laboratory		# of Samples	# of Deviations[1]	Min	Max	Average
Free Chlorine	Grab sample	mg/L	10	-----	0.63	1.80	1.46
Total Chlorine	Grab sample	mg/L	8	-----	0.81	1.93	1.53
E.coli	Caro	CFU/100 mL	8[2]	-----	<1	<1	<1
Total Coliform	Caro	CFU/100 mL	8[2]	-----	<1	<1	<1
Turbidity	Grab sample	NTU	8	-----	0.12	0.38	0.20

[1]SSW WQ Deviation Response Plan – Free Chlorine <0.20 mg/L, Turbidity >1.0 NTU
[2]Treatment Plant bacterial samples are included in the required monthly bacterial sampling amounts as per Drinking Water Protection Regulations Schedule B.

4. Customer Calls and Notifications

Customer calls within the Silver Star Water Utility service area are tracked and recorded. There were no customer calls this month.

5. Operational or Maintenance Activity

Operational activities within the Silver Star Water service area are tracked and recorded. Table 7 summarizes the operational activities this month.

Table 7 Monthly Operational Work and Maintenance

NUMBER OF LOCATIONS	TYPE OF WORK
0	Hydrant Maintenance
0	Water Service Locate
0	Water Main Break Repair
0	Water Service Install
4	Water Turn On/Off
2	Water Service and/or Curb Stop Repair
0	Water Meter and/or ERT Install
2	Water Meter Inspection
0	Water Meter Maintenance
0	Water Meter Replacement
0	Water Meter Manual Read
0	Water Meter Touch Pad Replacement
3	Water Investigation
0	Reservoir Cleaning
0	Vance Drainage Collection Maintenance

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Silver Star Water (SSW) Water Quality Report for July 2024

The following is the water quality summary for the Silver Star Water (SSW) Utility.

1. Sources

Not all of Silver Star's water sources are utilized year-round; the system is constructed so that the sources can be brought online based on demand. As Silver Star is primarily a winter resort, the highest water demands occur from November to March. SSW has nine water sources used for domestic use: Well 1, Well 2, Well 3, Well 4, Well 5, Well 10, Well 12, Paradise Reservoir and Vance Reservoir.

The surface water sources, Paradise and Vance Reservoirs, are metered in the Mid T Water Treatment Plant (MTWTP) as one volume; it is not possible to separate the volumes of each reservoir.

Table 1 summarizes the results of the raw water entering the treatment process. This is a blend of sources depending on demands in the system. This results in data variation throughout the year. Table 2 summarizes the results for the untreated water from the wells.

Wells 4 and 10 have not been used this season.

Table 1 Mid T Raw Water Monitoring

Parameter	Laboratory		# of Samples	# of Deviations[1]	Min	Max	Average
E.coli	Caro	MPN/100 mL	5	-----	<1	<1	<1
Total Coliform	Caro	MPN/100 mL	5	-----	<1	<1	<1
Turbidity	Grab sample	NTU	14	-----	0.14	0.26	0.20
Turbidity	SCADA[2] Daily Average	NTU	31	-----	0.06	0.13	0.08

[1]SSW WQ Deviation Response Plan – Turbidity >1.0 NTU
[2]SCADA: Supervisory Control and Data Acquisition.

Table 2 Mid T Raw Water Monitoring – Wells

Parameter	Laboratory		# of Samples	# of Deviations[1]	Min	Max	Average
Turbidity	SCADA[2] Daily Average	NTU	31	-----	0.12	0.18	0.14

[1]SSW WQ Deviation Response Plan – Turbidity >1.0 NTU
[2]SCADA: Supervisory Control and Data Acquisition.

2. Treatment Plant

SSW has a treatment plant, the Mid T Water Treatment Plant (MTWTP). The MTWTP uses a dual disinfection process of Ultra-violet (UV) disinfection and chlorine. Chlorine is added after UV treatment to ensure contact time for the removal of viruses. Tables 3, 4, and 5 summarize the results for chlorine, bacterial, turbidity, manganese, calculated contact time, and UV transmittance (UVT).

Table 3 Mid T Water Treatment Plant

Parameter	Laboratory		# of Samples	# of Deviations[1]	Min	Max	Average
Free Chlorine	SCADA[2] Daily Average	mg/L	31	-----	1.72	1.82	1.76
Free Chlorine	Grab sample	mg/L	4	-----	1.67	1.73	1.70
Total Chlorine	Grab sample	mg/L	4	-----	1.75	1.85	1.81
E.coli	Caro	CFU/100 mL	5	-----	<1	<1	<1
Total Coliform	Caro	CFU/100 mL	5	-----	<1	<1	<1
Turbidity	SCADA[2] Daily Average	NTU	31	-----	0.14	0.14	0.14
Turbidity	Grab sample	NTU	4	-----	0.18	0.21	0.20
Manganese	RDNO Lab	mg/L	5	-----	0.022	0.033	0.026

[1]SSW WQ Deviation Response Plan – Free Chlorine <0.20 mg/L, Turbidity >1.0 NTU, Manganese >0.12 mg/L
[2]SCADA: Supervisory Control and Data Acquisition.

