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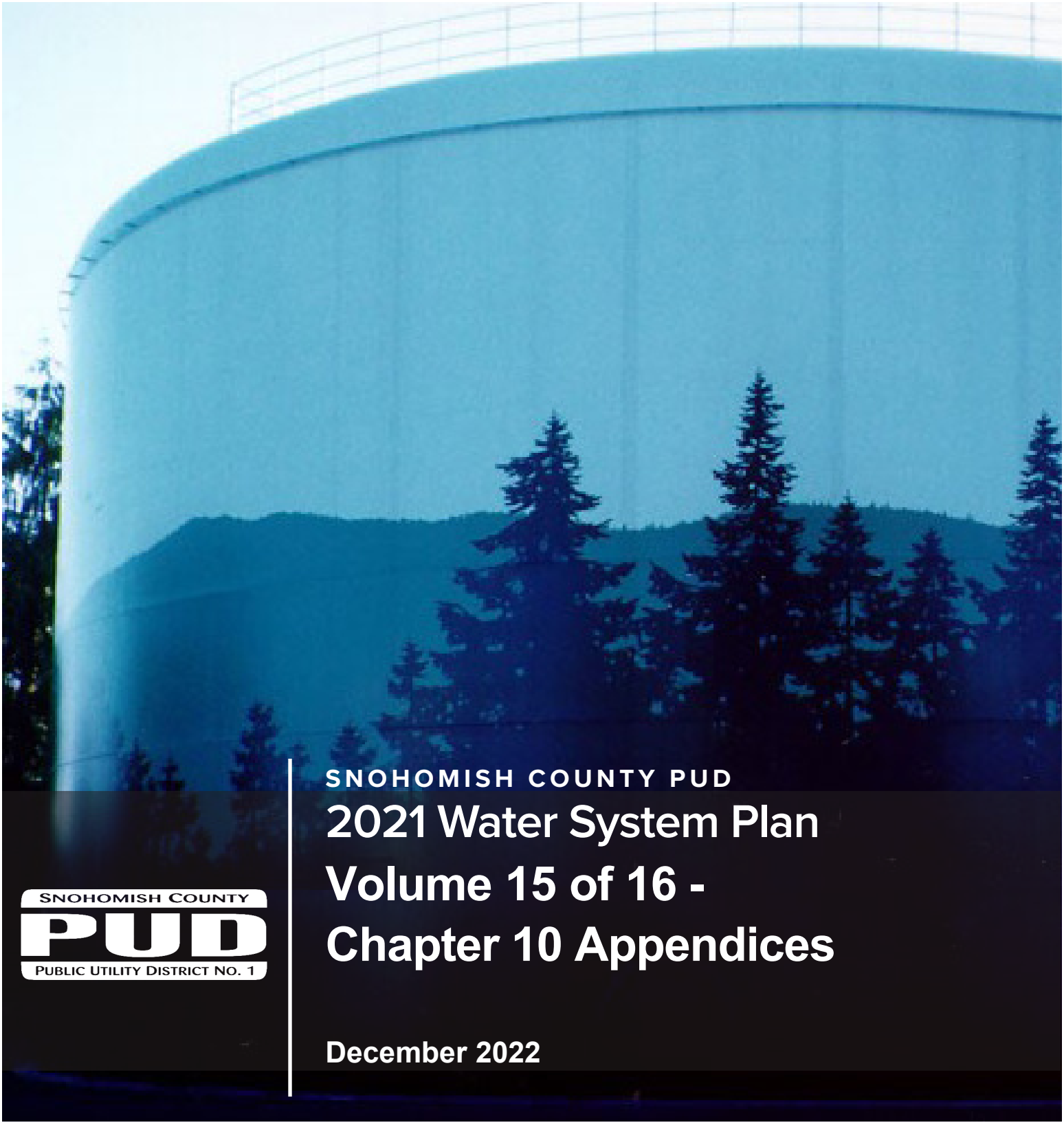

SNOHOMISH COUNTY PUD

2021 Water System Plan

Volume 15 of 16 - Chapter 10 Appendices

December 2022

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Appendices

Appendix 10-1A

SnoPUD 1 2019 Ground Water Coliform Monitoring Plan with Appendices

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Snohomish County Public Utility District No. 1
2320 California Street
P.O. Box 1107
Everett, Washington 98206-1107

COLIFORM MONITORING PLAN
FOR
SNO PUD 1 - WATER SYSTEMS
SUPPLIED BY GROUND WATER

GROUP-PUBLIC WATER SYSTEMS

SNO PUD 1 – MAY CREEK; System Identification No. 521050

SNO PUD 1 – SKYLITE TRACTS; System Identification No. 802201

SNO PUD 1 – SUNDAY LAKE; System Identification No. 85205D

SNO PUD 1 – 212TH STREET MARKET & DELI; System Identification No. 04515Q

SNO PUD 1 – KAYAK ESTATES; System Identification No. 231115

SNO PUD 1 – WARM BEACH; System identification No. 93000F

GROUP-B PUBLIC WATER SYSTEM

SNO PUD 1 – OTIS; System Identification No. 06956X

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Prepared By

Brett Gehrke
Snohomish County Public Utility District No. 1
Water Resources Division

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COLIFORM MONITORING PLAN
FOR
SNO PUD 1 – WATER SYSTEMS
SUPPLIED BY GROUND WATER

1.0 SYSTEM INFORMATION

1.1 SNO PUD 1 - May Creek ID# 521050:

Water Sources: The May Creek System has two wells (Well 1 and Well 2). Well 1 is 8-inches in diameter and approximately 150 feet deep. The well was drilled in 1984, when the system was acquired by SNO PUD 1. Well 2 is 12-inches in diameter and is the same depth as Well 1, 150 feet. Well 2 was equipped and placed into service in 2001. The wells are about 30 feet apart and draw from the same aquifer. Well 2 is the primary source and is equipped with a pump capable of producing 500 gallons per minute (gpm). Well 1 is the backup source and can produce about 280 gpm.

Liquid sodium hypochlorite solution (NaOCL), 6.00% is metered into the source water supply with a peristaltic metering pump. The NaOCL is applied at a dosage rate of 0.80 to 1.2 mg/L (seasonal chlorine applied dosage rate) as the water flow exits the pump house and is conveyed into two adjacent 175,000 gallon storage reservoirs.

The peristaltic metering pump is pre-set to deliver a fixed rate of NaOCL into the process when the well pump starts and is pre-set to stop metering the NaOCL when the well pump shuts off. The finished water chlorine residual is maintained in a range between 0.80-1.0 mg/L as the water is conveyed into the Systems' storage reservoirs.

In addition to chlorination, a chlorine residual analyzer is installed at the pump house which continuously measures and trends the chlorine residual level. The measured chlorine residual is transmitted to the Systems "SCADA" Automated Monitoring and Control System, which includes "low and high alarm set points" to allow for immediate indication and notification if the chlorine residual is out of the target range. When the system becomes activated an Operations Staff Member is alerted of critical alarms and immediately responds to make the appropriate correction.

An Operations Staff Member conducts a physical check and performs a thorough inspection of the May Creek Water System at a minimum of two days every week.

Population Served: The number of service connections in the May Creek Water System is 459 (June 2018). The total population served is estimated at 1,148 (assuming 2.5 persons per connection). According to *Table 2 in Appendix-2*, this population requires that a minimum of two (2) routine coliform samples are collected monthly. *Refer to Appendix-3B* for a map of the sampling sites, and *Appendix-5* for the sample collection site addresses. The population served by the May Creek Water System will be reviewed annually by the SNO PUD 1 Water Superintendent to ensure that the proper number of monthly samples is collected.

Distribution System: The May Creek Water System includes approximately seven (7) miles of pipe and two storage reservoirs totaling 350,000 gallons. Maintenance of the minimum target chlorine residual of 0.2 mg/L in all areas of the distribution system is accomplished by various methods which include; the use of circulating flow in reservoirs (top fill, bottom draw), looping of pipelines where possible and water main flushing (as needed, particularly on “dead end” pipelines).

1.2 SNO PUD 1 - Skylite Tracts ID# 802201:

Water Source: The Skylite Tracts Water System is served by an 8-inch diameter well that is equipped with two pumps. The primary pump can produce 60 gpm and the backup pump can produce 25 gpm.

Liquid sodium hypochlorite solution (NaOCL), 6.00% is metered into the source water supply with a constant speed peristaltic metering pump. The NaOCL is applied at a dosage rate of 0.80 to 1.2 mg/L (seasonal chlorine applied dosage rate) as the water flow exits the pump house and is pumped to an adjacent 100,000 gallon storage reservoir.

The peristaltic metering pump is pre-set to deliver a fixed rate of NaOCL into the process when the well pump starts and is pre-set to stop metering the NaOCL when the well pump shuts off. In addition to chlorination a chlorine residual analyzer is installed at the pump house which continuously measures and trends the chlorine residual level. The finished water chlorine residual is maintained in a range between 0.80-1.0 mg/L as the water is conveyed into the Systems’ storage reservoir.

An Operations Staff Member conducts a physical check and performs a thorough inspection of the Skylite Tracts Water System at a minimum of two days every week.

In 2007 telemetry data from the chlorine feed system and residual analyzer was connected and transmitted to the SNO PUD 1 “SCADA” Automated Monitoring and Control System. The automated monitoring and control system includes “low and high alarm set points” to allow for immediate indication and notification if the chlorine residual is out of the target range. When the system becomes activated an Operations Staff Member will be alerted of critical alarms and will immediately respond to make the appropriate correction.

Water is pumped from the well to an adjacent 100,000-gallon reservoir where the water is aerated to eliminate carbon dioxide. Service pumps draft from the reservoir and convey water to the distribution system.

Population Served: The Skylite Tracts Water System serves 152 connections (February 2016). The total population served is estimated at 380 people (assuming 2.5 persons per connection). According to *Table 2 in Appendix-2*, this population requires that a minimum of one (1) routine coliform sample is collected every month. Refer to *Appendix-3C* for a map of the sampling sites, and *Appendix-5* for the sample collection site addresses. The population served by the Skylite Tracts system will be reviewed annually by the SNO PUD 1 Water Superintendent to ensure that the proper number of monthly samples is collected.

Distribution System: The Skylite Tracts Water System includes approximately two (2) miles of pipe. The system is well looped and as such, maintaining the minimum target chlorine residual of 0.2 mg/L is generally not an issue in this system.

1.3 SNO PUD 1 - Sunday Lake ID# 85205D:

Water Source: The Sunday Lake System is supplied by a 12-inch diameter well that is approximately 400 feet deep. The well can produce 100 gpm. Water from the well is treated for the removal of iron and manganese with the metered injection of liquid sodium hypochlorite solution (NaOCL), 6.00% and liquid potassium permanganate solution (KM_nO_4), 0.50-0.60% in conjunction with a “green sand” filtration system. The source water is also treated for the removal of hydrogen sulfide gas (H2S) with the metered injection of NaOCL.

The NaOCL and KM_nO_4 are metered into the source water supply at an applied dosage rate of 3.3-3.8 mg/L (NaOCL) and 0.20-0.30 mg/L (KM_nO_4), respectively. These are typical seasonal dosage rates. The chemicals or oxidizers are injected into the source water at the headworks of the treatment process and prior to the green sand filters. The filtered water flow exits the pump house and is then diverted to the Systems’ 200,000 gallon storage reservoir. The finished water chlorine residual is maintained in a range of 1.2-1.4 mg/L as the water is conveyed from the treatment plant to the Systems’ storage reservoir.

In addition to the chemical injection of NaOCL and KM_nO_4, a chlorine residual analyzer is installed at the pump house which continuously measures and trends the chlorine residual level. The analyzer also provides a feedback loop signal to the chlorine metering pump to maintain the target chlorine residual level. The measured chlorine residual is transmitted to the Systems “SCADA” Automated Monitoring and Control System, which includes “low and high alarm set points” to allow for immediate indication and notification if the chlorine residual is out of the target range. When the system becomes activated an Operations Staff Member is alerted of critical alarms and immediately responds to make the appropriate correction.

An Operations Staff Member conducts a physical check and performs a thorough inspection of the Sunday Lake Water System at a minimum of two days every week.

Population Served: The system serves 170 connections (June 2018). The total population served is estimated at 425 people (assuming 2.5 persons per connection). According to *Table 2 in Appendix-2*, this population requires that a minimum of one (1) routine coliform sample is collected every month. *Refer to Appendix-3A* for a map of the sampling sites, and *Appendix-5* for the sample collection site addresses. The population served by the Sunday Lake system shall be reviewed annually by the SNO PUD 1 Water Superintendent to ensure that the proper number of monthly samples is collected.

Distribution System: The Sunday Lake distribution system includes approximately nine (9) miles of pipe in two pressure zones. The system includes one reservoir totaling 200,000 gallons. The system is well looped, with the source and storage reservoir a distance apart which provides good water circulation. Maintenance of the minimum target chlorine residual is not generally an issue in this system.

1.4 SNO PUD 1 - 212th Street Market and Deli ID# 04515Q:

Water Source: The 212th Street Market & Deli Water System is supplied from an 8-inch diameter well that is approximately 120 feet deep. Production from the well is rated at 2.5 gpm. Water from the well is pumped into a 3,000 gallon concrete storage reservoir. To eliminate any possibility of bacteriological contamination the water is chlorinated as it is pumped to the storage reservoir. A service pump moves the treated water from the reservoir to three captive air tanks and the System's single customer; an adjacent gas station and convenience store.

Liquid sodium hypochlorite solution (NaOCL), 2.63% is metered into the water supply with a constant speed peristaltic metering pump. The NaOCL is applied at a dosage rate of 1.3 to 1.8 mg/L (seasonal chlorine applied dosage rate) as the water flow exits the pump house and is pumped to an adjacent 3,000 gallon storage reservoir.

The peristaltic metering pump is pre-set to deliver a fixed rate of NaOCL into the process when the well pump starts and is pre-set to stop metering the NaOCL when the well pump shuts off. In addition to chlorination a chlorine residual analyzer is installed at the pump house which continuously measures and trends the chlorine residual. The finished water chlorine residual is maintained in a range between 0.80-1.3 mg/L as the water is conveyed into the Systems' storage reservoir.

An Operations Staff Member conducts a physical check and performs a thorough inspection of the 212th Street Market & Deli Water System at a minimum of two days every week.

Population Served: The 212th Street Market & Deli is a Group-A, Transient, Non-Community Water System. The System has a single connection which serves a transient population of over 25 people per day. This circumstance requires that a minimum of one (1) routine coliform sample is collected every month. *Refer to Appendix-3A* for a map of the sample collection site location, and *Appendix-5* for the sample collection site address. The number of people served by the system will be reviewed annually by the SNO PUD 1 Water Superintendent to ensure that the proper number of monthly samples is collected.

Distribution System: SNO PUD1 has no ownership in the 212th Street Market & Deli Distribution System. The customer's meter is in the pump house. The customer is responsible for the maintenance of the distribution system (service line) from the meter to the gas station and convenience store. The target chlorine residual at the customers tap is 0.2-0.5 mg/L.

1.5 SNO PUD 1 – KAYAK ESTATES ID# 231115

SNO PUD 1 purchased the Kayak Estates Water System from the previous owner Iliad, Inc. and received ownership and control of the System on October 18, 2006.

SNO PUD 1 constructed a treatment facility for the System which was placed into service August 2009. The treatment facility provides multiple treatment processes which includes primary disinfection with NaOCL and the removal of iron and manganese by oxidization liquid potassium permanganate solution in conjunction with a filtration system.

Water Sources: The Kayak Estate System has two wells (Well 2 and Well 3). Well 2 is (approximately 400 feet, tapping a deep aquifer) is equipped with a 260 gpm submersible pump. Subsequently, well 3 was drilled about 50 feet from, and to the same depth as Well 2. Well 3 is equipped with a 300 gpm deep set vertical turbine pump and is the primary use well. Water from the wells is treated for the removal of iron and manganese with the metered injection of liquid sodium hypochlorite solution (NaOCL), 12.50% and liquid potassium permanganate solution (KM_nO_4), 0.50-0.60% in conjunction with a pyrolusite filtration system.

Population Served: The system serves 367 connections (February 2016). The total population served is estimated at 918 people (assuming 2.5 persons per connection). According to *Table 2 in Appendix-2*, this population requires that a minimum of one (1) routine coliform sample is collected every month. *Refer to Appendix-3E* for a map of the sampling sites, and *Appendix-5* for the sample collection site addresses. The population served by the Kayak Estates system shall be reviewed annually by the SNO PUD 1 Water Superintendent to ensure that the proper number of monthly samples is collected

Distribution System: The Kayak Estates distribution system includes approximately thirteen (13) miles of pipe ranging in size from 2 to 12 inches in diameter and two

pressure zones. The system has one reservoir which has a storage capacity of 296,000 gallons.

1.6 SNO PUD 1 - Otis (Group B) ID# 06956X:

Water Source: The Otis Water System is supplied by a 6-inch diameter well which is approximately 228 feet deep. There is currently no treatment scheme in place for this system.

Population Served: The Otis Water System serves four (4) connections (October 2010). The total population served is estimated at ten (10) people (assuming 2.5 persons per connection). As a Group-B Water System, DOH regulations require that a single routine coliform sample is collected annually. The SNO PUD 1 goal is to collect one (1) routine coliform sample every quarter or four (4) per year. *Refer to Appendix-3A* for a map of the sample collection site, and *Appendix-5* for the sample collection site address. The population served by the Otis system shall be reviewed annually by the SNO PUD 1 Water Superintendent to ensure that the proper number of samples is collected.

Distribution System: The Otis Water System includes 340 feet of pipe.

1.7 SNO PUD 1 - WARM BEACH ID #93000F

The Warm Beach Water System was acquired by the SNO PUD #1 in September of 2018. The system has two active wells and one emergency well. There is a 200,000 gallon reservoir at the site of well #4 and treatment facility.

Water Source: The Warm Beach System has two active wells (Well 2 and Well 4). Well 2 is untreated and pumps directly into the distribution system. The well is approximately 180 feet, deep and is equipped with a 50 gpm submersible pump. Subsequently, Well 4 is drilled to approximately 542 feet and is equipped with a 200 gpm submersible pump and is the primary use well. Water from well #4 is treated for the removal of iron and manganese with the metered injection of liquid sodium hypochlorite solution (NaOCL), 12.50% and liquid potassium permanganate solution (KM_nO_4), 4% in conjunction with a pyrolusite filtration system. This system also has an emergency well (well 3R) which is currently disconnected from the distribution system.

Population Served: The Warm Beach Water System serves 621 connections. The total population served is estimated at 1553 people (assuming 2.5 persons per connection. According to *Table 2 in Appendix-2*, this population requires that a minimum of two (2) routine coliform sample is collected every month. *Refer to Appendix-3A* for a map of the sampling sites, and *Appendix-5* for the sample collection site addresses. The population served by the Warm Beach system shall be reviewed annually by the SNO PUD 1 Water Superintendent to ensure that the proper number of monthly samples is collected

Distribution System: The Warm Beach distribution system includes approximately nine (10) miles of pipe in three pressure zones. The system includes one reservoir totaling 200,000 gallons of storage.

2.0 ROUTINE SAMPLING INFORMATION

2.1 Number of Monthly Samples:

The PUD is required by the Washington State Department of Health (DOH) Group A Regulations *[WAC 246-290-300(3)(c)(i)]* to collect no fewer than the numbers of samples specified in *Appendix-2, DOH WAC Table 2*, Minimum Monthly Routine Coliform Sampling Requirements. DOH Group B regulations require a minimum of one (1) sample annually. Table 1 contains a summary of this information for the six (6) systems addressed in this plan:

Table 1
Numbers of Monthly Coliform Samples

System Name	Population Served	DOH Minimum Number	PUD Target Number
May Creek	1,070	2	2
Skylite Tracts	378	1	1
Sunday Lake	388	1	1
212th Street Market	>25/day	1	1
Kayak Estates	908	1	1
Otis	10	1/year	4/year
Warm Beach	1,553	2	2

2.2 Sample Collection Schedule:

Sample collection will be conducted during the first two weeks of each month. Normally, weekly samples will be collected on the first three or four business days of the week. For efficiency, the SNO PUD 1 sample collection schedule has been broken into two weekly groupings of sample locations. Each weekly group will be sampled according to geographically organized routes. *See: Appendix-5 (Routine Sample Site Addresses and Routing List)*.

If holidays or scheduling conflicts occur, samples will be scheduled for collection on an alternate day or week, but within the required collection and reporting period. *The SNO PUD 1 Water Foreman is responsible for ensuring that any deferred sample collection is rescheduled and that all of the required samples are collected each month*.

2.3 Sample Site Location:

The coliform sample sites are in areas within the referenced water systems. The sites were selected to be representative and indicative of each system's water quality.

Specific sample site locations are listed in *Appendix-4 and Appendix-5 (Routine and Repeat Sample Site Addresses and Routing Lists) and displayed in Appendix-3A through Appendix-3D (System Coliform Sample Collection Site Maps)*.

Site locations may be revised in response to changes in accessibility, population, "looping" of mains, consolidation with other systems, addition of pressure zones, or extension of water service to new areas. Any time that sample collection site locations are revised, this plan shall be updated to reflect the revisions *(any such revisions will also be sent to the DOH)*.

To improve efficiency, accessibility and avoid "false" unsatisfactory results (from contamination on the exterior of faucets or hose bibs); many sample sites use equipment that was designed for precise and sanitary sample collection. The SNO PUD 1 long term goal is to equip all sampling sites with such equipment.

2.4 Sample Collection Procedures:

See: Appendix-6 (Routine Coliform Sample Collection Procedures) for detailed sample collection procedures.

To avoid false unsatisfactory results due to soil, animal or groundwater exposure, all below grade sample stations and all customers' hose bibs shall be sprayed with a liquid disinfectant.

To insure samples are representative of water quality within the main, all sample sites will be flushed for a minimum of two (2) minutes prior to sample collection. This minimum flush time may be increased as needed for sites with large diameter or lengthy service lines.

2.5 Sample Integrity:

If the person collecting the samples determines that the sample collection process, including conditions during sampling or transport may have compromised the sample integrity and the sample should not be submitted for analysis; the collector shall discuss the issue with the Water Foreman or Water Superintendent. If it is agreed that the sample integrity has been compromised, the sample(s) shall be discarded and not submitted for analysis.

If the discarded sample(s) reduce the number of samples to below the minimum required amount, replacement sample(s) shall be collected as soon as possible within the same month.

2.6 Laboratory and Sample Analysis Methods:

SNO PUD 1 utilizes the services of independent state-certified laboratories to perform all analysis of coliform samples. The standard analysis method used for routine testing by these laboratories is the presence/absence (P/A) chromogenic method *[SM 9223 B (2b)]*. Other analysis methods may be used and performed by

the lab upon request by the PUD. Per *WAC 246-290* requirements, the laboratory will analyze all unsatisfactory total coliform samples for *E. coli*.

2.7 Sample Invalidation:

The laboratory will define invalid samples as follows:

- Samples with excess debris
- Multiple tube technique cultures that are turbid without gas production
- P/A technique cultures that are turbid in the absence of acid
- Membrane filtration technique cultures with confluent growth patterns or growth TNTC (too numerous to count) colonies without a surface sheen.

Invalid samples will not be submitted for compliance. Any invalid samples will only be re-sampled if they are needed to meet the minimum monthly requirement. When re-sampling of sites with invalid initial samples is required to meet the minimum monthly requirement, sampling will be conducted from the same site as the original sample, and within twenty-four (24) hours of receipt of notification from the laboratory that the sample was invalid.

3.0 REPEAT SAMPLING INFORMATION

3.1 Number of Repeat Samples:

For Group-A Ground water systems, regardless of size, a minimum of four (4) repeat samples shall be collected if the routine sample was unsatisfactory. At least one of these repeat samples shall be a raw water sample taken prior to treatment from each ground water source in use at the time of the unsatisfactory sample. For Group-A ground water systems the repeat samples shall be collected at;

- The same tap as the original unsatisfactory routine sample
- An active service within five (5) active connections upstream of where the original unsatisfactory sample was taken
- An active service within five (5) active connections downstream from where the original unsatisfactory sample was taken.
- At all active ground water sources (well head), prior to treatment. A sample must be taken at each ground water source, which was active at the time of the unsatisfactory sample.
- An alternative sampling protocol approved by the Department of Health may be used.

For Group-B Water Systems, DOH regulations do not specify the minimum number of repeat samples that shall be collected. In the absence of specific guidance, the SNO PUD 1 target is to collect enough repeat samples to verify the presence and isolate the source of contamination. *A total of four (4) repeat samples shall typically be collected from the following locations*:

- The same tap as the original unsatisfactory sample
- Upstream and downstream locations (if feasible)
- Raw (untreated) water from the source and or reservoir.

3.2 Repeat Sample Sites:

The addresses of the services that meet the upstream and downstream repeat sample requirement for the Group-A systems, for each routine sample site are listed in *Appendix-4 (Repeat Sample Sites List)*. When a routine sample is unsatisfactory, one (1) upstream and one (1) downstream site shall be selected from the list for repeat sampling. When routine sample sites located at the first two (2) or last two (2) active services on a main are unsatisfactory, SNO PUD 1 Staff shall consult with the DOH NW Region Office to determine how repeat sampling shall be conducted. *See: Appendix-9 (DOH and PUD Contact Information)*.

3.3 Timing of Repeat Samples:

All repeat samples shall be collected within twenty-four (24) hours of notification from the laboratory of an unsatisfactory result. If logistics prevents collection of repeat samples within twenty-four (24) hours of notification, the responsible SNO PUD 1 Staff member shall prepare a plan to collect samples as soon as possible. The person developing the plan shall contact the DOH NW Region Office immediately for consultation, seeking DOH approval of the plan. *See: Appendix-9 (DOH and SNO PUD 1 Contact Information). Repeat sampling shall be conducted per the DOH approved plan.*

All repeat samples in a water system shall be collected on the same day.

4.0 FOLLOW-UP SAMPLING AFTER UNSATISFACTORY SAMPLES

If any of the repeat samples are unsatisfactory, the following steps shall be taken; 1) call DOH and discuss the issue, 2) Conduct a Level 1 or 2 Assessment. 3) perform the remediation actions, 4) following remediation, take follow-up samples using the same criteria as for repeat samples *(See Sections 4.1 and 4.2).*

- From the same tap as the original unsatisfactory result
- From a site within five (5) services upstream of the site that was unsatisfactory
- From a site within five (5) services downstream of the site that was unsatisfactory
- At all active ground water sources (well head), prior to treatment. A sample must be taken at each ground water source, active at the time of the unsatisfactory sample.
- For systems collecting only one (1) routine sample per month, another site that would provide useful information for determining the source of contamination.

If the unsatisfactory sample is from the first two (2) or last two (2) active services on a main, the DOH Region Office shall be contacted for direction on where and how to collect the repeat samples.

Confirmed coliform or E coli samples also activate Treatment Technique Triggers; and a Level 1 or Level 2 assessment must be performed. (*See section 7.0)*

5.0 SAMPLING THE MONTH AFTER UNSATISFACTORY RESULTS

Collect normal monthly number of samples (reduced from previous rule Coliform Rule).

6.0 REPORTING UNSATISFACTORY RESULTS

6.1 Reporting Responsibility:

When any total coliform or *E. coli* samples are unsatisfactory, the laboratory will notify the SNO PUD 1 Water Engineering, Operations Senior Manager (SM), or Water Superintendent *as soon as possible on the day the result is obtained*. If not available, the laboratory will contact the Water Foreman or Designee. *See: Appendix-9 for contact information*.

The Water Superintendent (WS) is responsible for reporting all unsatisfactory coliform samples to DOH. If the WS is not available, Water Engineering, Operations Senior Manager or the Water Foreman shall be responsible for reporting to DOH. The WS shall notify Water Resources staff prior to any planned absences.

6.2 Unsatisfactory Results for Routine or Repeat Samples:

The DOH NW Region Office shall be contacted no later than ten (10) days after notification by the laboratory. Normally, this contact will be made by telephone, and on the same day that the notification was received. *See: Appendix-9 for DOH contact information*.

6.3 E.coli Unsatisfactory Samples:

If a routine sample is unsatisfactory for fecal coliform or *E. coli* bacteria, the WS will be contacted before the close of business on the day the laboratory notification is received. Upon such notification the WS shall immediately contact the Water Sr. Manager, Water Foreman or other designated staff member to arrange for repeat sampling as specified in Section 4. Repeat samples shall be collected as soon as is practicable, and in no case beyond twenty-four (24) hours of the notice.

The WS will also contact the DOH NW Region Office on the same day. In the event the DOH NW Regional Office cannot be contacted directly, the WS or Designee shall leave a message on the DOH emergency number. If DOH does not respond to the message on the day it was left, the WS or designee will attempt to contact DOH again on the following day. Such efforts shall continue until contact has been made.

Note: An unsatisfactory fecal coliform or E. coli result in a routine sample does not represent a violation however it is a serious issue that warrants thorough consideration and triggered additional sampling, possible public notification and Level 1 or Level 2 Assessments. The SM, Water Superintendent and Water Foreman will evaluate the situation to determine if an "advisory" should be distributed to affected customers pending the results of repeat samples.

6.4 Treatment Technique Violation:

Treatment Technique Violation (TTV)

- Failure to conduct Level 1 or Level 2 assessments within 30 days of trigger
- Fail to correct all sanitary defects within 30 days or per a schedule approved by the state
- Seasonal system that fails to conduct its State approved start up procedure.

6.5 Public Reporting

- An E.Coli MCL Violation (confirmed E.coli) requires public notification within 24 hours (Tier 1) See Appendix 10.
- A treatment technique violation must be reported to consumers within 30 days (Tier 2) See appendix 10A
- Monitoring violations must be reported to consumers 365 days (Tier 3). Normally reported in the Consumer Confidence Report (CCR)

Public Notification Plan, which is located in the Water System Comprehensive Plan for additional information and specific procedures. Copies of the Public Notification plan are maintained in the SNO PUD 1 - Water System Comprehensive Plan, which is located in the library at the PUD Water Shop and in the offices of the SM and Water Superintendent.

7.0 Triggered Assessments:

7.1 Treatment Technique Triggers

Confirmed coliform or E coli samples now also activate Treatment Technique Triggers. Treatment Technique triggers are;

- A confirmed total coliform sample, meaning two or more samples in a month for small systems (taking fewer than 40 samples a month), or more than 5% total coliform positive in a month for systems taking more than 40 samples a month.
- Confirmed E.Coli. At least two total coliform positive samples with at least one of those also E.coli positive in a linked sample set of routine and repeats.
- Failure to collect required repeat samples.

7.2 Assessments

There are two levels of assessments Level 1 and Level 2.
A level one assessment is triggered by;

- A confirmed total coliform sample, meaning two or more samples in a month for small systems (taking fewer than 40 samples a month), or more than 5% total coliform positive in a month for systems taking more than 40 samples a month.
- Failure to collect required repeat samples after a positive routine coliform sample.

A level 2 assessment is triggered by;

- A routine E.coli positive and a total coliform positive repeat.
- A routine E.coli positive and a failure to take a repeat sample.
- A routine E.coli positive and an E. coli positive repeat sample.
- A coliform positive sample with an E.coli positive repeat sample.
- A coliform positive sample with a coliform positive sample that was not also tested for E.coli.
- If a water system has had multiple confirmed coliform events in the previous rolling 12 month period.

Level 1 assessments are performed by the purveyor using profession knowledge and Department of Health templates and guides. Assessments must be performed and submitted to the State within 30 days of the confirmed positive sample. As of 03/29/16 the Washington Department of Health is currently writing guidance materials and will be available at a future date and will be included in the appendices. Level 1 assessment will look for;

- Sanitary defects
- Problems in operations and maintenance.
- Review best management practices (BMP's)
- Submit plan for corrective action(s)

Level 2 Assessment must be performed by; a Professional Engineer (PE), a Water Distribution Manager 2 or greater, the Washington Department of Health or the Local Health Authority (Snohomish County Health District). Assessments must be performed and submitted to the State within 30 days of the confirmed positive sample. As of 03/29/16 the Washington Department of Health is currently writing guidance materials and will be available at a future date and will be included in the appendices. A level 2 assessment is more in-depth than a level one. Level 2 assessment will;

- Look for sanitary defects
- Problems in operations and maintenance.
- Review best management practices (BMP's)
- Submit plan for corrective action(s)

8.0 COLIFORM MONITORING PLAN (CMP) PREPARATION INFORMATION

8.1 CMP Revision Criteria:

The CMP shall be reviewed periodically and revised on an as needed basis. The conditions to be evaluated in future reviews include:

- Changes in regulations
- Population changes
- Loss of sample site availability
- Changes in sample site location
- Expansion to service new areas
- Changes in pressure zones or flow patterns
- Consolidation of systems

8.2 CMP Preparation History:

Barbra Smith, with the SNO PUD 1 Water Resources Engineering Division prepared the first CMP in 1995.

The 1995 CMP was revised by Water Superintendent Brian St. Clair in 1997 and 1998.

A revised CMP for the SNO PUD 1 Lake Stevens Integrated System (LSIS) was completed in October 2004 and prepared by Peggy Coker, Water Distribution Specialist, Scott Schuler, Water Foreman, Tracy Boggs, Water Utility Administrator and Paul J. Wolcott, Water Superintendent.

In August 2005, the LSIS CMP was revised by Mark Spahr (retired SM) and Paul J. Wolcott (Water Superintendent) to be applicable for the SNO PUD Water Systems supplied by the City of Everett Regional Water Supply System.

In September 2005, The LSIS was CMP was revised by Mark Spahr (retired SM) and Paul J. Wolcott (Water Superintendent). The six (6) SNO PUD 1 - Ground Water Systems were consolidated into one CMP and the new CMP was titled 2005 COLIFORM MONITORING PLAN for SNO PUD 1 – WATER SYSTEMS – SUPPLIED by GROUND WATER.

On October 26, 2005 the CMP was submitted to the Washington State, Department of Health (DOH), and Division of Drinking Water for comments and acceptance. On June 08, 2006 the DOH replied to Paul J. Wolcott with CMP review comments.

In October 2006 the CMP was up-dated to include; DOH review comments, number of new service connections and the population served within each water system listed in the CMP, the addition of Kayak Estates Water System and minor text editing corrections and changes.

On November 3, 2006 the 2006 CMP for the Ground Water Systems was submitted to the DOH for comments and acceptance.

In January 2008 the CMP was updated by the SNO PUD 1 - Water Superintendent, Paul J. Wolcott. The 2008 up-date included; new coliform sample collection site maps, number of new water service connections and the population served within each water system listed in the CMP, updated routine and repeat sample site addresses and routing lists and minor text editing and format changes were made throughout the CMP.

In March 2008 the CMP was submitted to the Washington State Department of Health (DOH) by the SNO PUD 1 – Water Superintendent, Paul J. Wolcott.

In December 2010, The CMP was revised by Water Superintendent Brett Gehrke in preparation for the Water Comprehensive Plan. The plan was modified in January of 2012 with the incorporation of the Pilchuck -10 and Lake Rosiger water systems into the Lake Stevens Integrated system.

In March of 2016, The CMP was revised by Water Superintendent Brett Gehrke in preparation for the Total Coliform Rule Revisions

January 2019, The CMP was revised by Water Superintendent Brett Gehrke

APPENDIX-1

Source and Systems Location Site Map

The map is folded and inserted in a pocket in the binder insert behind this page

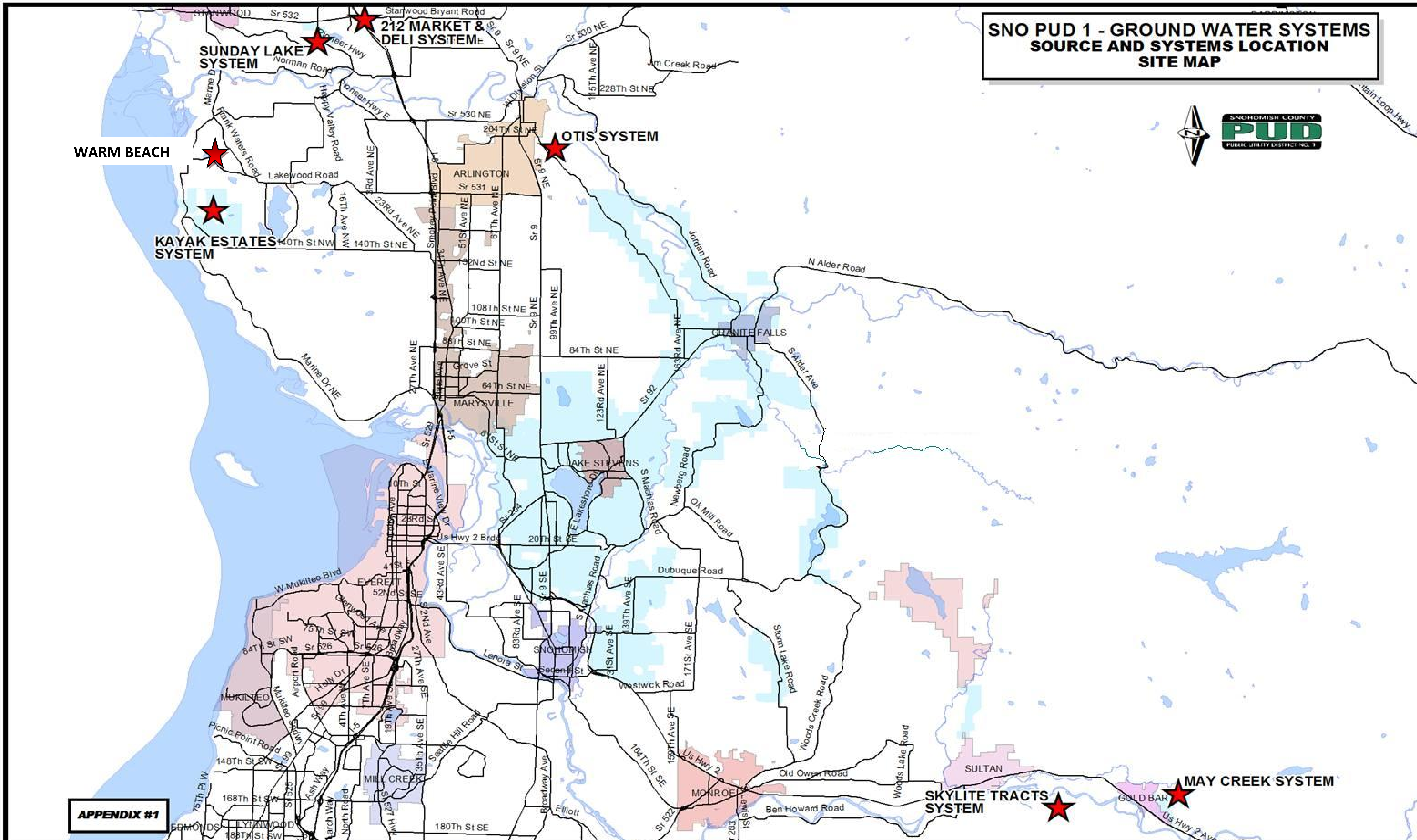

SNO PUD 1 - GROUND WATER SYSTEMS
SOURCE AND SYSTEMS LOCATION
SITE MAP
SNOHOMISH COUNTY PUD
PUBLIC UTILITY DISTRICT NO. 1
212 MARKET & DELI SYSTEM
SUNDAY LAKE SYSTEM
WARM BEACH
KAYAK ESTATES SYSTEM
OTIS SYSTEM
SKYLITE TRACTS SYSTEM
MAY CREEK SYSTEM
STANWOOD
ARLINGTON
MARYSVILLE
GRANITE FALLS
LAKE STEVENS
EVERETT
MUKILTEO
SNOHOMISH
MILL CREEK
MONROE
SULTAN
GOLD BAR
LYNNWOOD
EDMONDS
APPENDIX #1

Table 2
DOH REQUIRED MINIMUM MONTHLY COLIFORM SAMPLES

Population Served[1] During Month			Minimum Number of Routine Samples/Calendar Month	
			When NO samples with a coliform presence were collected during the previous month	When ANY samples with a coliform presence were collected during the previous month
1	----------	1,000	1[2]	5
1,001	----------	2,500	2	5
2,501	----------	3,300	3	5
3,301	----------	4,100	4	5
4,101	----------	4,900	5	5
4,901	----------	5,800	6	6
5,801	----------	6,700	7	7
6,701	----------	7,600	8	8
7,601	----------	8,500	9	9
8,501	----------	12,900	10	10
12,901	----------	17,200	15	15
17,201	----------	21,500	20	20
21,501	----------	25,000	25	25
25,001	----------	33,000	30	30
33,001	----------	41,000	40	40
41,001	----------	50,000	50	50
50,001	----------	59,000	60	60
59,001	----------	70,000	70	70
70,001	----------	83,000	80	80
83,001	----------	96,000	90	90
96,001	----------	130,000	100	100
130,001	----------	220,000	120	120
220,001	----------	320,000	150	150
320,001	----------	450,000	180	180
450,001	----------	600,000	210	210
600,001	----------	780,000	240	240
780,001	----------	970,000	270	270
970,001	----------	1,230,000[3]	300	300