Table 4 Contact Time (CT)

Parameter	Days Monitored	Min	Max	Average
Days 99.9% achieved	5	100%	100%	100%

99.9% is 3-log removal for Giardia

Table 5 Ultra-violet (UV) Disinfection

Parameter	Laboratory	Days Monitored	Min	Max	Average
UVT	SCADA[1] Daily Average	31	91%	100%	97%

[1]SCADA: Supervisory Control and Data Acquisition.

3. Distribution

Table 6 summarizes the results for chlorine, turbidity and bacterial for the distribution system from the following sites: Pinnacles, Grandview, Firehall, and Maintenance Building. The monthly water volume used at Silver Star was 8,969 m^3.

Table 6 Distribution

Parameter	Laboratory		# of Samples	# of Deviations[1]	Min	Max	Average
Free Chlorine	Grab sample	mg/L	13	-----	0.62	2.02	1.45
Total Chlorine	Grab sample	mg/L	10	-----	0.74	2.11	1.49
E.coli	Caro	CFU/100 mL	10[2]	-----	<1	<1	<1
Total Coliform	Caro	CFU/100 mL	10[2]	-----	<1	<1	<1
Turbidity	Grab sample	NTU	10	-----	0.12	0.27	0.19

[1]SSW WQ Deviation Response Plan – Free Chlorine <0.20 mg/L, Turbidity >1.0 NTU
[2]Treatment Plant bacterial samples are included in the required monthly bacterial sampling amounts as per Drinking Water Protection Regulations Schedule B.

4. Customer Calls and Notifications

Customer calls within the Silver Star Water Utility service area are tracked and recorded. There were no customer calls this month.

5. Operational or Maintenance Activity

Operational activities within the Silver Star Water service area are tracked and recorded. Table 7 summarizes the operational activities this month.

Table 7 Monthly Operational Work and Maintenance

NUMBER OF LOCATIONS	TYPE OF WORK
0	Hydrant Maintenance
0	Water Service Locate
0	Water Main Break Repair
0	Water Service Install
1	Water Turn On/Off
7	Water Service and/or Curb Stop Repair
1	Water Meter and/or ERT Install
1	Water Meter Inspection
0	Water Meter Maintenance
0	Water Meter Replacement
0	Water Meter Manual Read
0	Water Meter Touch Pad Replacement
44	Water Investigation
0	Reservoir Cleaning
0	Vance Drainage Collection Maintenance

REGIONAL DISTRICT
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Silver Star Water (SSW) Water Quality Report for August 2024

The following is the water quality summary for the Silver Star Water (SSW) Utility.

1. Sources

Not all of Silver Star's water sources are utilized year-round; the system is constructed so that the sources can be brought online based on demand. As Silver Star is primarily a winter resort, the highest water demands occur from November to March. SSW has nine water sources used for domestic use: Well 1, Well 2, Well 3, Well 4, Well 5, Well 10, Well 12, Paradise Reservoir and Vance Reservoir.

The surface water sources, Paradise and Vance Reservoirs, are metered in the Mid T Water Treatment Plant (MTWTP) as one volume; it is not possible to separate the volumes of each reservoir.

Table 1 summarizes the results of the raw water entering the treatment process. This is a blend of sources depending on demands in the system. This results in data variation throughout the year. Table 2 summarizes the results for the untreated water from the wells.

Wells 4 and 10 have not been used this season.

Table 1 Mid T Raw Water Monitoring

Parameter	Laboratory		# of Samples	# of Deviations[1]	Min	Max	Average
E.coli	Caro	MPN/100 mL	4	-----	<1	<1	<1
Total Coliform	Caro	MPN/100 mL	4	-----	<1	<1	<1
Turbidity	Grab sample	NTU	12	-----	0.10	0.23	0.18
Turbidity	SCADA[2] Daily Average	NTU	31	-----	0.10	0.14	0.12

[1]SSW WQ Deviation Response Plan – Turbidity >1.0 NTU
[2]SCADA: Supervisory Control and Data Acquisition.

Table 2 Mid T Raw Water Monitoring – Wells

Parameter	Laboratory		# of Samples	# of Deviations[1]	Min	Max	Average
Turbidity	SCADA[2] Daily Average	NTU	31	-----	0.08	0.15	0.12

[1]SSW WQ Deviation Response Plan – Turbidity >1.0 NTU
[2]SCADA: Supervisory Control and Data Acquisition.

2. Treatment Plant

SSW has a treatment plant, the Mid T Water Treatment Plant (MTWTP). The MTWTP uses a dual disinfection process of Ultra-violet (UV) disinfection and chlorine. Chlorine is added after UV treatment to ensure contact time for the removal of viruses. Tables 3, 4, and 5 summarize the results for chlorine, bacterial, turbidity, manganese, calculated contact time, and UV transmittance (UVT).