SNO PUD 1 – 212TH MARKET, KAYAK ESTATES, WARM BEACH, SUNDAY LAKE

Coliform Sample Collection

Site Map

The map is folded and inserted in a pocket in the binder insert behind this page

SITE	ADDRESS
159	2127 256th St NW
160	2009 252nd St NW
161	3221 263rd ST NW
162	26623 Hwy 99 N
171	14213 70TH AVE NW
172	15602 83RD AVE NW
173	16328 80TH AVE NW
173	17115 82ND AVE NW
173	17115 82ND AVE NW
174	16501 89TH AVE NW
200	2008 131st Ave NE
201	8627 176th St NW
202	9219 188th St SW
203	18510 Soundview Dr
204	19108 Soundview Dr
205	19610 Soundview Dr

Pressure Zones

212TH	SLk
Kay1	SLk-B
Kay2	Sun
Kay3	WRB 1
SLR	WRB 2
SLR-B	WRB 3

300Th St NW
72Nd Ave NW
Old 99 N
268Th St NE
127Th Ave NW
28Th Ave NW
268Th St NW
Sr 532
I-5
212TH MARKET
SUNDAY LAKE RESERVOIR
Norman Road
236Th St NE
Pioneer Hwy
Larson Road
Pioneer Hwy E
Happy Hollow Road
Happy Valley Road
83Rd Ave NE
Marine Dr
Frank Waters Road
Lakewood Road
Sr 531
23Rd Ave NE
WARM BEACH RESERVOIR
KAYAK RESERVOIR
W Lake Goodwin Road
E Lake Goodwin Road
Marine Dr NE

SNOHOMISH COUNTY PUD NO.1

212th MARKET, KAYAK ESTATES, WARM BEACH, SUNDAY LAKE SYSTEMS ◄ Flow Direction

Coliform Sample Location Sites

Reservoir

Major Roads

SNOHOMISH COUNTY PUD PUBLIC UTILITY DISTRICT NO. 1

0 850 1,700 3,400 5,100 Feet

APPENDIX 3A (EW)

Map: Y:\WATER SYSTEM\GIS\MAPS\Coliform_Monitoring_Plan\Warm_Beach_Kayak_2020.mxd

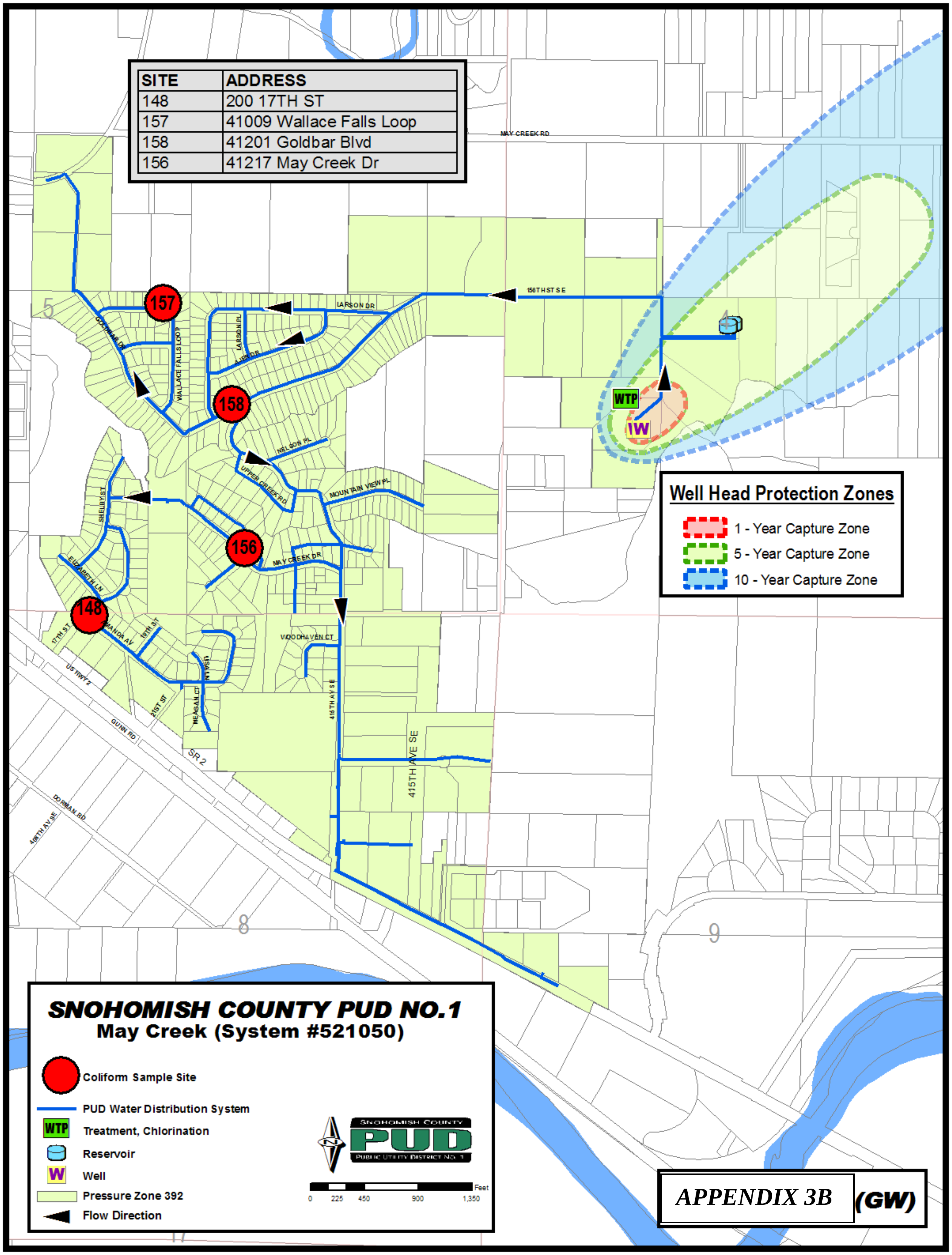
SNO PUD 1 – MAY CREEK

System Identification No. 521050

Coliform Sample Collection

Site Map

The map is folded and inserted in a pocket in the binder insert behind this page


SNOHOMISH COUNTY PUD NO.1
May Creek (System #521050)
Coliform Sample Site
PUD Water Distribution System
WTP
Treatment, Chlorination
Reservoir
W
Well
Pressure Zone 392
Flow Direction
Well Head Protection Zones
1 - Year Capture Zone
5 - Year Capture Zone
10 - Year Capture Zone
APPENDIX 3B
(GW)
157
158
156
148
MAY CREEK RD
LARSON DR
WALLACE FALLS LOOP
NELSON PL
UPPER CREEK RD
MOUNTAIN VIEW PL
MAY CREEK DR
SHELBY ST
ELIZABETH LN
17TH ST
19TH ST
21ST ST
US HWY 2
GUNN RD
SR 2
DORMAN RD
WOODHAVEN CT
415TH AVE SE
5
8
9
Feet
0
225
450
900
1,350

SITE	ADDRESS
148	200 17TH ST
157	41009 Wallace Falls Loop
158	41201 Goldbar Blvd
156	41217 May Creek Dr

APPENDIX-3C

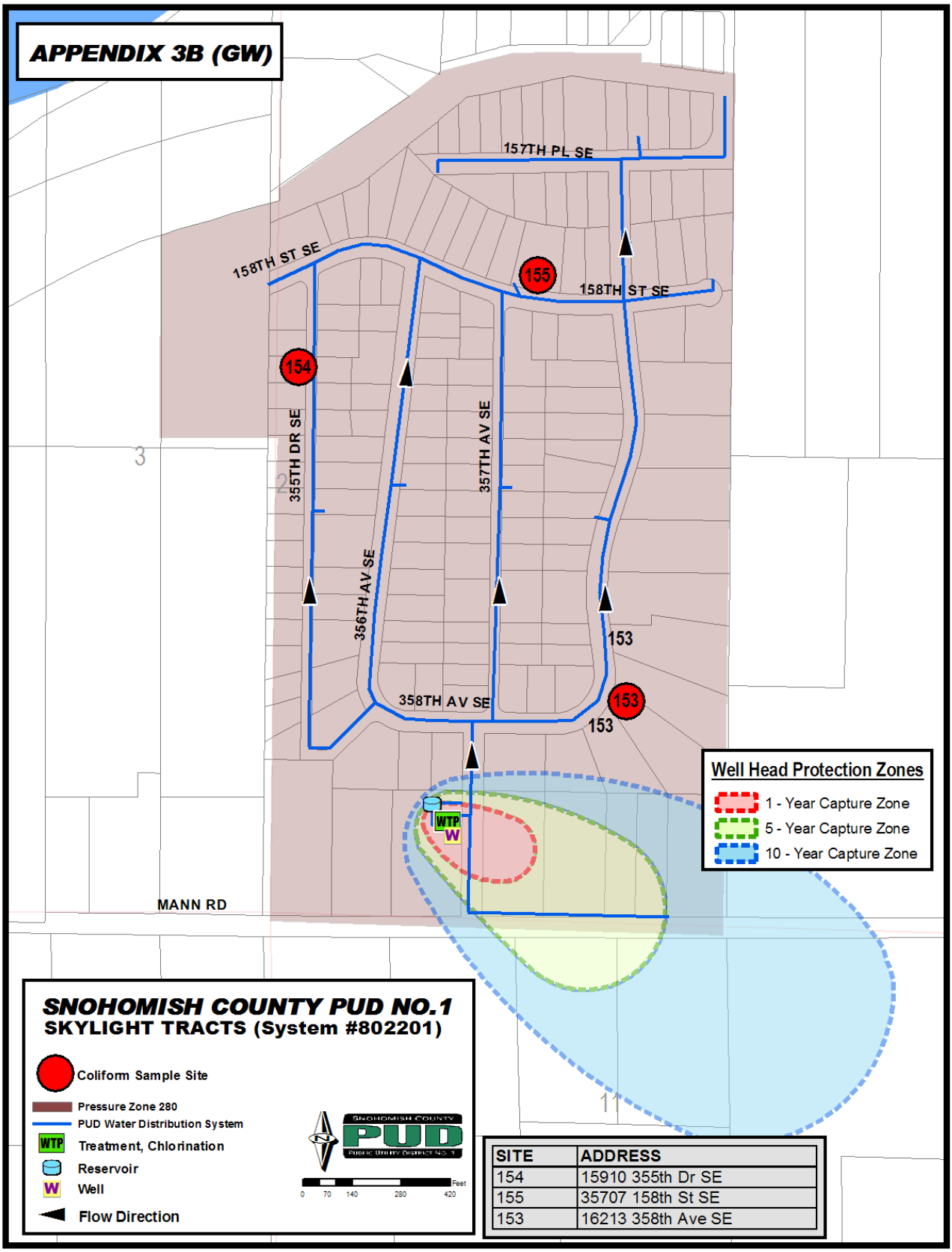
SNO PUD 1 – SKYLITE TRACTS

Coliform Sample Collection

Site Map

System Identification No. 802201

The map is folded and inserted in a pocket in the binder insert behind this page


APPENDIX 3B (GW)
157TH PL SE
158TH ST SE
158TH ST SE
155
154
355TH DR SE
357TH AV SE
356TH AV SE
153
358TH AV SE
153
153
WTP
W
MANN RD
Well Head Protection Zones
1 - Year Capture Zone
5 - Year Capture Zone
10 - Year Capture Zone
SNOHOMISH COUNTY PUD NO.1
SKYLIGHT TRACTS (System #802201)
Coliform Sample Site
Pressure Zone 280
PUD Water Distribution System
WTP Treatment, Chlorination
Reservoir
W Well
Flow Direction
SNOHOMISH COUNTY PUD
Public Utility District No. 1
0 70 140 280 420 Feet
SITE ADDRESS
154 15910 355th Dr SE
155 35707 158th St SE
153 16213 358th Ave SE

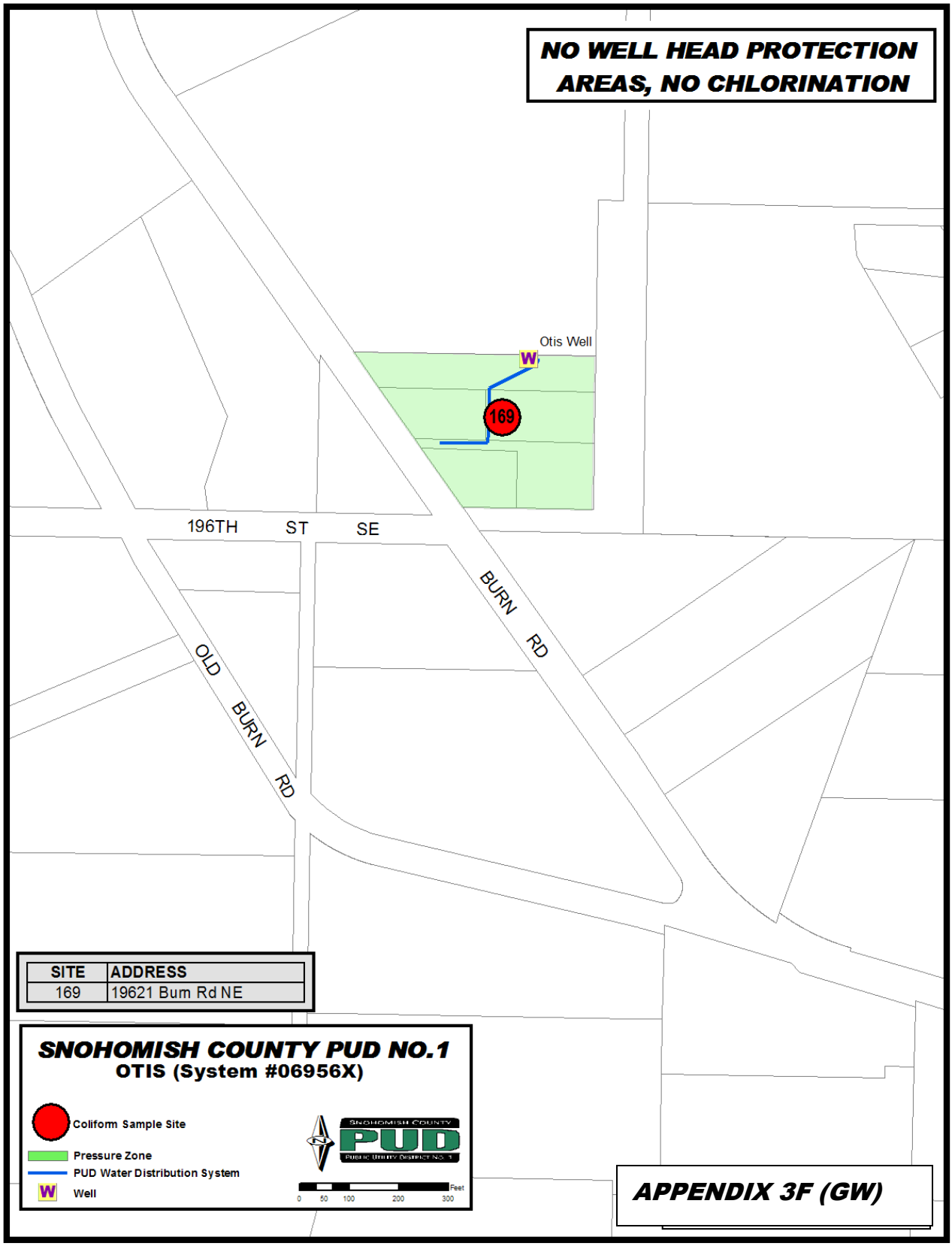
SNO PUD 1 – OTIS

System Identification No. 06956X

Coliform Sample Collection

Site Map

The map is folded and inserted in a pocket in the binder insert behind this page


NO WELL HEAD PROTECTION AREAS, NO CHLORINATION
Otis Well
W
169
196TH ST SE
BURN RD
OLD BURN RD
SITE | ADDRESS
169 | 19621 Bum Rd NE
SNOHOMISH COUNTY PUD NO.1
OTIS (System #06956X)
Coliform Sample Site
Pressure Zone
PUD Water Distribution System
W Well
SNOHOMISH COUNTY PUD
Public Utility District No. 1
Feet
0 50 100 200 300
APPENDIX 3F (GW)

COLIFORM MONITORING PLAN
FOR
SNO PUD 1 - WATER SYSTEMS
SUPPLIED BY GROUND WATER

APPENDIX-4

SNO PUD 1 - MAY CREEK, System Identification No. 521050

ROUTINE And REPEAT COLIFORM SAMPLE COLLECTION SITES

SITE 156	ADDRESS	PSI ZONE	COMMENTS
ROUTINE	41217 May Creek Drive	392	Above Ground Sample Station
REPEAT UPSTREAM	41229 May Creek Drive	392	Hose Bib
REPEAT DOWNSTREAM	41213 May Creek Drive	392	Hose Bib
Pump House	15826 - 423rd Ave SE	392	Post Treatment Pump House
Well #2 (Source)	15826 - 423rd Ave SE	392	Raw Water Sample Prior to Treatment
SITE 157	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE	41009 Wallace Falls Loop Rd	392	Above Ground Sample Station
REPEAT UPSTREAM	41015 Wallace Falls Loop Rd	392	Hose Bib
REPEAT DOWNSTREAM	41003 Wallace Falls Loop Rd	392	Hose Bib
Pump House	15826 - 423rd Ave SE	392	Post Treatment Pump House
Well #2 (Source)	15826 - 423rd Ave SE	392	Raw Water Sample Prior to Treatment
SITE 158	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE	41201 Goldbar Blvd	392	Above Ground Sample Station
REPEAT UPSTREAM	41219 Goldbar Blvd	392	Hose Bib
REPEAT DOWNSTREAM	15930 Goldbar Dr	392	Hose Bib
Pump House	15826 - 423rd Ave SE	392	Post Treatment Pump House
Well #2 (Source)	15826 - 423rd Ave SE	392	Raw Water Sample Prior to Treatment
SITE 148	**ADDRESS**	**ZONE**	**COMMENTS**
ROUTINE	200 17th Street	392	Above Ground Sample Station
REPEAT UPSTREAM	202 17th Street	392	Hose Bib
REPEAT DOWNSTREAM	1705 Amanda Ave	392	Hose Bib
Pump House	15826 - 423rd Ave SE	392	Post Treatment Pump House
Well #2 (Source)	15826 - 423rd Ave SE	392	Raw Water Sample Prior to Treatment

COLIFORM MONITORING PLAN
FOR
SNO PUD 1 - WATER SYSTEMS
SUPPLIED BY GROUND WATER

APPENDIX-4

SNO PUD 1 - SKYLITE TRACTS, System Identification No. 802201

ROUTINE And REPEAT COLIFORM SAMPLE COLLECTION SITES

SITE 153	ADDRESS	PSI ZONE	COMMENTS
ROUTINE	16213 358th Ave SE	290	Above Ground Sample Station
REPEAT UPSTREAM	16217 358th Ave SE	290	Hose Bib
REPEAT DOWNSTREAM	16201 358th Ave SE	290	Hose Bib
Well #1 (Source)	16312 - 357th Ave SE	290	Raw Water Sample Prior to Treatment
SITE 154	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE	15910 355th Dr SE	290	Above Ground Sample Station
REPEAT UPSTREAM	15918 355th Dr SE	290	Hose Bib
REPEAT DOWNSTREAM	15906 355th Dr SE	290	Hose Bib
Well #1 (Source)	16312 - 357th Ave SE	290	Raw Water Sample Prior to Treatment
SITE 155	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE	35707 158th St SE	290	Above Ground Sample Station
REPEAT UPSTREAM	35703 158th St SE	290	Hose Bib
REPEAT DOWNSTREAM	35719 158th St SE	290	Hose Bib
Well #1 (Source)	16312 - 357th Ave SE	290	Raw Water Sample Prior to Treatment

COLIFORM MONITORING PLAN
FOR
SNO PUD 1 - WATER SYSTEMS
SUPPLIED BY GROUND WATER

APPENDIX-4

SNO PUD 1 - SUNDAY LAKE, System Identification No. 85205D

ROUTINE And REPEAT COLIFORM SAMPLE COLLECTION SITES

SITE 159	ADDRESS	PSI ZONE	COMMENTS
ROUTINE	2127 256TH St NW	430	Above Ground Sample Station
REPEAT UPSTREAM	2205 256th St NW	430	Hose Bib
REPEAT DOWNSTREAM	2123 256th St NW	430	Hose Bib
Well #3 (Source)	2500 256th St NW	430	Raw Water Sample Prior to Treatment
SITE 160	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE	2009 252nd St NW	430	Above Ground Sample Station
REPEAT UPSTREAM	2020 252nd St NW	430	Hose Bib
REPEAT DOWNSTREAM	2005 252nd St NW	430	Hose Bib
Well #3 (Source)	2500 256th St NW	430	Raw Water Sample Prior to Treatment
SITE 161	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE	3221 - 263rd ST NW	430	Above Ground Sample Station
REPEAT UPSTREAM	26224 - 31st Ave NW	430	Hose Bib
REPEAT DOWNSTREAM	3309 - 263rd ST NW	430	Hose Bib
Well #3 (Source)	2500 256th St NW	430	Raw Water Sample Prior to Treatment

COLIFORM MONITORING PLAN
FOR
SNO PUD 1 - WATER SYSTEMS
SUPPLIED BY GROUND WATER

APPENDIX-4

SNO PUD 1 - 212TH STREET MARKET & DELI, System Identification No. 04515Q

ROUTINE And REPEAT COLIFORM SAMPLE COLLECTION SITES

SITE 162	ADDRESS	PSI ZONE	COMMENTS
ROUTINE	26623 Old Hwy 99 N	390	Hose Bib - Pump Station
REPEAT UPSTREAM	26623 Old Hwy 99 N	390	Storage Reservoir
REPEAT DOWNSTREAM	26625 Old Hwy 99 N	390	Gas Station Faucet
Well #1 (Source)	26623 Old 99 North	390	Raw Water Sample Prior to Treatment

COLIFORM MONITORING PLAN
FOR
SNO PUD 1 - WATER SYSTEMS
SUPPLIED BY GROUND WATER

APPENDIX-4

SNO PUD 1 - KAYAK ESTATES, System Identification No. 231115

ROUTINE And REPEAT COLIFORM SAMPLE COLLECTION SITES

SITE 171	ADDRESS	PSI ZONE	COMMENTS
ROUTINE	14213 70th Ave NW	570	Above Ground Sample Station
REPEAT UPSTREAM	14318 70th Ave NW	570	Hose Bib
REPEAT DOWNSTREA	14202 70th Ave NW	570	Hose Bib
Well #2 (Source)	16000 66th Ave NW	570	Raw Water Sample Prior to Treatment
Well #3 (Source)	16000 66th Ave NW	570	Raw Water Sample Prior to Treatment
SITE 172	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE	15602 83rd Ave NW	570	Above Ground Sample Station
REPEAT UPSTREAM	8221 153rd Pl NW	570	Hose Bib
REPEAT DOWNSTREA	8321 156th St NW	570	Hose Bib
Well #2 (Source)	16000 66th Ave NW	570	Raw Water Sample Prior to Treatment
Well #3 (Source)	16000 66th Ave NW	570	Raw Water Sample Prior to Treatment
SITE 173	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE	17115 82nd Ave NW	570	Above Ground Sample Station
REPEAT UPSTREAM	16904 82nd Ave NW	570	Hose Bib
REPEAT DOWNSTREA	17128 82nd Ave NW	570	Hose Bib
Well #2 (Source)	16000 66th Ave NW	570	Raw Water Sample Prior to Treatment
Well #3 (Source)	16000 66th Ave NW	570	Raw Water Sample Prior to Treatment

COLIFORM MONITORING PLAN
FOR
SNO PUD 1 - WATER SYSTEMS
SUPPLIED BY GROUND WATER

APPENDIX-4

SNO PUD 1 - OTIS, System Identification No. 06956X

ROUTINE And REPEAT COLIFORM SAMPLE COLLECTION SITES

SITE 169	ADDRESS	PSI ZONE	COMMENTS
ROUTINE	19621 Burn Rd NE	550	Above Ground Sample Station
REPEAT UPSTREAM	19611 Burn Rd NE	550	Hose Bib
REPEAT DOWNSTREAM	19615 Burn Rd NE	550	Hose Bib
WELL (Source)	19601 Burn Rd NE	550	Raw Water Sample Prior to Treatment

COLIFORM MONITORING PLAN FOR SNO PUD 1 WATER SYSTEMS SUPPLIED BY GROUND WATER
APPENDIX 4

SNO PUD 1 - Warm Beach, System Identification No. 93000F

ROUTINE And REPEAT COLIFORM SAMPLE COLLECTION SITES

	ADDRESS	PSI ZONE	COMMENTS
ROUTINE	8629 176th ST NW	450	Above Ground Sample Station
REPEAT UPSTREAM	8627 176th ST NW	450	Hose Bib
REPEAT DOWNSTREAM	9709 176th St NW	450	Hose Bib
Well #2 (Source)	18905 92nd DR NW		Raw Water Sample Prior to Treatment
Well #4 (Source)	17202 84th Ave NW		Raw Water Sample Prior to Treatment
	ADDRESS	**PSI ZONE**	**COMMENTS**
ROUTINE	9219 188th ST NW	350	Above Ground Sample Station
REPEAT UPSTREAM	18819 Railroad Ave	350	Hose Bib
REPEAT DOWNSTREAM	9322 188th ST NW	350	Hose Bib
Well #2 (Source)	18905 92nd DR NW		Raw Water Sample Prior to Treatment
Well #4 (Source)	17202 84th Ave NW		Raw Water Sample Prior to Treatment
	ADDRESS	**PSI ZONE**	**COMMENTS**
ROUTINE	18510 Soundview Driv	232	Above Ground Sample Station
REPEAT UPSTREAM	18530 Soundview Driv	232	Hose Bib
REPEAT DOWNSTREAM	180506 Soundview Dr	232	Hose Bib
Well #2 (Source)	18905 92nd DR NW		Raw Water Sample Prior to Treatment
Well #4 (Source)	17202 84th Ave NW		Raw Water Sample Prior to Treatment
	ADDRESS	**PSI ZONE**	**COMMENTS**
ROUTINE	19108 Soundview Dr	232	Above Ground Sample Station
REPEAT UPSTREAM	19110Soundview Dr	232	Hose Bib
REPEAT DOWNSTREAM	19202 Soundview Dr	232	Hose Bib
Well #2 (Source)	18905 92nd DR NW		Raw Water Sample Prior to Treatment
Well #4 (Source)	17202 84th Ave NW		Raw Water Sample Prior to Treatment

COLIFORM MONITORING PLAN FOR SNO PUD 1 WATER SYSTEMS SUPPLIED BY GROUND WATER
APPENDIX 4

SNO PUD 1 - Warm Beach, System Identification No. 93000F

ROUTINE And REPEAT COLIFORM SAMPLE COLLECTION SITES

	ADDRESS	PSI ZONE	COMMENTS
ROUTINE	19610 Soundview Dr	350	Above Ground Sample Station
REPEAT UPSTREAM	19531 Soundview Dr	350	Hose Bib
REPEAT DOWNSTREAM	19611 Soundview Dr	350	Hose Bib
Well #2 (Source)	18905 92nd DR NW		Raw Water Sample Prior to Treatment
Well #4 (Source)	17202 84th Ave NW		Raw Water Sample Prior to Treatment

COLIFORM MONITORING PLAN
FOR
SNO PUD 1 - WATER SYSTEMS
SUPPLIED BY GROUND WATER

APPENDIX-5

SNO PUD 1 - MAY CREEK, System Identification No. 521050

ROUTINE SAMPLE SITE ADDRESSES and ROUTING LIST

Reporting Period:

Distribution System Disinfectant Residual Monitoring

Monthly Coliform Sample Chlorine Residual

Date	Cl_2 Res mg/L	Temp ˚ Celsius	Site #	Address	Sample Collection Frequency Month
			156	41217 May Creek Dr	Jan - March - May - July - Sept - Nov
			157	41009 Wallace Falls Loop Rd	1 sample @ each site for months listed above
			158	41201 Goldbar Blvd	Feb - April - June - Aug - Oct - Dec
			148	200 17th Street	1 sample @ each site for months listed above
Min	**0.00**	**0.00**			
Max	**0.00**	**0.00**			
Avg	**#DIV/0!**	**#DIV/0!**			

Weekly Distribution System Water Quality Analyses

Date	Cl_2 Res mg/L	Turbidity NTU	pH s.u.	Alkalinity CaCO3 mg/L	Hardness CaCO3 mg/L	Address
						Hydrant @ Fire Sta #54
						Hydrant @ Fire Sta #54
						Hydrant @ Fire Sta #54
						Hydrant @ Fire Sta #54
						Hydrant @ Fire Sta #54
						Hydrant @ Fire Sta #54
						Hydrant @ Fire Sta #54
						Hydrant @ Fire Sta #54
						Hydrant @ Fire Sta #54
						Hydrant @ Fire Sta #54
Min	**0.00**	**0.00**	**0.0**	**0.0**	**0.0**	
Max	**0.00**	**0.00**	**0.0**	**0.0**	**0.0**	
Avg	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	

Return completed report to DOH District Engineer within 10-days of the end of the reporting month

Report Submitted On 00/00/00, By:

Brett Gehrke
Operator Certification No.: 7311
Superintendent, Operations & Maintenance
Water Resources Division
Snohomish County Public Utility District No. 1
(425) 397-3005, Office
bagehrke@snopud.com

Current Revision: January 2019
Revised Document: October 2016
Original Document: September 2005
Y:\Water Quality\Coliform Monitoring Plan\SNO PUD 1 - WATER SYSTEMS - GROUND WATER

COLIFORM MONITORING PLAN
FOR
SNO PUD 1 - WATER SYSTEMS
SUPPLIED BY GROUND WATER

APPENDIX-5

SNO PUD 1 - SKYLITE TRACTS, System Identification No. 802201

ROUTINE SAMPLE SITE ADDRESSES and ROUTING LIST

Reporting Period:

Distribution System Disinfectant Residual Monitoring

Monthly Coliform Sample Chlorine Residual

Date	Cl_2 Res mg/L	Temp ˚ Celsius	Site #	Address	Sample Collection Frequency Month
			153	16213 358th Ave SE	January - April - July - October
			154	15910 355th Dr SE	February - May - August - November
			155	35707 158th St SE	March - June - September - December
Min	**0.00**	**0.0**			
Max	**0.00**	**0.0**			
Avg	**#DIV/0!**	**#DIV/0!**			

Weekly Distribution System Water Quality Analyses

Date	Cl_2 Res mg/L	Turbidity NTU	pH s.u.	Alkalinity CaCO3 mg/L	Hardness CaCO3 mg/L	Address
						35627 157th Pl SE
						35627 157th Pl SE
						35627 157th Pl SE
						35627 157th Pl SE
						35627 157th Pl SE
						35627 157th Pl SE
						35627 157th Pl SE
						35627 157th Pl SE
						35627 157th Pl SE
						35627 157th Pl SE
Min	**0.00**	**0.0**	**0.0**	**0.0**	**0.0**	
Max	**0.00**	**0.0**	**0.0**	**0.0**	**0.0**	
Avg	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	

Return completed report to DOH District Engineer within 10-days of the end of the reporting month

Report Submitted On 00/00/00, By:

Brett Gehrke
Operator Certification No.: 7311
Superintendent, Operations & Maintenance
Water Resources Division
Snohomish County Public Utility District No. 1
(425) 397-3005, Office
bagehrke@snopud.com

COLIFORM MONITORING PLAN
FOR
SNO PUD 1 - WATER SYSTEMS
SUPPLIED BY GROUND WATER

APPENDIX-5

SNO PUD 1 - SUNDAY LAKE, System Identification No. 85205D

ROUTINE SAMPLE SITE ADDRESSES and ROUTING LIST

Reporting Period:

Distribution System Disinfectant Residual Monitoring

Monthly Coliform Sample Chlorine Residual

Date	Cl_2 Res mg/L	Temp ˚ Celsius	Site #	Address	Sample Collection Frequency Month
			159	2127 256th St NW	January - April - July - October
			160	2009 252nd St NW	February - May - August - November
			161	3221 263rd St NW	March - June - September - December
Min	**0.00**	**0.0**			
Max	**0.00**	**0.0**			
Avg	**#DIV/0!**	**#DIV/0!**			

Weekly Distribution System Water Quality Analyses

Date	Cl_2 Res mg/L	Turbidity NTU	pH s.u.	Alkalinity CaCO3 mg/L	Hardness CaCO3 mg/L	Address
						2009 252nd St NW
						2009 252nd St NW
						2009 252nd St NW
						2009 252nd St NW
						2009 252nd St NW
						2009 252nd St NW
						2009 252nd St NW
						2009 252nd St NW
						2009 252nd St NW
						2009 252nd St NW
Min	**0.00**	**0.00**	**0.0**	**0.0**	**0.0**	
Max	**0.00**	**0.00**	**0.0**	**0.0**	**0.0**	
Avg	**0.00**	**0.00**	**0.0**	**0.0**	**0.0**	

Return completed report to DOH District Engineer within 10-days of the end of the reporting month

Report Submitted On 00/00/00, By:

Brett Gehrke
Operator Certification No.: 7311
Superintendent, Operations & Maintenance
Water Resources Division
Snohomish County Public Utility District No. 1
(425) 397-3005, Office
bagehrke@snopud.com

COLIFORM MONITORING PLAN
FOR
SNO PUD 1 - WATER SYSTEMS
SUPPLIED BY GROUND WATER

APPENDIX-5

SNO PUD 1 - Kayak Estates, System Identification No. 231115
ROUTINE SAMPLE SITE ADDRESSES and ROUTING LIST

Distribution System Disinfectant Residual Monitoring

Monthly Coliform Sample Chlorine Residual

Date	Cl_2 Res mg/L	Temp ˚ Celsius	Site #	Address	Sample Collection Frequency Month
			171	14213 70th Ave NW	January - April - July - October
			172	15602 83rd Ave NW	February - May - August - November
			173	17115 82nd Ave NW	March - June - September - December
Min	**0.00**	**0.0**			
Max	**0.00**	**0.0**			
Avg	**#DIV/0!**	**#DIV/0!**			

Weekly Distribution System Water Quality Analyses

Date	Cl_2 Res mg/L	Turbidity NTU	pH s.u.	Alkalinity CaCO3 mg/L	Hardness CaCO3 mg/L	Address
Min	**0.00**	**0.00**	**0.0**	**0.0**	**0.0**	
Max	**0.00**	**0.00**	**0.0**	**0.0**	**0.0**	
Avg	**0.00**	**0.00**	**0.0**	**0.0**	**0.0**	

Return completed report to DOH District Engineer within 10-days of the end of the reporting month

Report Submitted On 00/00/00, By:

Brett Gehrke
Operator Certification No.: 7311
Superintendent, Operations & Maintenance
Water Resources Division
Snohomish County Public Utility District No. 1
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COLIFORM MONITORING PLAN
FOR
SNO PUD 1 - WATER SYSTEMS
SUPPLIED BY GROUND WATER

APPENDIX-5

SNO PUD 1 - 212TH STREET MARKET and DELI, System Identification No. 04515Q

ROUTINE SAMPLE SITE ADDRESSES and ROUTING LIST

Reporting Period:

Distribution System Disinfectant Residual Monitoring

Monthly Coliform Sample Chlorine Residual

Date	Cl_2 Res mg/L	Temp ˚ Celsius	Site #	Address	Sample Collection Frequency Month
			162	26623 Old Hwy 99	Monthly Sample Collection Site
Min	**0.00**	**0.0**			
Max	**0.00**	**0.0**			
Avg	**#DIV/0!**	**#DIV/0!**			

Weekly Distribution System Water Quality Analyses

Date	Cl_2 Res mg/L	Turbidity NTU	pH s.u.	Alkalinity CaCO3 mg/L	Hardness CaCO3 mg/L	Address
						26623 Old Hwy 99
						26623 Old Hwy 99
						26623 Old Hwy 99
						26623 Old Hwy 99
						26623 Old Hwy 99
						26623 Old Hwy 99
						26623 Old Hwy 99
						26623 Old Hwy 99
						26623 Old Hwy 99
						26623 Old Hwy 99
Min	**0.00**	**0.00**	**0.0**	**0.0**	**0.0**	
Max	**0.00**	**0.00**	**0.0**	**0.0**	**0.0**	
Avg	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	

Return completed report to DOH District Engineer within 10-days of the end of the reporting month

Report Submitted On 00/00/00, By:

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Coliform Monitoring Plan
for SNO PUD 1 - Water Systems Supplied by Ground Water
Appendix 5

SNO PUD 1 - WARM BEACH 93000F

DISTRIBUTION SYSTEM DISINFECTANT RESIDUAL MONITORING FORM

Reporting Period:

Distribution System Disinfectant Residual Monitoring

Monthly Coliform Sample Chlorine Residual

Date	Cl_2 Res mg/L	Temp ˚ Celsius	Site #	Address	Sample Collection Frequency Month
				8629 176th St NW	Jan, March, April, June, July, Sept, Oct, Dec
				9219 188th St NW	Jan, April, June, July, Oct, Dec
				185110 Soundview Dr	Feb, May, Aug, Nov
				19108 Soundview Dr	Feb, May, Aug, Nov
				19610 Soundview Dr	March, June, Sept, Dec
Min	**0.00**	**0.0**			
Max	**0.00**	**0.0**			
Avg	**#DIV/0!**	**#DIV/0!**			

Weekly Distribution System Water Quality Analyses

Date	Cl_2 Res mg/L	Turbidity NTU	pH s.u.	Alkalinity CaCO3 mg/L	Hardness CaCO3 mg/L	Address
						8627 176th ST NW
						8627 176th ST NW
						8627 176th ST NW
						8627 176th ST NW
						8627 176th ST NW
						8627 176th ST NW
						8627 176th ST NW
						8627 176th ST NW
						8627 176th ST NW
						8627 176th ST NW
Min	**0.00**	**0.00**	**0.0**	**0.0**	**0.0**	
Max	**0.00**	**0.00**	**0.0**	**0.0**	**0.0**	
Avg	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	

Return completed report to DOH District Engineer within 10-days of the end of the reporting month

Report Submitted On 00/00/00 , By:

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APPENDIX-6

ROUTINE/REPEAT COLIFORM SAMPLE COLLECTION PROCEDURES
And
CHLORINE RESIDUAL SAMPLE COLLECTION PROCEDURES

PERSONNEL

Staffing Requirement

Routine/Repeat coliform and chlorine residual sample collection responsibilities are assigned to one “primary” SNO PUD 1 Water Distribution Specialist (WDS) staff member. The WDS is assigned and responsible for the entire routine/repeat coliform monitoring and sample collection program within all of the SNO PUD 1 - Water Systems. As scheduled priorities and personnel availability dictate, the SNO PUD 1 Water Foreman or Water Superintendent may assign other qualified personnel to collect the coliform and free chlorine residual samples.

Labor Requirement

The total labor requirement or time required for each weekly sample route is approximately 16 - 24 hours. The time will vary due to weather, driving time to the sample collection sites, and the number and location of sample sites scheduled on a specific route.

PROTECTIVE EQUIPMENT AND SAFETY

Latex or rubber gloves (when handling disinfectants or DPD reagents)

Leather work gloves (to prevent insect and spider bites when opening meter boxes)

Waste container for collecting and storing discarded or “spent” reagents

District radio (handheld/set to repeater scan and Water Shop frequency)

Traffic safety vest (WISHA / WASHDOT approved)

2–3 traffic cones

Vehicle with traffic warning flashers

Insulated “cooler” with pre-chilled refrigerator pack(s) or bagged ice

FIELD QUALITY CONTROL

The WDS sample collector should be diligent and exhibit care when performing the sample collection activity to prevent any possible contamination of the samples during the collection process. *See: Coliform Monitoring Plan for SNO PUD 1 – WATER SYSTEMS; Supplied by City of Everett Regional Water Supply System; Sections 3.4 and 3.5* for additional information and quality control procedures.

SITE LOCATION DETAILS

See Appendices 3A - 3E and 4A - 5B of the applicable Coliform Monitoring Plan

SAMPLE COLLECTION PROCEDURES

Discussion and Description

State and federal law requires water systems to monitor their distribution system's water quality for disinfectant residual (free chlorine) and the presence of coliform bacteria (total and fecal). The purpose of the monitoring is two-fold: 1). To verify the presence and maintenance of a detectable disinfectant residual to protect water quality in the event that microbial contaminants enter the distribution system, and 2). To detect any potential microbial contamination that might have entered the water distribution system.

Types of Sampling Stations

The SNO PUD 1 the above grade type of water sample collection stations to conduct this monitoring: A dedicated above ground water sample hydrants (Kupferle Eclipse No.88 or Gil EH101).

Sample Representation

An important goal of routine coliform bacteria and chlorine residual monitoring is to obtain samples that are representative of the water quality in the water main; not the tap, the household plumbing or the service line.

To accomplish this, water must be flushed from the sample station until fresh water from the main is drawn to the tap. In addition, care must be taken to insure that conditions at or in the sample tap do not falsely influence the test results.