Table 3 Mid T Water Treatment Plant

Parameter	Laboratory		# of Samples	# of Deviations[1]	Min	Max	Average
Free Chlorine	SCADA[2] Daily Average	mg/L	31	-----	1.73	1.83	1.77
Free Chlorine	Grab sample	mg/L	3	-----	1.64	1.70	1.68
Total Chlorine	Grab sample	mg/L	3	-----	1.78	1.78	1.78
E.coli	Caro	CFU/100 mL	4	-----	<1	<1	<1
Total Coliform	Caro	CFU/100 mL	4	-----	<1	<1	<1
Turbidity	SCADA[2] Daily Average	NTU	31	-----	0.14	0.14	0.14
Turbidity	Grab sample	NTU	3	-----	0.14	0.19	0.16
Manganese	RDNO Lab	mg/L	4	-----	0.019	0.033	0.028

[1]SSW WQ Deviation Response Plan – Free Chlorine <0.20 mg/L, Turbidity >1.0 NTU, Manganese >0.12 mg/L
[2]SCADA: Supervisory Control and Data Acquisition.

Table 4 Contact Time (CT)

Parameter	Days Monitored	Min	Max	Average
Days 99.9% achieved	4	100%	100%	100%

99.9% is 3-log removal for Giardia

Table 5 Ultra-violet (UV) Disinfection

Parameter	Laboratory	Days Monitored	Min	Max	Average
UVT	SCADA[1] Daily Average	31	93%	101%	97%

[1]SCADA: Supervisory Control and Data Acquisition.

3. Distribution

Table 6 summarizes the results for chlorine, turbidity and bacterial for the distribution system from the following sites: Pinnacles, Grandview, Firehall, and Maintenance Building. The monthly water volume used at Silver Star was 9,267 m^3.

Table 6 Distribution

Parameter	Laboratory		# of Samples	# of Deviations[1]	Min	Max	Average
Free Chlorine	Grab sample	mg/L	9	-----	0.76	1.68	1.40
Total Chlorine	Grab sample	mg/L	8	-----	0.89	1.77	1.48
E.coli	Caro	CFU/100 mL	8[2]	-----	<1	<1	<1
Total Coliform	Caro	CFU/100 mL	8[2]	-----	<1	<1	<1
Turbidity	Grab sample	NTU	8	-----	0.09	0.27	0.19

[1]SSW WQ Deviation Response Plan – Free Chlorine <0.20 mg/L, Turbidity >1.0 NTU
[2]Treatment Plant bacterial samples are included in the required monthly bacterial sampling amounts as per Drinking Water Protection Regulations Schedule B.

4. Customer Calls and Notifications

Customer calls within the Silver Star Water Utility service area are tracked and recorded. There were no customer calls this month.

5. Operational or Maintenance Activity

Operational activities within the Silver Star Water service area are tracked and recorded. Table 7 summarizes the operational activities this month.

Table 7 Monthly Operational Work and Maintenance

NUMBER OF LOCATIONS	TYPE OF WORK
1	Hydrant Maintenance
0	Water Service Locate
0	Water Main Break Repair
0	Water Service Install
0	Water Turn On/Off
7	Water Service and/or Curb Stop Repair
0	Water Meter and/or ERT Install
1	Water Meter Inspection
0	Water Meter Maintenance
0	Water Meter Replacement
0	Water Meter Manual Read
0	Water Meter Touch Pad Replacement
0	Water Investigation
0	Reservoir Cleaning
0	Vance Drainage Collection Maintenance

REGIONAL DISTRICT
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Silver Star Water (SSW) Water Quality Report for September 2024

The following is the water quality summary for the Silver Star Water (SSW) Utility.

1. Sources

Not all of Silver Star's water sources are utilized year-round; the system is constructed so that the sources can be brought online based on demand. As Silver Star is primarily a winter resort, the highest water demands occur from November to March. SSW has nine water sources used for domestic use: Well 1, Well 2, Well 3, Well 4, Well 5, Well 10, Well 12, Paradise Reservoir and Vance Reservoir.

The surface water sources, Paradise and Vance Reservoirs, are metered in the Mid T Water Treatment Plant (MTWTP) as one volume; it is not possible to separate the volumes of each reservoir.

Table 1 summarizes the results of the raw water entering the treatment process. This is a blend of sources depending on demands in the system. This results in data variation throughout the year. Table 2 summarizes the results for the untreated water from the wells.

Wells 4 and 10 have not been used this season.

Table 1 Mid T Raw Water Monitoring

Parameter	Laboratory		# of Samples	# of Deviations[1]	Min	Max	Average
E.coli	Caro	MPN/100 mL	5	-----	<1	<1	<1
Total Coliform	Caro	MPN/100 mL	5	-----	<1	<1	<1
Turbidity	Grab sample	NTU	13	-----	0.09	0.23	0.16
Turbidity	SCADA[2] Daily Average	NTU	30	-----	0.09	0.13	0.10

[1]SSW WQ Deviation Response Plan – Turbidity >1.0 NTU
[2]SCADA: Supervisory Control and Data Acquisition.

Table 2 Mid T Raw Water Monitoring – Wells

Parameter	Laboratory		# of Samples	# of Deviations[1]	Min	Max	Average
Turbidity	SCADA[2] Daily Average	NTU	30	-----	0.11	0.24	0.16

[1]SSW WQ Deviation Response Plan – Turbidity >1.0 NTU
[2]SCADA: Supervisory Control and Data Acquisition.

2. Treatment Plant

SSW has a treatment plant, the Mid T Water Treatment Plant (MTWTP). The MTWTP uses a dual disinfection process of Ultra-violet (UV) disinfection and chlorine. Chlorine is added after UV treatment to ensure contact time for the removal of viruses. Tables 3, 4, and 5 summarize the results for chlorine, bacterial, turbidity, manganese, calculated contact time, and UV transmittance (UVT).

Table 3 Mid T Water Treatment Plant

Parameter	Laboratory		# of Samples	# of Deviations[1]	Min	Max	Average
Free Chlorine	SCADA[2] Daily Average	mg/L	30	-----	1.49	1.76	1.72
Free Chlorine	Grab sample	mg/L	5	-----	1.65	1.71	1.67
Total Chlorine	Grab sample	mg/L	5	-----	1.74	1.84	1.79
E.coli	Caro	CFU/100 mL	5	-----	<1	<1	<1
Total Coliform	Caro	CFU/100 mL	5	-----	<1	<1	<1
Turbidity	SCADA[2] Daily Average	NTU	30	-----	0.14	0.14	0.14
Turbidity	Grab sample	NTU	5	-----	0.19	0.22	0.20
Manganese	RDNO Lab	mg/L	5	-----	0.023	0.035	0.028

[1]SSW WQ Deviation Response Plan – Free Chlorine <0.20 mg/L, Turbidity >1.0 NTU, Manganese >0.12 mg/L
[2]SCADA: Supervisory Control and Data Acquisition.

Table 4 Contact Time (CT)

Parameter	Days Monitored	Min	Max	Average
Days 99.9% achieved	5	100%	100%	100%

99.9% is 3-log removal for Giardia

Table 5 Ultra-violet (UV) Disinfection

Parameter	Laboratory	Days Monitored	Min	Max	Average
UVT	SCADA[1] Daily Average	30	74%	102%	99%

[1]SCADA: Supervisory Control and Data Acquisition.

3. Distribution

Table 6 summarizes the results for chlorine, turbidity and bacterial for the distribution system from the following sites: Pinnacles, Grandview, Firehall, and Maintenance Building. The monthly water volume used at Silver Star was 7,432 m^3.

Table 6 Distribution

Parameter	Laboratory		# of Samples	# of Deviations[1]	Min	Max	Average
Free Chlorine	Grab sample	mg/L	12	-----	0.76	1.66	1.53
Total Chlorine	Grab sample	mg/L	10	-----	0.91	1.72	1.59
E.coli	Caro	CFU/100 mL	10^2	-----	<1	<1	<1
Total Coliform	Caro	CFU/100 mL	10^2	-----	<1	<1	<1
Turbidity	Grab sample	NTU	10	-----	0.12	0.26	0.21

[1]SSW WQ Deviation Response Plan – Free Chlorine <0.20 mg/L, Turbidity >1.0 NTU
[2]Treatment Plant bacterial samples are included in the required monthly bacterial sampling amounts as per Drinking Water Protection Regulations Schedule B.

4. Customer Calls and Notifications

Customer calls within the Silver Star Water Utility service area are tracked and recorded. There were no customer calls this month.

5. Operational or Maintenance Activity

Operational activities within the Silver Star Water service area are tracked and recorded. Table 7 summarizes the operational activities this month.

Table 7 Monthly Operational Work and Maintenance

NUMBER OF LOCATIONS	TYPE OF WORK
0	Hydrant Maintenance
0	Water Service Locate
0	Water Main Break Repair
0	Water Service Install
0	Water Turn On/Off
4	Water Service and/or Curb Stop Repair
2	Water Meter/ERT Install
2	Water Meter/ERT Inspection
0	Water Meter/ERT Maintenance
0	Water Meter/ERT Replacement
0	Water Meter Manual Read
1	Water Investigation
1	Vance Drainage Collection Maintenance

REGIONAL DISTRICT
NORTH OKANAGAN

Silver Star Water (SSW) Water Quality Report for October 2024

The following is the water quality summary for the Silver Star Water (SSW) Utility.

1. Sources

Not all of Silver Star's water sources are utilized year-round; the system is constructed so that the sources can be brought online based on demand. As Silver Star is primarily a winter resort, the highest water demands occur from November to March. SSW has nine water sources used for domestic use: Well 1, Well 2, Well 3, Well 4, Well 5, Well 10, Well 12, Paradise Reservoir and Vance Reservoir.