Conditions That Can Lead to False Positive (Unsatisfactory) Results

- Bacterial contamination from soil
- Stagnant and inadequately flushed service lines
- Animal waste on or around the tap
- Oral contact of humans or animals with the tap
- Contact of the interior of the sample container with the sampler's hands
- Surface water drainage onto or into the sample tap
- Insects, slugs or rodents in contact with the sample tap
- Biofilms formed in the piping due to the absence of adequate disinfectant residual.

Conditions That Can Lead to False Negative (Satisfactory) Results

Inadequate flushing of chlorine solution from the sample tap after disinfection.

Prior to sample collection, care must be taken to adequately flush the tap with enough sample water to remove the disinfectant from the interior and exterior surfaces of the tap.

SITE SPECIFIC PROCEDURES

.

Procedures and Guidelines for Dedicated Above Ground Water Sample Hydrants

These devices are essentially configured like a fire hydrant, except that they do not have a subsurface drain. To prevent freezing and bacteria growth, the barrel of the hydrant must be pumped out after each use. Each station is connected to the water main by a dedicated water main service connection. Kupferle hydrants have an aluminum cover with a hinged door. Gil hydrants have a single piece plastic cover that must be removed to expose the sample tap.

- Unlock the cover on the sample station housing. For the hydrants, use a District series WTR key to unlock the padlock.

- Open the door (Kupferle Hydrant) or remove the station cover (Gil Hydrant). Inside there are two spigots, one large with a star shaped handle on top, a second, smaller one made of brass with a T-handle valve on the side. The tiny valve is connected to a short piece of ¼" copper tubing.

- Don rubber or latex gloves. With a handheld spray bottle filled with diluted Bacdown disinfectant, spray the sample spigots with disinfectant.

- On the Kupferle hydrants use the top end of a 6' service wrench (also called a curb key) to loosen the five sided nut on the round, black plastic, 3" valve box lid located in the ground near the base of the hydrant. Pry the loosened lid out of the "box" with a screwdriver.

- Lower the key end of the wrench into the valve box and place it on the valve nut. The valve is full open at ¼ of a turn. Leave the key wrench on the valve in the open position.

- Turn on the main sample tap valve. Let the tap run at high flow until any visible water discoloration or rust particles are flushed away, then reduce the flow and allow the tap to flush for at least two minutes.

- While the tap is flushing, fill out the Edge sample information form (see the example copy at the end of this Appendix) and place the sticker with the sample number on the lid of the coliform sample bottle. On the sample form, write the sample site number, date, time, and your name in the appropriate boxes. In the same section write in the free chlorine residual result as it is displayed on the analyzer.

- After flushing, readjust the sample flow valve to a lower, less turbulent flow rate and collect a 10 ml water sample into the glass sample vial for free chlorine residual analysis. For each sample, rinse the vial and cap out twice with tap water before conducting the analysis.

- Analyze the sample for free chlorine residual using a HACH pocket colorimeter™ (see the HACH field analysis procedures manual for details on free chlorine DPD analysis with this instrument).

- Check the Chlorine residual; if the residual chlorine concentration in the sample is greater than or equal to 0.2 mg/L, you are ok to proceed collecting a sample. If there is less than 0.2 mg/L of residual, continue flushing until the minimum residual is detected.

- Prior to collecting sample disinfect your hands with hand sanitizer.

- Confirm that the empty bottle lid is not loose, that the sterile seal has not been broken, and that the bottle is not cracked. If the cap is loose discard the bottle and use a new one. The bottle must be filled to or above the 100 ml mark and the cap must be replaced tightly. Do not overflow the bottles, they contain a de-chlorinating agent.

- After the sample bottle is filled, examine the sample for any visible debris or leaks from cracks in the bottle. If any of either are present, empty the container, discard it and collect another sample with a new bottle.

If you drop the cap when filling the bottle or touch the lip or interior of the bottle, discard it and repeat with a new bottle.

- Place the coliform sample into a cooler with a cold refrigerant pack or ice pack.
- Log the chlorine residual result onto the Edge sample information form.
- When sample collection is complete, shut the line valve with the service key (Kupferle) or turn the valve handle to the off position (Gil). This will stop the flow of water from the station.
- On the Kupferle hydrant, remove the key from the valve box, place the valve box lid back in the top of the tube and tighten the nut on the lid with the upper end of the 6' key.
- With the sample tap faucet still open, use the small T-handle to open the small valve on the ¼" copper tubing. Fit the suction end of the small bilge pump to the end of the copper tubing and pump until air is drawn in through the large sample tap. This step removes water from the barrel of the sample hydrant, which prevents freezing in cold weather. Removing the water also reduces the opportunity for bacteria to grow in the hydrant barrel between uses.
- Close the large tap faucet valve and the small ¼" valve.
- Close and lock the hydrant door (Kupferle) or replace and lock the cover (Gil).
- Flush out the HACH vial and cap with water from the sample station, refill the vial with sample water and cap it. This will dissolve any excess reagent before arriving at the next site.

Empty the contents of the free chlorine sample vial into the spent reagent collection bottle. At the conclusion of the sample collection day the spent reagents should be discarded by flushing the solution into a sanitary sewer.

Hose Bib Style Taps Located on the Outside Walls of Residences or Businesses

A pre-established agreement with the property owner for the use of routine sampling sites is preferred. If prior arrangements have not been made with the property owner, ask permission from the owner prior to collecting the sample.

- Disconnect any hoses, freeze covers, or other attachments connected to or covering the tap (leave air vacuum breakers in place).

- For outside hose bibs where the drainage will cause damage or a hazard, place a five-gallon plastic bucket under the tap to catch the sample water. Do not allow water to run into crawl space vents, under buildings or otherwise cause even minor damage to private property. In the winter, do not allow water to run over steps or sidewalks where it can create a fall hazard if it freezes. After sampling is completed, the bucket of water should be disposed of properly.

- Turn on the tap and let it flush for at least two minutes. The purpose of this flush is to draw water from the main through the service piping to the sample tap.

- To neutralize external contaminants on the exterior hose bib tap, spray bacdown disinfectant on the tap while flushing.

- While the tap is flushing, fill out the Edge sample information form (see the example copy at the end of this Appendix) and place the sticker with the sample number on the lid of the coliform sample bottle. On the sample form, write the sample site number, date, time, and your name in the appropriate boxes. In the same section write in the free chlorine residual result as it is displayed on the analyzer.

- After flushing the tap at high flow for at least two minutes; readjust the flow to a lower, less turbulent flow rate.

- Collect a 10 ml water sample into a glass sample vial from a HACH pocket colorimeter kit for free chlorine analysis with DPD. *(See the HACH field analysis procedures manual for details on free chlorine DPD analysis with this instrument)*. Rinse the vial and screw cap out with sample water at least twice before filling it with sample water.

- Check the Chlorine residual; if the residual chlorine concentration in the sample is greater than or equal to 0.2 mg/L, you are ok to proceed collecting a sample. If there is less than 0.2 mg/L of residual, continue flushing until the minimum residual is detected.

- Prior to collecting sample disinfect your hands with hand sanitizer.

- Confirm that the empty bottle lid is not loose, that the sterile seal has not been broken, and that the bottle is not cracked. If the cap is loose discard the bottle and use a new one. The bottle must be filled to or above the 100 ml mark and the

cap must be replaced tightly. Do not overflow the bottles, they contain a de-chlorinating agent.

- Examine the filled sample bottle for any visible debris or cracks. If any are present, empty and discard the bottle and then collect a new sample with a new bottle.

- Place the coliform sample into a cooler with a cold refrigerant pack and close the lid of the cooler.

- Write the chlorine residual result onto the Edge coliform sample form.

- Flush out the chlorine residual test vial and cap with water from the sample station, refill the vial with sample water and cap it. This will dissolve any excess reagent before arriving at the next site.

Empty the contents of the free chlorine sample vial into the spent reagent collection bottle. At the conclusion of the sample collection day the spent reagents should be discarded by flushing the solution into the sanitary sewer.

- Shut off the tap and replace any of the attachments you removed. Make sure the tap is not leaking and that any hose connections are firmly screwed back onto the hose bib. Freeze covers should be replaced in the position they were found.

These taps are located on the Customers' Private Property. The PUD does not want the owners to ask us to remove our sample site from their property because we have not left things exactly the way we found them.

Cold Water Taps located in Public Buildings or in Businesses

- Take a small pair of pliers, a lab towel, a new sample bottle and the HACH chlorine analysis kit into the building with you. Notify a representative of the building or business what you are doing, and what will be involved.

- If so equipped, remove the aeration screen from the end of the faucet. You may need pliers to do this. Use the towel to pad the jaws of the pliers so that the screen housing is not scratched.

- Turn on the cold water and allow the faucet to run for at least two minutes. The purpose of this flush is to draw water from the main up the service piping to the sample tap. In locations such as restrooms, flush each toilet and/or urinal to increase the draw of water from the main up the service line to the sampling

location in the building. Some locations may require numerous and repeated flushes to obtain a representative sample.

Sample sites located in large buildings should be scheduled for sample collection in late morning after the occupants of the building have drawn fresh water from the main through the plumbing.

- After flushing, readjust the sample flow to a lower, less turbulent flow rate.
- Collect a 10 ml water sample into a glass sample vial from a HACH pocket colorimeter kit for free chlorine analysis with DPD. *(See the HACH field analysis procedures manual for details on free chlorine DPD analysis with this instrument)*. Rinse the vial and screw cap out with sample water at least twice before filling it with sample water.
- Check the Chlorine residual; if the residual chlorine concentration in the sample is greater than or equal to 0.2 mg/L, you are ok to proceed collecting a sample. If there is less than 0.2 mg/L of residual, continue flushing until the minimum residual is detected.
- Prior to collecting sample disinfect your hands with hand sanitizer.
- Confirm that the empty bottle lid is not loose, that the sterile seal has not been broken, and that the bottle is not cracked. If the cap is loose discard the bottle and use a new one. The bottle must be filled to or above the 100 ml mark and the cap must be replaced tightly. Do not overflow the bottles, they contain a de-chlorinating agent.
- Examine the filled sample bottle for any visible debris or cracks. If any are present, empty and discard the bottle and then collect a new sample with a new bottle.
- Place the coliform sample into a cooler with a cold refrigerant pack and close the lid of the cooler.
- Rinse the sink thoroughly to remove any reagent water (pink color).
- After collection and chlorine analysis are complete, shut off all faucets and replace the faucet aeration screen. If there is a counter surrounding the sink, wipe it dry with a lab towel or a paper towel. Leave each location exactly as you found it, or better.

- Upon return to your vehicle, fill out the four-part Edge sample information form (see the example copy at the end of this Appendix)

- While the tap is flushing, fill out the Edge sample information form (see the example copy at the end of this Appendix) and place the sticker with the sample number on the lid of the coliform sample bottle. On the sample form, write the sample site number, date, time, and your name in the appropriate boxes. In the same section write in the free chlorine residual result as it is displayed on the analyzer.

- Log the chlorine residual result onto the coliform sample form on the line to the left of the circled "*Free"* and onto the distribution system coliform sample chlorine residual field log (see attached example).

COLIFORM MONITORING PLAN
FOR
SNO PUD 1 WATER SYSTEMS
SUPPLIED BY GROUND WATER

APPENDIX-7

County: **Snohomish**
System Name: **SNO PUD 1 - MAY CREEK**
System ID No.: **521050**
Source No.: **SO1, SO2**

Reporting Period:

Monthly Routine Coliform Site Sample Collection

Number of coliform samples submitted:

Number of unsatisfactory coliform samples:

Monthly Coliform Sample Site-Free Chlorine Residual Results

Number of sites sampled during the month:

Minimum chlorine residual: mg/L
Maximum chlorine residual: mg/L
Average chlorine residual: mg/L

Number of sites where no free chlorine residual was detected:

Continuous In-Line Chlorine Residual Monitoring @ May Creek Pump Station

Minimum chlorine residual: mg/L
Maximum chlorine residual: mg/L
Average chlorine residual: mg/L

Weekly Distribution System Free Chlorine Residual Results

Number of sites sampled during the month:

Minimum chlorine residual: mg/L
Maximum chlorine residual: mg/L
Average chlorine residual: mg/L

Number of sites where no free chlorine residual was detected:

Report Submitted On 00/00/00, By:

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Return completed report to DOH District Engineer within 10-days of the end of the reporting month

Current Revision: January 2019
Revised Document: October 2016
Original Document: September 2005
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COLIFORM MONITORING PLAN
FOR
SNO PUD 1 WATER SYSTEMS
SUPPLIED BY GROUND WATER

APPENDIX-7

County: **Snohomish**
System Name: **SNO PUD 1 - SKYLITE TRACTS**
System ID No.: **802201**
Source No.: **SO1**

Reporting Period:

Monthly Routine Coliform Site Sample Collection

Number of coliform samples submitted:

Number of unsatisfactory coliform samples:

Monthly Coliform Sample Site-Free Chlorine Residual Results

Number of sites sampled during the month:

Minimum chlorine residual: mg/L
Maximum chlorine residual: mg/L
Average chlorine residual: mg/L

Number of sites where no free chlorine residual was detected:

Continuous In-Line Chlorine Residual Monitoring @ Skylite Tracts Pump Station

Minimum chlorine residual: mg/L
Maximum chlorine residual: mg/L
Average chlorine residual: mg/L

Weekly Distribution System Free Chlorine Residual Results

Number of sites sampled during the month:

Minimum chlorine residual: mg/L
Maximum chlorine residual: mg/L
Average chlorine residual: mg/L

Number of sites where no free chlorine residual was detected:

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COLIFORM MONITORING PLAN
FOR
SNO PUD 1 WATER SYSTEMS
SUPPLIED BY GROUND WATER

APPENDIX-7

County: **Snohomish**
System Name: **SNO PUD 1 - SUNDAY LAKE**
System ID No.: **85205D**
Source No.: **SO2 ,SO3**

Reporting Period:

Monthly Routine Coliform Site Sample Collection

Number of coliform samples submitted:

Number of unsatisfactory coliform samples:

Monthly Coliform Sample Site-Free Chlorine Residual Results

Number of sites sampled during the month:

Minimum chlorine residual: mg/L
Maximum chlorine residual: mg/L
Average chlorine residual: mg/L

Number of sites where no free chlorine residual was detected:

Continuous In-Line Chlorine Residual Monitoring @ Sunday Lake Pump Station

Minimum chlorine residual: mg/L
Maximum chlorine residual: mg/L
Average chlorine residual: mg/L

Weekly Distribution System Free Chlorine Residual Results

Number of sites sampled during the month:

Minimum chlorine residual: mg/L
Maximum chlorine residual: mg/L
Average chlorine residual: mg/L

Number of sites where no free chlorine residual was detected:

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Return completed form to DOH District Engineer within 10-days of the end of the reporting month

Current Revision: January 2019
Revised Document: October 2016
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COLIFORM MONITORING PLAN
FOR
SNO PUD 1 WATER SYSTEMS
SUPPLIED BY GROUND WATER

APPENDIX-7

County: **Snohomish**
System Name: **SNO PUD 1 - 212TH STREET MARKET & DELI**
System ID No.: **04515Q**
Source No.: **SO1**

Reporting Period:

Monthly Routine Coliform Site Sample Collection

Number of coliform samples submitted:

Number of unsatisfactory coliform samples:

Monthly Coliform Sample Site-Free Chlorine Residual Results

Number of sites sampled during the month:

Minimum chlorine residual: mg/L
Maximum chlorine residual: mg/L
Average chlorine residual: mg/L

Number of sites where no free chlorine residual was detected:

Continuous In-Line Chlorine Residual Monitoring @ 212 Market Pump Station

Minimum chlorine residual: mg/L
Maximum chlorine residual: mg/L
Average chlorine residual: mg/L

Weekly Distribution System Free Chlorine Residual Results

Number of sites sampled during the month:

Minimum chlorine residual: mg/L
Maximum chlorine residual: mg/L
Average chlorine residual: mg/L

Number of sites where no free chlorine residual was detected:

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COLIFORM MONITORING PLAN
FOR
SNO PUD 1 WATER SYSTEMS
SUPPLIED BY GROUND WATER

APPENDIX-7

County: **Snohomish**
System Name: **SNO PUD 1 - KAYAK ESTATES**
System ID No.: **231115**
Source No.: **SO1/SO2**
Reporting Period:

Monthly Routine Coliform Sample Collection

Number of coliform samples submitted:	0
Number of unsatisfactory coliform samples:	0

Monthly Coliform Sample Site-Free Chlorine Residual Results

Number of sites sampled during the month:	0
Minimum chlorine residual:	0.00 mg/L
Maximum chlorine residual:	0.00 mg/L
Average chlorine residual:	0.00 mg/L
Number of sites where no free chlorine residual was detected:	0

Continuous In-Line Chlorine Residual Monitoring @ Kayak Estates Pump Station

Average daily minimum chlorine residual:	0.00 mg/L
Average daily maximum chlorine residual:	0.00 mg/L
Average daily chlorine residual:	0.00 mg/L

Weekly Distribution System Free Chlorine Residual Results

Number of sites sampled during the month:	0
Minimum chlorine residual:	0.00 mg/L
Maximum chlorine residual:	0.00 mg/L
Average chlorine residual:	0.00 mg/L
Number of sites where no free chlorine residual was detected:	0

Report Submitted On , By:

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SNO PUD 1 - WARM BEACH
SYSTEM ID 93000F

MONTHLY WATER QUALITY SUMMARY REPORT
APPENDIX 7

County: **Snohomish**
System Name: **SNO PUD 1 - WARM BEACH**
System ID No.: **93000 F**
Source No.: **SO1/SO4**

Reporting Period: December 2019

Monthly Routine Coliform Sample Collection

Number of coliform samples submitted:	2
Number of unsatisfactory coliform samples:	0

Monthly Coliform Sample Site-Free Chlorine Residual Results

Number of sites sampled during the month:	2	
Minimum chlorine residual:	0.20	mg/L
Maximum chlorine residual:	0.30	mg/L
Average chlorine residual:	0.25	mg/L
Number of sites where no free chlorine residual was detected:	0	

Continuous In-Line Chlorine Residual Monitoring @ Warm Beach Pump Station

Average daily minimum chlorine residual:	0.45	mg/L
Average daily maximum chlorine residual:	0.51	mg/L
Average daily chlorine residual:	0.48	mg/L

Weekly Distribution System Free Chlorine Residual Results

Number of sites sampled during the month:	0	
Minimum chlorine residual:	0.00	mg/L
Maximum chlorine residual:	0.00	mg/L
Average chlorine residual:	#DIV/0!	mg/L
Number of sites where no free chlorine residual was detected:	0	

Report Submitted On 00/00/00, By:

Brett Gehrke
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Water Superintendent
Water Resources Operations Maintenance and Engineering
Snohomish County Public Utility District No. 1
(425) 397-3005, Office
(425)267-6776, Fax
bagehrke@snopud.com

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Revised Document: February 2016
Current Revision: August2009
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COLIFORM MONITORING PLAN
FOR
SNO PUD 1 WATER SYSTEMS
SUPPLIED BY GROUND WATER

APPENDIX-7

County: **Snohomish**
System Name: **SNO PUD 1 - OTIS**
System ID No.: **06956X**
Source No.: **SO1**

Group-B Ground Water Supply System
Non-Chlorinated Ground Water Supply

Reporting Period:

Quarterly/Annual Coliform Site Sample Collection

Number of coliform samples submitted:

Number of unsatisfactory coliform samples:

Coliform Sample Collected @ 19621 Burn Rd NE

Report Submitted On 00/00/00, By:

Brett Gehrke
Operator Certification No.: 7311
Superintendent, Operations & Maintenance
Water Resources Division
Snohomish County Public Utility District No. 1
(425) 397-3005, Office
bagehrke@snopud.com

Return completed report to DOH District Engineer within 10-days of the end of the reporting month

Report Submitted On 00/00/00, By:
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COLIFORM MONITORING PLAN
FOR
SNO PUD 1 - WATER SYSTEMS
SUPPLIED BY GROUND WATER

APPENDIX-7A

SNO PUD 1 - MAY CREEK, System Identification No. 521050

DISTRIBUTION SYSTEM DISINFECTANT RESIDUAL MONITORING FORM

Reporting Period:

Distribution System Disinfectant Residual Monitoring

Monthly Coliform Sample Chlorine Residual

Date	Cl_2 Res mg/L	Temp ˚ Celsius	Site #	Address	Sample Collection Frequency Month
			156	41217 May Creek Dr	Jan - March - May - July - Sept - Nov
			157	41009 Wallace Falls Loop Rd	1 sample @ each site for months listed above
			158	41201 Goldbar Blvd	Feb - April - June - Aug - Oct - Dec
			148	200 17th Street	1 sample @ each site for months listed above
Min	**0.00**	**0.00**			
Max	**0.00**	**0.00**			
Avg	**#DIV/0!**	**#DIV/0!**			