The surface water sources, Paradise and Vance Reservoirs, are metered in the Mid T Water Treatment Plant (MTWTP) as one volume; it is not possible to separate the volumes of each reservoir.

Table 1 summarizes the results of the raw water entering the treatment process. This is a blend of sources depending on demands in the system. This results in data variation throughout the year. Table 2 summarizes the results for the untreated water from the wells.

Wells 4 and 10 have not been used this season. Vance Reservoir was brought online on October 29, 2024.

Table 1 Mid T Raw Water Monitoring

Parameter	Laboratory		# of Samples	# of Deviations[1]	Min	Max	Average
E.coli	Caro	MPN/100 mL	4	-----	<1	<1	<1
Total Coliform	Caro	MPN/100 mL	4	-----	<1	<1	<1
Turbidity	Grab sample	NTU	13	-----	0.14	0.23	0.18
Turbidity	SCADA[2] Daily Average	NTU	31	-----	0.07	0.34	0.11

[1]SSW WQ Deviation Response Plan – Turbidity >1.0 NTU
[2]SCADA: Supervisory Control and Data Acquisition.

Table 2 Mid T Raw Water Monitoring – Wells

Parameter	Laboratory		# of Samples	# of Deviations[1]	Min	Max	Average
Turbidity	SCADA[2] Daily Average	NTU	31	-----	0.26	0.56	0.38

[1]SSW WQ Deviation Response Plan – Turbidity >1.0 NTU
[2]SCADA: Supervisory Control and Data Acquisition.

2. Treatment Plant

SSW has a treatment plant, the Mid T Water Treatment Plant (MTWTP). The MTWTP uses a dual disinfection process of Ultra-violet (UV) disinfection and chlorine. Chlorine is added after UV treatment to ensure contact time for the removal of viruses. Tables 3, 4, and 5 summarize the results for chlorine, bacterial, turbidity, manganese, calculated contact time, and UV transmittance (UVT).

Table 3 Mid T Water Treatment Plant

Parameter	Laboratory		# of Samples	# of Deviations[1]	Min	Max	Average
Free Chlorine	SCADA[2] Daily Average	mg/L	31	-----	1.67	1.84	1.75
Free Chlorine	Grab sample	mg/L	4	-----	1.65	1.74	1.70
Total Chlorine	Grab sample	mg/L	4	-----	1.74	1.85	1.79
E.coli	Caro	CFU/100 mL	4	-----	<1	<1	<1
Total Coliform	Caro	CFU/100 mL	4	-----	<1	<1	<1
Turbidity	SCADA[2] Daily Average	NTU	31	-----	0.14	0.14	0.14
Turbidity	Grab sample	NTU	4	-----	0.13	0.20	0.17
Manganese	RDNO Lab	mg/L	4	-----	0.031	0.036	0.034

[1]SSW WQ Deviation Response Plan – Free Chlorine <0.20 mg/L, Turbidity >1.0 NTU, Manganese >0.12 mg/L
[2]SCADA: Supervisory Control and Data Acquisition.

Table 4 Contact Time (CT)

Parameter	Days Monitored	Min	Max	Average
Days 99.9% achieved	4	100%	100%	100%

99.9% is 3-log removal for Giardia

Table 5 Ultra-violet (UV) Disinfection

Parameter	Laboratory	Days Monitored	Min	Max	Average
UVT	SCADA[1] Daily Average	31	80%	101%	96%

[1]SCADA: Supervisory Control and Data Acquisition.

3. Distribution

Table 6 summarizes the results for chlorine, turbidity and bacterial for the distribution system from the following sites: Pinnacles, Grandview, Firehall, and Maintenance Building. The monthly water volume used at Silver Star was 6,839 m^3.

Table 6 Distribution

Parameter	Laboratory		# of Samples	# of Deviations[1]	Min	Max	Average
Free Chlorine	Grab sample	mg/L	10	-----	1.21	1.64	1.55
Total Chlorine	Grab sample	mg/L	8	-----	1.32	1.73	1.62
E.coli	Caro	CFU/100 mL	8[2]	-----	<1	<1	<1
Total Coliform	Caro	CFU/100 mL	8[2]	-----	<1	<1	<1
Turbidity	Grab sample	NTU	8	-----	0.11	0.26	0.19

[1]SSW WQ Deviation Response Plan – Free Chlorine <0.20 mg/L, Turbidity >1.0 NTU
[2]Treatment Plant bacterial samples are included in the required monthly bacterial sampling amounts as per Drinking Water Protection Regulations Schedule B.

4. Customer Calls and Notifications

Customer calls within the Silver Star Water Utility service area are tracked and recorded. There were no customer calls this month.

5. Operational or Maintenance Activity

Operational activities within the Silver Star Water service area are tracked and recorded. Table 7 summarizes the operational activities this month.

Table 7 Monthly Operational Work and Maintenance

NUMBER OF LOCATIONS	TYPE OF WORK
35	Hydrant Maintenance
1	Water Service Locate
0	Water Main Break Repair
0	Water Service Install
0	Water Turn On/Off
6	Water Service and/or Curb Stop Repair
4	Water Meter/ERT Install
5	Water Meter/ERT Inspection
1	Water Meter/ERT Maintenance
5	Water Meter/ERT Replacement
0	Water Meter Manual Read
11	Water Investigation
1	Reservoir Cleaning

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Silver Star Water (SSW) Water Quality Report for November 2024

The following is the water quality summary for the Silver Star Water (SSW) Utility.

On November 8, a water service break occurred at 9847 Pinnacles Road and their water service was turned off. An emergency repair was attempted on November 8 but was unsuccessful. Repair was scheduled for November 12 but was delayed until November 13. A Water Service Interruption and Precautionary Water Quality Advisory (WQA) notice was issued to the residents on Silver Star Road for the day of the repair as the water main needed to be shut off. The water service was restored and the precautionary WQA was rescinded on November 13.

1. Sources

Not all of Silver Star's water sources are utilized year-round; the system is constructed so that the sources can be brought online based on demand. As Silver Star is primarily a winter resort, the highest water demands occur from November to March. SSW has nine water sources used for domestic use: Well 1, Well 2, Well 3, Well 4, Well 5, Well 10, Well 12, Paradise Reservoir and Vance Reservoir.

The surface water sources, Paradise and Vance Reservoirs, are metered in the Mid T Water Treatment Plant (MTWTP) as one volume; it is not possible to separate the volumes of each reservoir.

Table 1 summarizes the results of the raw water entering the treatment process. This is a blend of sources depending on demands in the system. This results in data variation throughout the year. Table 2 summarizes the results for the untreated water from the wells. Table 3 summarizes the results for the untreated water from Paradise and/or Vance Reservoirs.

Wells 4 and 10 have not been used this season. Vance Reservoir was brought online on October 29, 2024.

Table 1 Mid T Raw Water Monitoring

Parameter	Laboratory		# of Samples	# of Deviations[1]	Min	Max	Average
E.coli	Caro	MPN/100 mL	4	-----	<1	<1	<1
Total Coliform	Caro	MPN/100 mL	4	-----	<1	8	2.75
Turbidity	Grab sample	NTU	17	-----	0.12	0.41	0.29
Turbidity	SCADA[2] Daily Average	NTU	30	-----	0.08	0.72	0.24

[1]SSW WQ Deviation Response Plan – Turbidity >1.0 NTU
[2]SCADA: Supervisory Control and Data Acquisition.

Table 2 Mid T Raw Water Monitoring – Wells

Parameter	Laboratory		# of Samples	# of Deviations[1]	Min	Max	Average
Turbidity	SCADA[2] Daily Average	NTU	30	-----	0.11	0.77	0.34

[1]SSW WQ Deviation Response Plan – Turbidity >1.0 NTU
[2]SCADA: Supervisory Control and Data Acquisition.

Table 3 Mid T Raw Water Monitoring – Surface Sources

Parameter	Laboratory		# of Samples	# of Deviations[1]	Min	Max	Average
E.coli	Caro	MPN/100 mL	3	-----	<1	<1	<1
Total Coliform	Caro	MPN/100 mL	3	-----	5	19	12
Turbidity	Grab sample	NTU	3	-----	0.39	0.52	0.46
Turbidity	SCADA[2] Daily Average	NTU	30	1[3]	0.35	1.57	0.55
UVT - Unfiltered	RDNO Lab	%	3	-----	95.9	96.9	96.47

[1]SSW WQ Deviation Response Plan – Turbidity >1.0 NTU
[2]SCADA: Supervisory Control and Data Acquisition.
[3]Daily average turbidity >1.0 NTU on November 5. Turbidity increase caused by Vance reservoir being brought online. The blended raw water entering the treatment process remained < 1 NTU.

2. Treatment Plant

SSW has a treatment plant, the Mid T Water Treatment Plant (MTWTP). The MTWTP uses a dual disinfection process of Ultra-violet (UV) disinfection and chlorine. Chlorine is added after UV treatment to ensure contact time for the removal of viruses. Tables 4, 5 and 6 summarize the results for chlorine, bacterial, turbidity, manganese, calculated contact time, and UV transmittance (UVT).