Weekly Distribution System Water Quality Analyses

Date	Cl_2 Res mg/L	Turbidity NTU	pH s.u.	Alkalinity CaCO3 mg/L	Hardness CaCO3 mg/L	Address
						Hydrant @ Fire Sta #54
						Hydrant @ Fire Sta #54
						Hydrant @ Fire Sta #54
						Hydrant @ Fire Sta #54
						Hydrant @ Fire Sta #54
						Hydrant @ Fire Sta #54
						Hydrant @ Fire Sta #54
						Hydrant @ Fire Sta #54
						Hydrant @ Fire Sta #54
						Hydrant @ Fire Sta #54
Min	**0.00**	**0.00**	**0.0**	**0.0**	**0.0**	
Max	**0.00**	**0.00**	**0.0**	**0.0**	**0.0**	
Avg	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	

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COLIFORM MONITORING PLAN
FOR
SNO PUD 1 - WATER SYSTEMS
SUPPLIED BY GROUND WATER

APPENDIX-7A

SNO PUD 1 - SKYLITE TRACTS, System Identification No. 802201

DISTRIBUTION SYSTEM DISINFECTANT RESIDUAL MONITORING FORM

Reporting Period:

Distribution System Disinfectant Residual Monitoring

Monthly Coliform Sample Chlorine Residual

Date	Cl_2 Res mg/L	Temp ° Celsius	Site #	Address	Sample Collection Frequency Month
			153	16213 358th Ave SE	January - April - July - October
			154	15910 355th Dr SE	February - May - August - November
			155	35707 158th St SE	March - June - September - December
Min	**0.00**	**0.0**			
Max	**0.00**	**0.0**			
Avg	**#DIV/0!**	**#DIV/0!**			

Weekly Distribution System Water Quality Analyses

Date	Cl_2 Res mg/L	Turbidity NTU	pH s.u.	Alkalinity CaCO3 mg/L	Hardness CaCO3 mg/L	Address
						35627 157th Pl SE
						35627 157th Pl SE
						35627 157th Pl SE
						35627 157th Pl SE
						35627 157th Pl SE
						35627 157th Pl SE
						35627 157th Pl SE
						35627 157th Pl SE
						35627 157th Pl SE
						35627 157th Pl SE
Min	**0.00**	**0.0**	**0.0**	**0.0**	**0.0**	
Max	**0.00**	**0.0**	**0.0**	**0.0**	**0.0**	
Avg	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	

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COLIFORM MONITORING PLAN
FOR
SNO PUD 1 - WATER SYSTEMS
SUPPLIED BY GROUND WATER

APPENDIX-7A

SNO PUD 1 - SUNDAY LAKE, System Identification No. 85205D

DISTRIBUTION SYSTEM DISINFECTANT RESIDUAL MONITORING FORM

Reporting Period:

Distribution System Disinfectant Residual Monitoring					
Monthly Coliform Sample Chlorine Residual					
Date	**Cl_2 Res mg/L**	**Temp ˚ Celsius**	**Site #**	**Address**	**Sample Collection Frequency Month**
			159	2127 256th St NW	January - April - July - October
			160	2009 252nd St NW	February - May - August - November
			161	3221 263rd St NW	March - June - September - December
Min	**0.00**	**0.0**			
Max	**0.00**	**0.0**			
Avg	**#DIV/0!**	**#DIV/0!**			

Weekly Distribution System Water Quality Analyses						
Date	**Cl_2 Res mg/L**	**Turbidity NTU**	**pH s.u.**	**Alkalinity CaCO3 mg/L**	**Hardness CaCO3 mg/L**	**Address**
						2127 256th St NW
						2127 256th St NW
						2127 256th St NW
						2127 256th St NW
						2127 256th St NW
						2127 256th St NW
						2127 256th St NW
						2127 256th St NW
						2127 256th St NW
						2127 256th St NW
Min	**0.00**	**0.0**	**0.0**	**0.0**	**0.0**	
Max	**0.00**	**0.0**	**0.0**	**0.0**	**0.0**	
Avg	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	

Report Submitted On 00/00/00, By:

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COLIFORM MONITORING PLAN
FOR
SNO PUD 1 - WATER SYSTEMS
SUPPLIED BY GROUND WATER

APPENDIX-7A

SNO PUD 1 - Kayak Estates, System Identification No. 231115

DISTRIBUTION SYSTEM DISINFECTANT RESIDUAL MONITORING FORM

Reporting Period:

Distribution System Disinfectant Residual Monitoring

Monthly Coliform Sample Chlorine Residual

Date	Cl_2 Res mg/L	Temp ˚ Celsius	Site #	Address	Sample Collection Frequency Month
			171	14213 70th Ave NW	January - April - July - October
			172	15602 83rd Ave NW	February - May - August - November
			173	17115 82nd Ave NW	March - June - September - December
Min	**0.00**	**0.0**			
Max	**0.00**	**0.0**			
Avg	**#DIV/0!**	**#DIV/0!**			

Weekly Distribution System Water Quality Analyses

Date	Cl_2 Res mg/L	Turbidity NTU	pH s.u.	Alkalinity CaCO3 mg/L	Hardness CaCO3 mg/L	Address
						14213 - 70th Ave W
						14213 - 70th Ave W
						14213 - 70th Ave W
						14213 - 70th Ave W
						14213 - 70th Ave W
						14213 - 70th Ave W
						14213 - 70th Ave W
						14213 - 70th Ave W
						14213 - 70th Ave W
Min	**0.00**	**0.00**	**0.0**	**0.0**	**0.0**	
Max	**0.00**	**0.00**	**0.0**	**0.0**	**0.0**	
Avg	**0.00**	**0.00**	**0.0**	**0.0**	**0.0**	

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Operator Certification No.: 007311
Water Superintendent
Water Resources Operations Maintenance and Engineering
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Current Revision: March 2016
Revised Document: January 2012
Original Document: September 2005
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COLIFORM MONITORING PLAN
FOR
SNO PUD 1 - WATER SYSTEMS
SUPPLIED BY GROUND WATER

APPENDIX-7A

SNO PUD 1 - 212TH STREET MARKET and DELI, System Identification No. 04515Q

DISTRIBUTION SYSTEM DISINFECTANT RESIDUAL MONITORING FORM

Reporting Period:

Distribution System Disinfectant Residual Monitoring

Monthly Coliform Sample Chlorine Residual

Date	Cl_2 Res mg/L	Temp ˚ Celsius	Site #	Address	Sample Collection Frequency Month
			162	26623 Old Hwy 99	Monthly Sample Collection Site
Min	**0.00**	**0.0**			
Max	**0.00**	**0.0**			
Avg	**#DIV/0!**	**#DIV/0!**			

Weekly Distribution System Water Quality Analyses

Date	Cl_2 Res mg/L	Turbidity NTU	pH s.u.	Alkalinity CaCO3 mg/L	Hardness CaCO3 mg/L	Address
						26623 Old Hwy 99
						26623 Old Hwy 99
						26623 Old Hwy 99
						26623 Old Hwy 99
						26623 Old Hwy 99
						26623 Old Hwy 99
						26623 Old Hwy 99
						26623 Old Hwy 99
						26623 Old Hwy 99
Min	**0.00**	**0.00**	**0.0**	**0.0**	**0.0**	
Max	**0.00**	**0.00**	**0.0**	**0.0**	**0.0**	
Avg	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	

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Coliform Monitoring Plan
for SNO PUD 1 - Water Systems Supplied by Ground Water
Appendix 7A

SNO PUD 1 - WARM BEACH 93000F

DISTRIBUTION SYSTEM DISINFECTANT RESIDUAL MONITORING FORM

Reporting Period:

Distribution System Disinfectant Residual Monitoring

Monthly Coliform Sample Chlorine Residual

Date	Cl_2 Res mg/L	Temp ˚ Celsius	Site #	Address	Sample Collection Frequency Month
				8629 176th St NW	Jan, March, April, June, July, Sept, Oct, Dec
				9219 188th St NW	Jan, April, June, July, Oct, Dec
				185110 Soundview Dr	Feb, May, Aug, Nov
				19108 Soundview Dr	Feb, May, Aug, Nov
				19610 Soundview Dr	March, June, Sept, Dec
Min	**0.00**	**0.0**			
Max	**0.00**	**0.0**			
Avg	**#DIV/0!**	**#DIV/0!**			

Weekly Distribution System Water Quality Analyses

Date	Cl_2 Res mg/L	Turbidity NTU	pH s.u.	Alkalinity CaCO3 mg/L	Hardness CaCO3 mg/L	Address
						8627 176th ST NW
						8627 176th ST NW
						8627 176th ST NW
						8627 176th ST NW
						8627 176th ST NW
						8627 176th ST NW
						8627 176th ST NW
						8627 176th ST NW
						8627 176th ST NW
						8627 176th ST NW
Min	**#REF!**	**#REF!**	**#REF!**	**#REF!**	**#REF!**	
Max	**#REF!**	**#REF!**	**#REF!**	**#REF!**	**#REF!**	
Avg	**#REF!**	**#REF!**	**#REF!**	**#REF!**	**#REF!**	

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COLIFORM MONITORING PLAN
FOR
SNO PUD 1 - WATER SYSTEMS
SUPPLIED BY GROUND WATER

APPENDIX-8

SNO PUD 1 - MAY CREEK, System Identification No. 521050
MAY CREEK - POST DISINFECTION TREATMENT FACILITY MONITORING FORM

FINISHED WATER PRODUCTION				CHEMICAL USAGE NaOCL 5.25%		PLANT WATER QUALITY								SYSTEM WATER QUALITY			
Date	Flow Meter Totalizer	Total Cubic Ft	Flow MG	Solution Used Gals	Dosage Rate mg/L	Cl_2 Res Post - NaOCL mg/L	Cl_2 Res Analyzer mg/L	Temp ° Celsius	pH s.u.	Condutivity	Alkalinity CaCO3 mg/L	Hardness CaCO3 mg/L	Turbidity NTU	Cl_2 Res mg/L	Temp ° Celsius	pH s.u.	Turbidity NTU
00/01/08			0.000		#DIV/0!												
2			0.000		#DIV/0!												
3			0.000		#DIV/0!												
4			0.000		#DIV/0!												
5			0.000		#DIV/0!												
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30			0.000		#DIV/0!												
31			0.000		#DIV/0!												
Total		**0**	**0.000**	**0.0**													
Min		**0**	**0.000**	**0.00**	**#DIV/0!**	**0.00**	**0.00**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.00**	**0.00**	**0.0**	**0.0**	**0.00**
Max		**0**	**0.000**	**0.00**	**#DIV/0!**	**0.00**	**0.00**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.00**	**0.00**	**0.0**	**0.0**	**0.00**
Avg		**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**

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COLIFORM MONITORING PLAN
FOR
SNO PUD 1 - WATER SYSTEMS
SUPPLIED BY GROUND WATER

APPENDIX-8

SNO PUD 1 - SKYLITE TRACTS, System Identification No. 802201
SKYLITE TRACTS - POST DISINFECTION TREATMENT FACILITY MONITORING FORM

FINISHED WATER PRODUCTION				CHEMICAL USAGE NaOCL 5.25%		PLANT WATER QUALITY								SYSTEM WATER QUALITY			
Date	Flow Meter Totalizer	Total Cubic Ft	Flow MG	Solution Used Gals	Dosage Rate mg/L	Cl_2 Res Post - NaOCL mg/L	Cl_2 Res Analyzer mg/L	Temp ° Celsius	pH s.u.	Condutivity	Alkalinity CaCO3 mg/L	Hardness CaCO3 mg/L	Turbidity NTU	Cl_2 Res mg/L	Temp ° Celsius	pH s.u.	Turbidity NTU
00/01/08			0.000		#DIV/0!												
2			0.000		#DIV/0!												
3			0.000		#DIV/0!												
4			0.000		#DIV/0!												
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28			0.000		#DIV/0!												
29			0.000		#DIV/0!												
30			0.000		#DIV/0!												
31			0.000		#DIV/0!												
Total		**0**	**0.000**	**0.00**													
Min		**0**	**0.000**	**0.00**	**#DIV/0!**	**0.00**	**0.00**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.00**	**0.00**	**0.0**	**0.0**	**0.00**
Max		**0**	**0.000**	**0.00**	**#DIV/0!**	**0.00**	**0.00**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.00**	**0.00**	**0.0**	**0.0**	**0.00**
Avg		**#DIV/0!**	**0.000**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**

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COLIFORM MONITORING PLAN
FOR
SNO PUD 1 - WATER SYSTEMS
SUPPLIED BY GROUND WATER

SNO PUD 1 - SUNDAY LAKE, System Identification No. 85205D
SUNDAY LAKE - POST DISINFECTION and TREATMENT MONITORING FORM

APPENDIX-8

FINISHED WATER PRODUCTION				CHEMICAL USAGE				TREATMENT PLANT WATER QUALITY														SYSTEM WATER QUALITY		
				NaOCL 5.25%		$KMnO_4$ 0.53%		Raw Water							Finished Water										
Date	Flow Meter Totalizer	Total Cubic Ft	Finished Water Flow MG	Solution Used Gals	Dosage Rate mg/L	Solution Used Gals	Dosage Rate mg/L	Temp ° Celsius	Turbidity NTU	pH s.u.	Fe mg/L	Mn mg/L	Alkalinity CaCO3 mg/L	Hardness CaCO3 mg/L	Temp ° Celsius	Cl_2 Res mg/L	Cl_2 Res Analyzer mg/L	Turbidity NTU	pH s.u.	Fe mg/L	Mn mg/L	Alkalinity CaCO3 mg/L	Hardness CaCO3 mg/L	Cl_2 Res mg/L	Turbidity NTU	pH s.u.
00/01/08			0.000		#DIV/0!		#DIV/0!																			
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3			0.000		#DIV/0!		#DIV/0!																			
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29			0.000		#DIV/0!		#DIV/0!																			
30			0.000		#DIV/0!		#DIV/0!																			
31			0.000		#DIV/0!		#DIV/0!																			
Total		**0**	**0.000**	**0.0**		**0.0**																				
Min		**0**	**0.000**	**0.00**	**#DIV/0!**	**0.00**	**#DIV/0!**	**0.0**	**0.00**	**0.0**	**0.000**	**0.000**	**0.0**	**0.0**	**0.0**	**0.00**	**0.00**	**0.00**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.00**	**0.00**	**0.0**
Max		**0**	**0.000**	**0.00**	**#DIV/0!**	**0.00**	**#DIV/0!**	**0.0**	**0.00**	**0.0**	**0.000**	**0.000**	**0.0**	**0.0**	**0.0**	**0.00**	**0.00**	**0.00**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.00**	**0.00**	**0.0**
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Return completed report to DOH District Engineer within 10-days of the end of the reporting month

Report Submitted On 00/00/00, By:

Brett Gehrke
Operator Certification No.: 7311
Superintendent, Operations & Maintenance
Water Resources Division
Snohomish County Public Utility District No. 1
(425) 397-3005, Office
bagehrke@snopud.com

COLIFORM MONITORING PLAN
FOR
SNO PUD 1 - WATER SYSTEMS
SUPPLIED BY GROUND WATER

APPENDIX-8

SNO PUD 1 - 212TH STREET MARKET and DELI, System Identification No. 04515Q
212TH STREET MARKET - POST DISINFECTION TREATMENT FACILITY MONITORING FORM

FINISHED WATER PRODUCTION				CHEMICAL USAGE NaOCL 2.63%		PLANT WATER QUALITY								SYSTEM WATER QUALITY			
Date	Flow Meter Totalizer	Total Cubic Ft	Flow MG	Solution Used Gals	Dosage Rate mg/L	Cl_2 Res Post - NaOCL mg/L	Cl_2 Res Analyzer mg/L	Temp ° Celsius	pH s.u.	Condutivity	Alkalinity CaCO3 mg/L	Hardness CaCO3 mg/L	Turbidity NTU	Cl_2 Res mg/L	Temp ° Celsius	pH s.u.	Turbidity NTU
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Total		**0.0000**	**0.0000**	**0.000**													
Min		**0.0000**	**0.0000**	**0.000**	**#DIV/0!**	**0.00**	**0.00**	**0.0**	**0.0**	**0**	**0.0**	**0.0**	**0.00**	**0.00**	**0.0**	**0.0**	**0.00**
Max		**0.0000**	**0.0000**	**0.000**	**#DIV/0!**	**0.00**	**0.00**	**0.0**	**0.0**	**0**	**0.0**	**0.0**	**0.00**	**0.00**	**0.0**	**0.0**	**0.00**
Avg		**#DIV/0!**	**0.0000**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**

Return completed report to DOH District Engineer within 10-days of the end of the reporting month

Report Submitted On 00/00/00, By:

Brett Gehrke
Operator Certification No.: 7311
Superintendent, Operations & Maintenance
Water Resources Division
Snohomish County Public Utility District No. 1
(425) 397-3005, Office
bagehrke@snopud.com

COLIFORM MONITORING PLAN
FOR
SNO PUD 1 - WATER SYSTEMS
SUPPLIED BY GROUND WATER

SNO PUD 1 - Kayak Estates, System Identification No. 231115
Kayak Estates - POST DISINFECTION and TREATMENT MONITORING FORM

APPENDIX-8

FINISHED WATER PRODUCTION				CHEMICAL USAGE				TREATMENT PLANT WATER QUALITY														SYSTEM WATER QUALITY		
				NaOCl 12.50%		$KMnO_4$ 0.53%		Raw Water							Finished Water										
Date	Flow Meter Totalizer	Total Cubic Ft	Finished Water Flow MG	Solution Used Gals	Dosage Rate mg/L	Solution Used Gals	Dosage Rate mg/L	Temp ° Celsius	Turbidity NTU	pH s.u.	Fe mg/L	Mn mg/L	Alkalinity CaCO3 mg/L	Hardness CaCO3 mg/L	Temp ° Celsius	Cl_2 Res mg/L	Cl_2 Res Analyzer mg/L	Turbidity NTU	pH s.u.	Fe mg/L	Mn mg/L	Alkalinity CaCO3 mg/L	Hardness CaCO3 mg/L	Cl_2 Res mg/L	Turbidity NTU	pH s.u.
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Min		**0**	**0.000**	**0.00**	**#DIV/0!**	**0.00**	**#DIV/0!**	**0.0**	**0.00**	**0.0**	**0.000**	**0.000**	**0.0**	**0.0**	**0.0**	**0.00**	**0.00**	**0.00**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.00**	**0.00**	**0.0**
Max		**0**	**0.000**	**0.00**	**#DIV/0!**	**0.00**	**#DIV/0!**	**0.0**	**0.00**	**0.0**	**0.000**	**0.000**	**0.0**	**0.0**	**0.0**	**0.00**	**0.00**	**0.00**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.00**	**0.00**	**0.0**
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Return completed report to DOH District Engineer within 10-days of the end of the reporting month

Report Submitted On 00/00/00, By:

Brett Gehrke
Operator Certification No.: 7311
Superintendent, Operations & Maintenance
Water Resources Division
Snohomish County Public Utility District No. 1
(425) 397-3005, Office
bagehrke@snopud.com

COLIFORM MONITORING PLAN
FOR
SNO PUD 1 - WATER SYSTEMS
SUPPLIED BY GROUND WATER

Reporting Period:
WARM BEACH - POST DISINFECTION TREATMENT FACILITY MONITORING FORM

APPENDIX-8

FINISHED WATER PRODUCTION				CHEMICAL USAGE						TREATMENT PLANT WATER QUALITY SO4															SYSTEM WATER QUALITY		
				NaOCL 12.5%			$KMnO_4$ 0.50%			Raw Water							Finished Water											
Date	Flow Meter Totalizer	Total Cubic Ft	Finished Water Flow MG	Solution Used Gals	Solution Added Gals	Dosage Rate mg/L	Solution Used Gals	Solution Added Gals	Dosage Rate mg/L	Temp ° Celsius	Turbidity NTU	pH s.u.	Fe mg/L	Mn mg/L	Alkalinity CaCO3 mg/L	Hardness CaCO3 mg/L	Temp ° Celsius	Cl_2 Res mg/L	Cl_2 Res Analyzer mg/L	Turbidity NTU	pH s.u.	Fe mg/L	Mn mg/L	Alkalinity CaCO3 mg/L	Hardness CaCO3 mg/L	Cl_2 Res mg/L	Turbidity NTU	pH s.u.
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Min		**0**	**0.000**	**0.0**	**0.0**	**0.00**	**0.0**	**0.0**	**0.00**	**0.0**	**0.00**	**0.0**	**0.000**	**0.000**	**0.0**	**0.0**	**0.0**	**0.00**	**0.00**	**0.00**	**0.0**	**0.000**	**0.000**	**0.0**	**0.0**	**0.00**	**0.00**	**0.0**
Max		**0**	**0.000**	**0.0**	**0.0**	**0.00**	**0.0**	**0.0**	**0.00**	**0.0**	**0.00**	**0.0**	**0.000**	**0.000**	**0.0**	**0.0**	**0.0**	**0.00**	**0.00**	**0.00**	**0.0**	**0.000**	**0.000**	**0.0**	**0.0**	**0.00**	**0.00**	**0.0**
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Return completed report to DOH District Engineer within 10-days of the end of the reporting month