Table 4 Mid T Water Treatment Plant

Parameter	Laboratory		# of Samples	# of Deviations[1]	Min	Max	Average
Free Chlorine	SCADA[2] Daily Average	mg/L	30	-----	1.40	1.77	1.65
Free Chlorine	Grab sample	mg/L	3	-----	1.61	1.76	1.68
Total Chlorine	Grab sample	mg/L	3	-----	1.69	1.88	1.79
E.coli	Caro	CFU/100 mL	4	-----	<1	<1	<1
Total Coliform	Caro	CFU/100 mL	4	-----	<1	<1	<1
Turbidity	SCADA[2] Daily Average	NTU	30	-----	0.14	0.14	0.14
Turbidity	Grab sample	NTU	3	-----	0.19	0.33	0.28
Manganese	RDNO Lab	mg/L	4	-----	0.035	0.043	0.038

[1]SSW WQ Deviation Response Plan – Free Chlorine <0.20 mg/L, Turbidity >1.0 NTU, Manganese >0.12 mg/L
[2]SCADA: Supervisory Control and Data Acquisition.

Table 5 Contact Time (CT)

Parameter	Days Monitored	Min	Max	Average
Days 99.9% achieved	4	100%	100%	100%

99.9% is 3-log removal for Giardia

Table 6 Ultra-violet (UV) Disinfection

Parameter	Laboratory	Days Monitored	Min	Max	Average
UVT	SCADA[1] Daily Average	30	93%	102%	98%

[1]SCADA: Supervisory Control and Data Acquisition.

3. Distribution

Table 7 summarizes the results for chlorine, turbidity and bacterial for the distribution system from the following sites: Pinnacles, Grandview, Firehall, and Maintenance Building. The monthly water volume used at Silver Star was 8,321 m^3.

Table 7 Distribution

Parameter	Laboratory		# of Samples	# of Deviations[1]	Min	Max	Average
Free Chlorine	Grab sample	mg/L	8	-----	0.73	1.62	1.38
Total Chlorine	Grab sample	mg/L	8	-----	0.84	1.70	1.46
E.coli	Caro	CFU/100 mL	8[2]	-----	<1	<1	<1
Total Coliform	Caro	CFU/100 mL	8[2]	-----	<1	<1	<1
Turbidity	Grab sample	NTU	8	-----	0.11	0.35	0.24

[1]SSW WQ Deviation Response Plan – Free Chlorine <0.20 mg/L, Turbidity >1.0 NTU
[2]Treatment Plant bacterial samples are included in the required monthly bacterial sampling amounts as per Drinking Water Protection Regulations Schedule B.

4. Customer Calls and Notifications

Customer calls within the Silver Star Water Utility service area are tracked and recorded. There were no customer calls this month.

5. Operational or Maintenance Activity

Operational activities within the Silver Star Water service area are tracked and recorded. Table 8 summarizes the operational activities this month.

Table 8 Monthly Operational Work and Maintenance

NUMBER OF LOCATIONS	TYPE OF WORK
0	Hydrant Maintenance
0	Water Service Locate
0	Water Main Break Repair
0	Water Service Install
2	Water Turn On/Off
1	Water Service and/or Curb Stop Repair
5	Water Meter/ERT Install
0	Water Meter/ERT Inspection
0	Water Meter/ERT Maintenance
1	Water Meter/ERT Replacement
0	Water Meter Manual Read
3	Water Investigation

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Silver Star Water (SSW) Water Quality Report for December 2024

The following is the water quality summary for the Silver Star Water (SSW) Utility.

1. Sources

Not all of Silver Star's water sources are utilized year-round; the system is constructed so that the sources can be brought online based on demand. As Silver Star is primarily a winter resort, the highest water demands occur from November to March. SSW has nine water sources used for domestic use: Well 1, Well 2, Well 3, Well 4, Well 5, Well 10, Well 12, Paradise Reservoir and Vance Reservoir.

The surface water sources, Paradise and Vance Reservoirs, are metered in the Mid T Water Treatment Plant (MTWTP) as one volume; it is not possible to separate the volumes of each reservoir.

Table 1 summarizes the results of the raw water entering the treatment process. This is a blend of sources depending on demands in the system. This results in data variation throughout the year. Table 2 summarizes the results for the untreated water from the wells. Table 3 summarizes the results for the untreated water from Paradise and/or Vance Reservoirs.

Wells 4 and 10 have not been used this season. Vance Reservoir was brought online on October 29, 2024.

Table 1 Mid T Raw Water Monitoring

Parameter	Laboratory		# of Samples	# of Deviations[1]	Min	Max	Average
E.coli	Caro	MPN/100 mL	4	-----	<1	<1	<1
Total Coliform	Caro	MPN/100 mL	4	-----	1	4	2
Turbidity	Grab sample	NTU	22	-----	0.19	0.42	0.27
Turbidity	SCADA[2] Daily Average	NTU	31	-----	0.11	0.49	0.16

[1]SSW WQ Deviation Response Plan – Turbidity >1.0 NTU
[2]SCADA: Supervisory Control and Data Acquisition.