Report Submitted On 00/00/00, By:

Brett Gehrke
Operator Certification No.: 007311
Water Superintendent
Water Resources Operations Maintenance and Engineering
Snohomish County Public Utility District No. 1
(425) 397-3005, Office
(425)267-6776, Fax
bagehrke@snopud.com

NOTIFICATION CONTACT INFORMATION for DOH and SNO PUD 1

Dept. of Health, NW Regional Office Contact List:
NORTHWEST DRINKING WATER OPERATIONS
20435 72nd Ave S, Suite 200, K17-12
Kent WA 98032-2358
MAIN (253) 395-6750 • FAX (253) 395-6760 • TTY Relay Service 1-800-833-6388

DOH - After Hours Hotline for Drinking Water Emergencies: (877) 481-4901

Carol Stuckey; NW Regional Office Coliform Program Manager
(253) 395-6775
Carol.Stuckey@doh.wa.gov

Erika Lindsey ; Snohomish County Regional Engineer
(253) 395-6766
Erika.lindsey@doh.wa.gov

Derek Pell; NW Assistant Regional Manager
(253) 395-6763
Derek.Pell@doh.wa.gov

Snohomish County Public Utility District No. 1 - Water Resources Division Contact List:

P.O. Box 1107
Everett, Washington 98206-1107

SNO PUD 1 – Emergency After Hours Contact Numbers:

(***425) 879-6735, Water On-Call Duty Phone***
(425) 783-1000, SNO PUD 1 – Dispatch Center

Brant Wood, Water Resources Operations and Maintenance, Engineering, Senior Manager
(425) 397-3003, Office
(425)231-5643, Cell Phone
bewood@snopud.com

Brett Gehrke, Water Resources Division Operations and Maintenance, Superintendent
(425) 397-3005, office
(425) 359-0403, Cell phone
bagehrke@snopud.com

NOTIFICATION CONTACT INFORMATION for DOH and SNO PUD 1

Scott Schuller, Water Resources Division Operations and Maintenance, Water Inspector
(425) 397-3052, Office
(425) 239-0794, Cell
rsschuller@snopud.com

Howard Smith, Water Resources Division Operations and Maintenance, Water Foreman
(425) 397-3050, Office
(425) 239-6471, Cell
hfsmith@snopud.com

Dale Aschenbrenner Water Resources Division Operations and Maintenance, Water Foreman
(425) 397-3051, Office
(425) 239-5763, Cell
daaschenbrenner@snopud.com

APPENDIX-10A

SNO PUD 1 – Public Notification Example Letter

Coliform Maximum Contaminant Level (MCL) Exceeded

E.Coli MCL Violation –*E. coli* Bacteria

The Public Notification (Example) Letter for exceeding an Acute MCL is inserted in the binder insert behind this page. A similar letter will be distributed to customers within the effected water system.

EXAMPLE LETTER

DRINKING WATER WARNING

The Snohomish County Public Utility Water System **XXXXXX**, **ID# XXXXXX** located in Snohomish County is contaminated with *E. coli* bacteria.

E. coli bacteria were detected/confirmed in the water supply on (date). These bacteria can make you sick and are a particular concern for people with weakened immune systems.

DO NOT DRINK THE WATER WITHOUT BOILING IT FIRST. Bring all water to a boil, let it boil 3 – 5 minutes, and let it cool before using. Boiled or purchased bottled water should be used for drinking, making ice, brushing teeth, washing dishes, and food preparation until *further notice*. Boiling kills bacteria and other organisms in the water.

E. coli are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, some of the elderly, and people with severely compromised immune systems.

The symptoms above are not caused only by organisms in drinking water. If you experience any of these symptoms and they persist, you may want to seek medical advice. People at increased risk should seek advice about drinking water from their health care provider.

What happened? What is the suspected or known source of contamination?

The following is being done to correct the problem:

We will consult with the State Department of Health about this incident. We will notify you when you no longer need to boil the water. We anticipate resolving the problem by (date).

For more information regarding this issue please contact; Brett Gehrke, Superintendent of Operations and Maintenance, Water Resources Division, Snohomish County PUD No. 1. You may contact Brett at telephone number (425) 397-3005 or Email address; bagehrke@snopud.com

Please share this notice with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distribution copies by hand or mail.

This notice is sent to you on (date), by; Brant E. Wood, P.E., Senior Manager, Water Resources Operations, Maintenance and Engineering, Snohomish County PUD No. 1. You may contact Brant at telephone number (425) 397-3003 or Email address; bewood@snopud.com

SNO PUD 1 – Public Notification Example Letter

The Public Notification (Example) Letter for a Treatment Technique violation is inserted in the binder insert behind this page. A similar letter will be distributed to customers within the effected water system.

A Treatment Technique Notification Certification Form is inserted in the binder behind the example letter. The form is required to be completed and submitted to the DOH immediately following the distribution of the Public Notification Letter.

EXAMPLE LETTER

IMPORTANT NOTICE ABOUT YOUR WATER SYSTEM
Coliform Maximum Contaminant Level (MCL)

The Snohomish County PUD No. 1 **XXXXXX Water System**, **ID# XXXXXX** in Snohomish County routinely monitors for the presence of total coliform bacteria. The District recently detected and confirmed (coliform / E.coli bacteria)_____ in recent sampling. The District did not conduct a(n) (assessment/ correct sanitary defects)_____ in a 30 day timeframe as outlined by the Washington Department of Health. Although this incident was not an emergency, as our customer, you have a right to know what happened and what we did or are doing to correct the situation.

Coliforms are bacteria which are naturally present in the environment and are used as an indicator that other; potentially-harmful, bacteria may be present. Coliforms were found in more samples than allowed and this was a warning of potential problems

You do not need to boil your water. People with severely compromised immune systems, infants, and some elderly may at be an increased risk and may want to contact their health care provider for additional guidance.

What happened? What is the suspected or known source of contamination?

At this time:
☐ The problem is resolved.
☐ We anticipate completing the corrective action by ____ / ____ / ____.
☐ Other _____.

For more information regarding this issue please contact; Brett Gehrke, Superintendent of Operations and Maintenance, Water Resources Division, Snohomish County PUD No. 1. You may contact Brett at telephone number (425) 397-3005 or Email address; bagehrke@snopud.com

Please share this notice with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

This notice is sent to you on (date), by; Brant E. Wood, P.E., Senior Manager, Water Resources Operations, Maintenance and Engineering, Snohomish County PUD No. 1. You may contact Brant at telephone number (425) 397-3003 or Email address; bewood@snopud.com

Washington State Department of Health
Division of Environmental Health
Office of Drinking Water

Coliform Treatment Technique Public Notice Certification Form

The purpose of this form (below) is to provide documentation to the department that public notice was distributed.
Please check the appropriate box and fill in the date that the notice was distributed:

☐ Notice was mailed to all water customers on ____ / ____/____.

☐ Notice was hand delivered to all water customers on ___ / ___ /___.

☐ Notice was posted (*with department approval*) at:

_____ on ___ / ___ /____.

_____ _____

_____

Signature of owner or operator:_____ _____(Date)

Brant E. Wood, P.E.
Senior Manager
Water Resources Operations, Maintenance and Engineering
Snohomish County PUD No. 1
(425) 397-3003, Office
(425) 267-6202, Fax
bewood@snopud.com

The Department of Health is an equal opportunity agency. For persons with disabilities, this form is available on request in other formats. To submit a request, please call 1-800-525-0127 (TTY 1-800-833-6388).

Send copy of completed notification and certification to:

☐ ***Eastern Drinking Water Operations, 1500 West Fourth Ave., Suite 305, Spokane WA 99204 or fax to (509) 456-2997***

☐ ***Northwest Drinking Water Operation, 20435 72nd Ave South, Suite 200, Kent WA 98032 or fax to (253) 395-6760***

☐ ***Southwest Drinking Water Operation, PO Box 47823, Olympia WA 98504 or fax to (360) 664-8058***

SNOHOMISH COUNTY PUD
PUBLIC UTILITY DISTRICT NO. 1

425-397-3000

WARNING:

Do not drink tap water without boiling it first!

☐ **Fecal coliform**
☐ **E. coli bacteria**
☐ **Other:** _____

were detected in the water supply on:
(date) _____.

Boiling kills bacteria and other organisms in the water:

- **Bring water to a rolling boil for one minute**
- **Let water cool before using**

To avoid possible illness: use boiled or purchased bottled water for drinking, making ice, brushing teeth, washing dishes, and food preparation until further notice.

Contact your doctor, if you experience one or more of these symptoms: nausea, cramps, diarrhea, jaundice, headache and/or fatigue. People with chronic illnesses, infants and the elderly may be at higher risk and should seek medical advice.

Water System: _____
I.D.: _____
County: _____
Contact: _____
Telephone: _____
Date notice distributed: _____

What is fecal coliform and E. coli?

Fecal coliform and E. coli are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these waters can cause short-term effects, such as diarrhea, cramps, nausea, headaches or other symptoms. They may pose a special health risk for infants, young children, some of the elderly, and people with severely compromised immune systems.

How long will this warning be in effect?

We will consult with the Washington State Department of Health about this incident. We will notify you when you no longer need to boil the water.

Vea al reverso para la versión en Español.

SNOHOMISH COUNTY PUD
PUBLIC UTILITY DISTRICT NO. 1

425-397-3000

WARNING:

Do not drink tap water without boiling it first!

☐ Fecal coliform
☐ E. coli bacteria
☐ Other: _____

were detected in the water supply on:
(date) _____.

Boiling kills bacteria and other organisms in the water:

- Bring water to a rolling boil for one minute
- Let water cool before using

To avoid possible illness: use boiled or purchased bottled water for drinking, making ice, brushing teeth, washing dishes, and food preparation until further notice.

Contact your doctor, if you experience one or more of these symptoms: nausea, cramps, diarrhea, jaundice, headache and/or fatigue. People with chronic illnesses, infants and the elderly may be at higher risk and should seek medical advice.

Water System: _____
I.D.: _____
County: _____
Contact: _____
Telephone: _____
Date notice distributed: _____

What is fecal coliform and E. coli?

Fecal coliform and E. coli are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these waters can cause short-term effects, such as diarrhea, cramps, nausea, headaches or other symptoms. They may pose a special health risk for infants, young children, some of the elderly, and people with severely compromised immune systems.

How long will this warning be in effect?

We will consult with the Washington State Department of Health about this incident. We will notify you when you no longer need to boil the water.

Vea al reverso para la versión en Español.

SNOHOMISH COUNTY PUD
PUBLIC UTILITY DISTRICT NO. 1

425-397-3000

ADVERTENCIA:

¡No tome el agua de la llave sin antes hervirla!

☐ **Bacteria coliforme fecal**
☐ **Bacteria E. coli**
☐ **Otra:** _____

fueron encontradas en su sistema de agua:
(el día)_____.

Hervir el agua mata a las bacterias y otros organismos en el agua:

- **Ponga el agua en la estufa hasta que hierva y deje hervir el agua por un minuto**
- **Deje enfriar el agua antes de usarla**

Para evitar posibles enfermedades y hasta nuevo aviso: use agua hervida o agua potable embotellada para tomar, hacer hielo, limpiarse los dientes, lavar los platos y para preparar comidas.

Hable con su doctor si usted tiene uno o más de los siguientes síntomas: náusea, dolor estomacal, diarrea, ictericia, dolores de cabeza y/o cansancio. La gente con enfermedades crónicas, bebés y personas mayores de edad, pueden estar en situación de alto riesgo y deben consultar con su médico o proveedores de servicios médicos.

Sistema de agua: _____
I.D.: _____
Condado: _____
Contacto: _____
Teléfono: _____
Fecha de notificación: _____

¿Qué son las bacterias coliforme fecal y E. coli?

Coliformes fecales o E. coli son bacterias cuya presencia indica que el agua esta contaminada con desechos humanos o de animales. Microbios de esos desechos pueden causar diarrea, dolor estomacal, náusea, dolores de cabeza u otros síntomas. Pueden representar un peligro para la salud de bebés, niños y niñas de corta edad y personas con sistemas inmunológicos en alto riesgo.

¿Por cuánto tiempo va a estar en efecto esta advertencia?

Vamos a consultar con el Departamento de Salud del estado de Washington acerca de este incidente. Le vamos a notificar cuando ya no sea necesario hervir el agua.

See reverse side for English version.

SNOHOMISH COUNTY PUD
PUBLIC UTILITY DISTRICT NO. 1

425-397-3000

ADVERTENCIA:

¡No tome el agua de la llave sin antes hervirla!

☐ **Bacteria coliforme fecal**
☐ **Bacteria E. coli**
☐ **Otra:** _____

fueron encontradas en su sistema de agua:
(el día)_____.

Hervir el agua mata a las bacterias y otros organismos en el agua:

- **Ponga el agua en la estufa hasta que hierva y deje hervir el agua por un minuto**
- **Deje enfriar el agua antes de usarla**

Para evitar posibles enfermedades y hasta nuevo aviso: use agua hervida o agua potable embotellada para tomar, hacer hielo, limpiarse los dientes, lavar los platos y para preparar comidas.

Hable con su doctor si usted tiene uno o más de los siguientes síntomas: náusea, dolor estomacal, diarrea, ictericia, dolores de cabeza y/o cansancio. La gente con enfermedades crónicas, bebés y personas mayores de edad, pueden estar en situación de alto riesgo y deben consultar con su médico o proveedores de servicios médicos.

Sistema de agua: _____
I.D.: _____
Condado: _____
Contacto: _____
Teléfono: _____
Fecha de notificación: _____

¿Qué son las bacterias coliforme fecal y E. coli?

Coliformes fecales o E. coli son bacterias cuya presencia indica que el agua esta contaminada con desechos humanos o de animales. Microbios de esos desechos pueden causar diarrea, dolor estomacal, náusea, dolores de cabeza u otros síntomas. Pueden representar un peligro para la salud de bebés, niños y niñas de corta edad y personas con sistemas inmunológicos en alto riesgo.

¿Por cuánto tiempo va a estar en efecto esta advertencia?

Vamos a consultar con el Departamento de Salud del estado de Washington acerca de este incidente. Le vamos a notificar cuando ya no sea necesario hervir el agua.

See reverse side for English version.

COLIFORM MONITORING PLAN
FOR
SNO PUD 1 – WATER SYSTEMS
SUPPLIED BY CITY OF EVERETT REGIONAL WATER SUPPLY SYSTEM

APPENDIX-11 212th Market

A. *E. coli*-Present Sample Response

Distribution System *E. coli* Response Checklist				
Background Information	**Yes**	**No**	**N/A**	**To Do List**
We inform staff members about activities within the distribution system that could affect water quality.	☒	☐	☐	☐
We document all water main breaks, construction & repair activities, and low pressure and outage incidents.	☒	☐	☐	☐
We can easily access and review documentation on water main breaks, construction & repair activities, and low pressure and outage incidents.	☒	☐	☐	☐
Our Cross-Connection Control Program is up-to-date.	☒	☐	☐	☐
We test all cross-connection control devices annually as required, with easy access to the proper documentation.	☒	☐	☐	☐
We routinely inspect all treatment facilities for proper operation.	☒	☐	☐	☐
We identified one or more qualified individuals who are able to conduct a Level 2 assessment of our water system.	☒	☐	☐	☐
We have procedures in place for disinfecting and flushing the water system if it becomes necessary.	☒	☐	☐	☐
We can activate an emergency intertie with an adjacent water system in an emergency.	☒	☐	☒	☐
We have a map of our service area boundaries.	☒	☐	☐	☐
We have consumers who may not have access to bottled or boiled water.	☐	☒	☐	☐
There is a sufficient supply of bottled water immediately available to our customers who are unable to boil their water.	☒	☐	☐	☐
We have identified the contact person at each day care, school, medical facility, food service, and other customers who may have difficulty responding to a Health Advisory.	☐	☒	☐	☐
We have messages prepared and translated into different languages to ensure our consumers will understand them.	☐	☒	☐	☐
We have the capacity to print and distribute the required number of notices in a short time period.	☒	☐	☐	☐
Policy Direction	**Yes**	**No**	**N/A**	**To Do List**
We have discussed the issue of *E. coli*-present sample results with our policy makers.	☐	☐	☐	☒

If we find *E. coli* in a routine distribution sample, the policy makers want to wait until repeat test results are available before issuing advice to water system customers.	☐	☐	☒	☐

Distribution System *E. coli* Response Checklist

Potential Public Notice Delivery Methods	Yes	No	N/A	To Do List
It is feasible to deliver a notice going door-to-door.	☒	☐	☐	☐
We have a list of all of our customers' addresses.	☒	☐	☐	☐
We have a list of customer telephone numbers or access to a Reverse 9-1-1 system.	☒	☐	☐	☐
We have a list of customer email addresses.	☐	☒	☐	☐
We encourage our customers to remain in contact with us using social media.	☒	☐	☐	☐
We have an active website we can quickly update to include important messages.	☒	☐	☐	☐
Our customers drive by a single location where we could post an advisory and expect everyone to see it.	☒	☐	☐	☐
We need a news release to supplement our public notification process.	☒	☐	☐	☐

Distribution System *E. coli* Response Plan

If we have *E. coli* in our distribution system we will immediately:

1. Call DOH.
2. Collect repeat and triggered source samples per Part D. Collect additional investigative samples as necessary.
3. Inspect our Water Facilities, including reservoir and treatment plants for proper operations
4. Review construction activities, water main breaks recent outages or low pressure events that may of recently occurred.
5. Interview staff to determine if anything unusual had recently happened in the water system.
6. Review Cross connection control program status.
7. Notify SNO PUD Corp Comm.
8. Discuss if a Heath advisory is warranted based on findings of steps 3 through 6
9. Await repeat sample results
    - If Repeats are satisfactory lift HA if one was issued
    - If any repeats return as unsatisfactory issue HA if one not in place already. Host DOH for System Inspection and respond appropriately

COLIFORM MONITORING PLAN
FOR
SNO PUD 1 – WATER SYSTEMS
SUPPLIED BY CITY OF EVERETT REGIONAL WATER SUPPLY SYSTEM

APPENDIX-11 212th Market

10. Discuss with DOH whether to issue a Health Advisory based on the findings of steps 3-6.

COLIFORM MONITORING PLAN
FOR
SNO PUD 1 – WATER SYSTEMS
SUPPLIED BY CITY OF EVERETT REGIONAL WATER SUPPLY SYSTEM

APPENDIX-11 212th Market

***E. coli*-Present Triggered Source Sample Response Checklist – SO1 All Sources**				
Background Information	**Yes**	**No**	**N/A**	**To Do List**
We review our sanitary survey results and respond to any recommendations affecting the microbial quality of our water supply.	☒	☐	☐	☐
We address any significant deficiencies identified during a sanitary survey.	☒	☐	☐	☐
There are contaminant sources within our Wellhead Protection Area that could affect the microbial quality of our source water, and If yes, we can eliminate them.	☒ ☐	☐ ☒	☐ ☐	☐ ☐
We routinely inspect our well site(s).	☒	☐	☐	☐
We have a good raw water sample tap installed at each source.	☒	☐	☐	☐
After we complete work on a source, we disinfect the source, flush, and collect an investigative sample.	☒	☐	☐	☐
Public Notice	**Yes**	**No**	**N/A**	**To Do List**
We discussed the requirement for immediate public notice of an *E. coli*-present source sample result with our water system's governing body (board of directors or commissioners) and received direction from them on our response plan.	☐	☐	☐	☒
We discussed the requirement for immediate public notice of an *E. coli*-present source sample result with our wholesale customers and encouraged them to develop a response plan.	☒	☐	☐	☐
We have prepared templates and a communications plan that will help us quickly distribute our messages.	☒	☐	☐	☐

COLIFORM MONITORING PLAN
FOR
SNO PUD 1 – WATER SYSTEMS
SUPPLIED BY CITY OF EVERETT REGIONAL WATER SUPPLY SYSTEM

APPENDIX-11 212th Market

***E. coli*-Present Triggered Source Sample Response Checklist – Source**				
Alternate Sources	**Yes**	**No**	**N/A**	**To Do List**
We can stop using this source and still provide reliable water service to our customers.	☒	☐	☐	☐
We have an emergency intertie with a neighboring water system that we can use until corrective action is complete (perhaps for several months).	☐	☒	☐	☐
We can provide bottled water to all or part of the distribution system for an indefinite period.	☒	☐	☐	☐
We can quickly replace our existing source of supply with a more protected new source.	☒	☐	☐	☐
Temporary Treatment	**Yes**	**No**	**N/A**	**To Do List**
This source is continuously chlorinated, and our existing facilities can provide 4-log virus treatment (CT = 6) before the first customer. If yes, at what concentration? 1.2 mg/L	☒	☐	☐	☐
We can quickly introduce chlorine into the water system and take advantage of the existing contact time to provide 4-log virus treatment to a large portion of the distribution system.	☒	☐	☐	☐
We can reduce the production capacity of our pumps or alter the configuration of our storage quantities (operational storage) to increase the amount of time the water stays in the system before the first customer to achieve CT = 6.	☒	☐	☐	☐
We can alter the demand for drinking water (maximum day or peak hour) through conservation messages to increase the time the water is in the system prior to the first customer in order to achieve 4-log virus treatment with chlorine.	☐	☒	☐	☐

*NOTE: If your system has multiple sources, you may want to complete a separate checklist for each source.