Table 2 Mid T Raw Water Monitoring – Wells

Parameter	Laboratory		# of Samples	# of Deviations[1]	Min	Max	Average
Turbidity	SCADA[2] Daily Average	NTU	31	2[3]	0.07	1.62	0.27

[1]SSW WQ Deviation Response Plan – Turbidity >1.0 NTU
[2]SCADA: Supervisory Control and Data Acquisition.
[3]Daily average turbidity >1.0 NTU on December 3 and 4. Turbidity increase suspected to be caused by wells 5 and 12, therefore, these wells were taken offline for a brief period. The blended raw water entering the treatment process remained < 1 NTU.

Table 3 Mid T Raw Water Monitoring – Surface Sources

Parameter	Laboratory		# of Samples	# of Deviations[1]	Min	Max	Average
E.coli	Caro	MPN/100 mL	4	-----	<1	<1	<1
Total Coliform	Caro	MPN/100 mL	4	-----	<1	5	2.5
Turbidity	Grab sample	NTU	4	-----	0.29	0.61	0.47
Turbidity	SCADA[2] Daily Average	NTU	31	-----	0.26	0.55	0.36
UVT - Unfiltered	RDNO Lab	%	4	-----	95.4	96.7	96.2

[1]SSW WQ Deviation Response Plan – Turbidity >1.0 NTU
[2]SCADA: Supervisory Control and Data Acquisition.

2. Treatment Plant

SSW has a treatment plant, the Mid T Water Treatment Plant (MTWTP). The MTWTP uses a dual disinfection process of Ultra-violet (UV) disinfection and chlorine. Chlorine is added after UV treatment to ensure contact time for the removal of viruses. Tables 4, 5 and 6 summarize the results for chlorine, bacterial, turbidity, manganese, calculated contact time, and UV transmittance (UVT).

Table 4 Mid T Water Treatment Plant

Parameter	Laboratory		# of Samples	# of Deviations[1]	Min	Max	Average
Free Chlorine	SCADA[2] Daily Average	mg/L	31	-----	1.59	1.69	1.64
Free Chlorine	Grab sample	mg/L	4	-----	1.69	1.72	1.70
Total Chlorine	Grab sample	mg/L	4	-----	1.78	1.83	1.82
E.coli	Caro	CFU/100 mL	4	-----	<1	<1	<1
Total Coliform	Caro	CFU/100 mL	4	-----	<1	<1	<1
Turbidity	SCADA[2] Daily Average	NTU	31	-----	0.14	0.14	0.14
Turbidity	Grab sample	NTU	4	-----	0.21	0.35	0.26
Manganese	RDNO Lab	mg/L	4	-----	0.018	0.037	0.028

[1]SSW WQ Deviation Response Plan – Free Chlorine <0.20 mg/L, Turbidity >1.0 NTU, Manganese >0.12 mg/L

[2]SCADA: Supervisory Control and Data Acquisition.

Table 5 Contact Time (CT)

Parameter	Days Monitored	Min	Max	Average
Days 99.9% achieved	4	100%	100%	100%

99.9% is 3-log removal for Giardia

Table 6 Ultra-violet (UV) Disinfection

Parameter	Laboratory	Days Monitored	Min	Max	Average
UVT	SCADA[1] Daily Average	31	95%	101%	99%

[1]SCADA: Supervisory Control and Data Acquisition.

3. Distribution

Table 7 summarizes the results for chlorine, turbidity and bacterial for the distribution system from the following sites: Pinnacles, Grandview, Firehall, and Maintenance Building. The monthly water volume used at Silver Star was 15,748 m^3.

Table 7 Distribution

Parameter	Laboratory		# of Samples	# of Deviations[1]	Min	Max	Average
Free Chlorine	Grab sample	mg/L	16	-----	0.79	1.67	1.42
Total Chlorine	Grab sample	mg/L	16	-----	0.84	1.75	1.49
E.coli	Caro	CFU/100 mL	16[2]	-----	<1	<1	<1
Total Coliform	Caro	CFU/100 mL	16[2]	-----	<1	<1	<1
Turbidity	Grab sample	NTU	16	-----	0.14	0.32	0.23

[1]SSW WQ Deviation Response Plan – Free Chlorine <0.20 mg/L, Turbidity >1.0 NTU
[2]Treatment Plant bacterial samples are included in the required monthly bacterial sampling amounts as per Drinking Water Protection Regulations Schedule B.

4. Customer Calls and Notifications

Customer calls within the Silver Star Water Utility service area are tracked and recorded. There were no customer calls this month.

5. Operational or Maintenance Activity

Operational activities within the Silver Star Water service area are tracked and recorded. Table 8 summarizes the distribution operational activities this month.

Table 8 Monthly Operational Work and Maintenance

NUMBER OF LOCATIONS	TYPE OF WORK
0	Hydrant Maintenance
0	Water Service Locate
0	Water Main Break Repair
0	Water Service Install
2	Water Turn On/Off
0	Water Curb Stop Repair
0	Water Meter/ERT Install
0	Water Meter/ERT Inspection
0	Water Meter/ERT Maintenance
0	Water Meter/ERT Replacement
0	Water Meter Manual Read
0	Water Investigation