COLIFORM MONITORING PLAN
FOR
SNO PUD 1 – WATER SYSTEMS
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APPENDIX-11 212th Market

E. coli-Present Triggered Source Sample Response Plan – Source SO5 & SO6 Lake Stevens Wells

If we have *E. coli* in Source SO5 or SO6water we will immediately:

1. Turn off Wells.
2. Call DOH.
3. Repeat and source samples
4. Sample Reservoir
5. Collect additional investigative samples as necessary.
6. Await repeat sample results
    - If repeats are satisfactory lift HA if one was issued
7. Discuss with DOH whether to issue a Health Advisory based on the findings.

COLIFORM MONITORING PLAN
FOR
SNO PUD 1 – WATER SYSTEMS
SUPPLIED BY CITY OF EVERETT REGIONAL WATER SUPPLY SYSTEM

APPENDIX-11 Kayak Estates

A. *E. coli*-Present Sample Response

Distribution System *E. coli* Response Checklist				
Background Information	**Yes**	**No**	**N/A**	**To Do List**
We inform staff members about activities within the distribution system that could affect water quality.	☒	☐	☐	☐
We document all water main breaks, construction & repair activities, and low pressure and outage incidents.	☒	☐	☐	☐
We can easily access and review documentation on water main breaks, construction & repair activities, and low pressure and outage incidents.	☒	☐	☐	☐
Our Cross-Connection Control Program is up-to-date.	☒	☐	☐	☐
We test all cross-connection control devices annually as required, with easy access to the proper documentation.	☒	☐	☐	☐
We routinely inspect all treatment facilities for proper operation.	☒	☐	☐	☐
We identified one or more qualified individuals who are able to conduct a Level 2 assessment of our water system.	☒	☐	☐	☐
We have procedures in place for disinfecting and flushing the water system if it becomes necessary.	☒	☐	☐	☐
We can activate an emergency intertie with an adjacent water system in an emergency.	☐	☒	☐	☐
We have a map of our service area boundaries.	☒	☐	☐	☐
We have consumers who may not have access to bottled or boiled water.	☐	☒	☐	☐
There is a sufficient supply of bottled water immediately available to our customers who are unable to boil their water.	☐	☒	☐	☐
We have identified the contact person at each day care, school, medical facility, food service, and other customers who may have difficulty responding to a Health Advisory.	☐	☒	☐	☐
We have messages prepared and translated into different languages to ensure our consumers will understand them.	☐	☒	☐	☐
We have the capacity to print and distribute the required number of notices in a short time period.	☒	☐	☐	☐
Policy Direction	**Yes**	**No**	**N/A**	**To Do List**
We have discussed the issue of *E. coli*-present sample results with our policy makers.	☐	☐	☐	☒

If we find *E. coli* in a routine distribution sample, the policy makers want to wait until repeat test results are available before issuing advice to water system customers.	☐	☐	☒	☐

Distribution System *E. coli* Response Checklist

Potential Public Notice Delivery Methods	Yes	No	N/A	To Do List
It is feasible to deliver a notice going door-to-door.	☐	☒	☐	☐
We have a list of all of our customers' addresses.	☒	☐	☐	☐
We have a list of customer telephone numbers or access to a Reverse 9-1-1 system.	☒	☐	☐	☐
We have a list of customer email addresses.	☐	☒	☐	☐
We encourage our customers to remain in contact with us using social media.	☒	☐	☐	☐
We have an active website we can quickly update to include important messages.	☒	☐	☐	☐
Our customers drive by a single location where we could post an advisory and expect everyone to see it.	☐	☒	☐	☐
We need a news release to supplement our public notification process.	☒	☐	☐	☐

Distribution System *E. coli* Response Plan

If we have *E. coli* in our distribution system we will immediately:

1. Call DOH.
2. Collect repeat and triggered source samples per Part D. Collect additional investigative samples as necessary.
3. Inspect our Water Facilities, including reservoir and treatment plants for proper operations
4. Review construction activities, water main breaks recent outages or low pressure events that may of recently occurred.
5. Interview staff to determine if anything unusual had recently happened in the water system.
6. Review Cross connection control program status.
7. Notify SNO PUD Corp Comm.
8. Discuss if a Heath advisory is warranted based on findings of steps 3 through 6
9. Await repeat sample results
    - If Repeats are satisfactory lift HA if one was issued
    - If any repeats return as unsatisfactory issue HA if one not in place already. Host DOH for System Inspection and respond appropriately

10. Discuss with DOH whether to issue a Health Advisory based on the findings of steps 3-6.

COLIFORM MONITORING PLAN
FOR
SNO PUD 1 – WATER SYSTEMS
SUPPLIED BY CITY OF EVERETT REGIONAL WATER SUPPLY SYSTEM

APPENDIX-11 Kayak Estates

E. coli-Present Triggered Source Sample Response Checklist – All Sources SO1 & SO2

Background Information	**Yes**	**No**	**N/A**	**To Do List**
We review our sanitary survey results and respond to any recommendations affecting the microbial quality of our water supply.	☒	☐	☐	☐
We address any significant deficiencies identified during a sanitary survey.	☒	☐	☐	☐
There are contaminant sources within our Wellhead Protection Area that could affect the microbial quality of our source water, and	☐	☒	☐	☐
If yes, we can eliminate them.	☐	☐	☒	☐
We routinely inspect our well site(s).	☒	☐	☐	☐
We have a good raw water sample tap installed at each source.	☒	☐	☐	☐
After we complete work on a source, we disinfect the source, flush, and collect an investigative sample.	☒	☐	☐	☐
Public Notice	**Yes**	**No**	**N/A**	**To Do List**
We discussed the requirement for immediate public notice of an *E. coli*-present source sample result with our water system's governing body (board of directors or commissioners) and received direction from them on our response plan.	☐	☐	☐	☒
We discussed the requirement for immediate public notice of an *E. coli*-present source sample result with our wholesale customers and encouraged them to develop a response plan.	☒	☐	☐	☐
We have prepared templates and a communications plan that will help us quickly distribute our messages.	☒	☐	☐	☐

COLIFORM MONITORING PLAN
FOR
SNO PUD 1 – WATER SYSTEMS
SUPPLIED BY CITY OF EVERETT REGIONAL WATER SUPPLY SYSTEM

APPENDIX-11 Kayak Estates

E. coli-Present Triggered Source Sample Response Checklist – Source SO1 & SO2 Kayak Estates Wells

Alternate Sources	Yes	No	N/A	To Do List
We can stop using this source and still provide reliable water service to our customers.	☒	☐	☐	☐
We have an emergency intertie with a neighboring water system that we can use until corrective action is complete (perhaps for several months).	☐	☒	☐	☐
We can provide bottled water to all or part of the distribution system for an indefinite period.	☒	☐	☐	☐
We can quickly replace our existing source of supply with a more protected new source.	☒	☐	☐	☐
Temporary Treatment	**Yes**	**No**	**N/A**	**To Do List**
This source is continuously chlorinated, and our existing facilities can provide 4-log virus treatment (CT = 6) before the first customer. If yes, at what concentration? 1.2 mg/L	☐	☒	☐	☐
We can quickly introduce chlorine into the water system and take advantage of the existing contact time to provide 4-log virus treatment to a large portion of the distribution system.	☐	☒	☐	☐
We can reduce the production capacity of our pumps or alter the configuration of our storage quantities (operational storage) to increase the amount of time the water stays in the system before the first customer to achieve CT = 6.	☐	☒	☐	☐
We can alter the demand for drinking water (maximum day or peak hour) through conservation messages to increase the time the water is in the system prior to the first customer in order to achieve 4-log virus treatment with chlorine.	☐	☒	☐	☐

*NOTE: If your system has multiple sources, you may want to complete a separate checklist for each source.

COLIFORM MONITORING PLAN
FOR
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APPENDIX-11 Kayak Estates

E. coli-Present Triggered Source Sample Response Plan – Source SO1 & SO2 Kayak Estates

If we have *E. coli* in Source SO1 or SOwater we will immediately:

1. Turn off well with positive sample and use other..
2. Call DOH.
3. Repeat and source samples
4. Collect additional investigative samples as necessary.
5. Await repeat sample results
    - If repeats are satisfactory lift HA if one was issued
6. Discuss with DOH whether to issue a Health Advisory based on the findings.

COLIFORM MONITORING PLAN
FOR
SNO PUD 1 – WATER SYSTEMS
GROUND WATER SYSTEMS

APPENDIX-11 SKYLITE TRACTS

A. *E. coli*-Present Sample Response

Distribution System *E. coli* Response Checklist				
Background Information	**Yes**	**No**	**N/A**	**To Do List**
We inform staff members about activities within the distribution system that could affect water quality.	☒	☐	☐	☐
We document all water main breaks, construction & repair activities, and low pressure and outage incidents.	☒	☐	☐	☐
We can easily access and review documentation on water main breaks, construction & repair activities, and low pressure and outage incidents.	☒	☐	☐	☐
Our Cross-Connection Control Program is up-to-date.	☒	☐	☐	☐
We test all cross-connection control devices annually as required, with easy access to the proper documentation.	☒	☐	☐	☐
We routinely inspect all treatment facilities for proper operation.	☒	☐	☐	☐
We identified one or more qualified individuals who are able to conduct a Level 2 assessment of our water system.	☒	☐	☐	☐
We have procedures in place for disinfecting and flushing the water system if it becomes necessary.	☒	☐	☐	☐
We can activate an emergency intertie with an adjacent water system in an emergency.	☒	☐	☒	☐
We have a map of our service area boundaries.	☒	☐	☐	☐
We have consumers who may not have access to bottled or boiled water.	☐	☒	☐	☐
There is a sufficient supply of bottled water immediately available to our customers who are unable to boil their water.	☒	☐	☐	☐
We have identified the contact person at each day care, school, medical facility, food service, and other customers who may have difficulty responding to a Health Advisory.	☐	☒	☐	☐
We have messages prepared and translated into different languages to ensure our consumers will understand them.	☐	☒	☐	☐
We have the capacity to print and distribute the required number of notices in a short time period.	☒	☐	☐	☐
Policy Direction	**Yes**	**No**	**N/A**	**To Do List**
We have discussed the issue of *E. coli*-present sample results with our policy makers.	☐	☐	☐	☒

If we find *E. coli* in a routine distribution sample, the policy makers want to wait until repeat test results are available before issuing advice to water system customers.	☐	☐	☒	☐

Distribution System *E. coli* Response Checklist

Potential Public Notice Delivery Methods	Yes	No	N/A	To Do List
It is feasible to deliver a notice going door-to-door.	☒	☐	☐	☐
We have a list of all of our customers' addresses.	☒	☐	☐	☐
We have a list of customer telephone numbers or access to a Reverse 9-1-1 system.	☒	☐	☐	☐
We have a list of customer email addresses.	☐	☒	☐	☐
We encourage our customers to remain in contact with us using social media.	☒	☐	☐	☐
We have an active website we can quickly update to include important messages.	☒	☐	☐	☐
Our customers drive by a single location where we could post an advisory and expect everyone to see it.	☒	☐	☐	☐
We need a news release to supplement our public notification process.	☒	☐	☐	☐

Distribution System *E. coli* Response Plan

If we have *E. coli* in our distribution system we will immediately:

1. Call DOH.
2. Collect repeat and triggered source samples per Part D. Collect additional investigative samples as necessary.
3. Inspect our Water Facilities, including reservoir and treatment plants for proper operations
4. Review construction activities, water main breaks recent outages or low pressure events that may of recently occurred.
5. Interview staff to determine if anything unusual had recently happened in the water system.
6. Review Cross connection control program status.
7. Notify SNO PUD Corp Comm.
8. Discuss if a Heath advisory is warranted based on findings of steps 3 through 6
9. Await repeat sample results
    - If Repeats are satisfactory lift HA if one was issued
    - If any repeats return as unsatisfactory issue HA if one not in place already. Host DOH for System Inspection and respond appropriately

10. Discuss with DOH whether to issue a Health Advisory based on the findings of steps 3-6.

COLIFORM MONITORING PLAN
FOR
SNO PUD 1 – WATER SYSTEMS
GROUND WATER SYSTEMS

APPENDIX-11 SKYLITE TRACTS

***E. coli*-Present Triggered Source Sample Response Checklist – All Sources**				
Background Information	**Yes**	**No**	**N/A**	**To Do List**
We review our sanitary survey results and respond to any recommendations affecting the microbial quality of our water supply.	☒	☐	☐	☐
We address any significant deficiencies identified during a sanitary survey.	☒	☐	☐	☐
There are contaminant sources within our Wellhead Protection Area that could affect the microbial quality of our source water, and If yes, we can eliminate them.	☒ ☐	☐ ☒	☐ ☐	☐ ☐
We routinely inspect our well site(s).	☒	☐	☐	☐
We have a good raw water sample tap installed at each source.	☒	☐	☐	☐
After we complete work on a source, we disinfect the source, flush, and collect an investigative sample.	☒	☐	☐	☐
Public Notice	**Yes**	**No**	**N/A**	**To Do List**
We discussed the requirement for immediate public notice of an *E. coli*-present source sample result with our water system's governing body (board of directors or commissioners) and received direction from them on our response plan.	☐	☐	☐	☒
We discussed the requirement for immediate public notice of an *E. coli*-present source sample result with our wholesale customers and encouraged them to develop a response plan.	☒	☐	☐	☐
We have prepared templates and a communications plan that will help us quickly distribute our messages.	☒	☐	☐	☐

COLIFORM MONITORING PLAN
FOR
SNO PUD 1 – WATER SYSTEMS
GROUND WATER SYSTEMS

APPENDIX-11 SKYLITE TRACTS

E. coli-Present Triggered Source Sample Response Checklist – Source SO1

Alternate Sources	**Yes**	**No**	**N/A**	**To Do List**
We can stop using this source and still provide reliable water service to our customers.	☐	☒	☐	☐
We have an emergency intertie with a neighboring water system that we can use until corrective action is complete (perhaps for several months).	☐	☒	☐	☐
We can provide bottled water to all or part of the distribution system for an indefinite period.	☒	☐	☐	☐
We can quickly replace our existing source of supply with a more protected new source.	☐	☒	☐	☐
Temporary Treatment	**Yes**	**No**	**N/A**	**To Do List**
This source is continuously chlorinated, and our existing facilities can provide 4-log virus treatment (CT = 6) before the first customer. If yes, at what concentration? 1.2 mg/L	☒	☐	☐	☐
We can quickly introduce chlorine into the water system and take advantage of the existing contact time to provide 4-log virus treatment to a large portion of the distribution system.	☐	☒	☐	☐
We can reduce the production capacity of our pumps or alter the configuration of our storage quantities (operational storage) to increase the amount of time the water stays in the system before the first customer to achieve CT = 6.	☐	☒	☐	☐
We can alter the demand for drinking water (maximum day or peak hour) through conservation messages to increase the time the water is in the system prior to the first customer in order to achieve 4-log virus treatment with chlorine.	☒	☐	☐	☐

*NOTE: If your system has multiple sources, you may want to complete a separate checklist for each source.

COLIFORM MONITORING PLAN
FOR
SNO PUD 1 – WATER SYSTEMS
GROUND WATER SYSTEMS

APPENDIX-11 SKYLITE TRACTS

E. coli-Present Triggered Source Sample Response Plan – Source SO1 Skylite tracts (2 pumps in one casing)

If we have *E. coli* in Source SO5 or SO6water we will immediately:

1. Turn off Wells if adequate storage.
2. Call DOH.
3. Repeat and source samples
4. Sample Reservoir.
5. Inspect distribution system for defects or damage
6. Collect additional investigative samples as necessary.
7. Await repeat sample results
    - If repeats are satisfactory lift HA if one was issued
8. Discuss with DOH whether to issue a Health Advisory based on the findings.

COLIFORM MONITORING PLAN
FOR
SNO PUD 1 – WATER SYSTEMS
GROUND WATER SYSTEMS
APPENDIX-11 WARM BEACH

A. *E. coli*-Present Sample Response

Distribution System *E. coli* Response Checklist				
Background Information	**Yes**	**No**	**N/A**	**To Do List**
We inform staff members about activities within the distribution system that could affect water quality.	☒	☐	☐	☐
We document all water main breaks, construction & repair activities, and low pressure and outage incidents.	☒	☐	☐	☐
We can easily access and review documentation on water main breaks, construction & repair activities, and low pressure and outage incidents.	☒	☐	☐	☐
Our Cross-Connection Control Program is up-to-date.	☒	☐	☐	☐
We test all cross-connection control devices annually as required, with easy access to the proper documentation.	☒	☐	☐	☐
We routinely inspect all treatment facilities for proper operation.	☒	☐	☐	☐
We identified one or more qualified individuals who are able to conduct a Level 2 assessment of our water system.	☒	☐	☐	☐
We have procedures in place for disinfecting and flushing the water system if it becomes necessary.	☒	☐	☐	☐
We can activate an emergency intertie with an adjacent water system in an emergency.	☐	☒	☐	☐
We have a map of our service area boundaries.	☒	☐	☐	☐
We have consumers who may not have access to bottled or boiled water.	☐	☒	☐	☐
There is a sufficient supply of bottled water immediately available to our customers who are unable to boil their water.	☐	☒	☐	☐
We have identified the contact person at each day care, school, medical facility, food service, and other customers who may have difficulty responding to a Health Advisory.	☐	☒	☐	☐
We have messages prepared and translated into different languages to ensure our consumers will understand them.	☐	☒	☐	☐
We have the capacity to print and distribute the required number of notices in a short time period.	☒	☐	☐	☐
Policy Direction	**Yes**	**No**	**N/A**	**To Do List**
We have discussed the issue of *E. coli*-present sample results with our policy makers.	☐	☐	☐	☒

If we find *E. coli* in a routine distribution sample, the policy makers want to wait until repeat test results are available before issuing advice to water system customers.	☐	☐	☒	☐

Distribution System *E. coli* Response Checklist

Potential Public Notice Delivery Methods	Yes	No	N/A	To Do List
It is feasible to deliver a notice going door-to-door.	☐	☒	☐	☐
We have a list of all of our customers' addresses.	☒	☐	☐	☐
We have a list of customer telephone numbers or access to a Reverse 9-1-1 system.	☒	☐	☐	☐
We have a list of customer email addresses.	☐	☒	☐	☐
We encourage our customers to remain in contact with us using social media.	☒	☐	☐	☐
We have an active website we can quickly update to include important messages.	☒	☐	☐	☐
Our customers drive by a single location where we could post an advisory and expect everyone to see it.	☐	☒	☐	☐
We need a news release to supplement our public notification process.	☒	☐	☐	☐

Distribution System *E. coli* Response Plan

If we have *E. coli* in our distribution system we will immediately:

1. Call DOH.
2. Collect repeat and triggered source samples per Part D. Collect additional investigative samples as necessary.
3. Inspect our Water Facilities, including reservoir and treatment plants for proper operations
4. Review construction activities, water main breaks recent outages or low pressure events that may of recently occurred.
5. Interview staff to determine if anything unusual had recently happened in the water system.
6. Review Cross connection control program status.
7. Notify SNO PUD Corp Comm.
8. Discuss if a Heath advisory is warranted based on findings of steps 3 through 6
9. Await repeat sample results
    - If Repeats are satisfactory lift HA if one was issued
    - If any repeats return as unsatisfactory issue HA if one not in place already. Host DOH for System Inspection and respond appropriately

10. Discuss with DOH whether to issue a Health Advisory based on the findings of steps 3-6.

COLIFORM MONITORING PLAN
FOR
SNO PUD 1 – WATER SYSTEMS
GROUND WATER SYSTEMS
APPENDIX-11 WARM BEACH

***E. coli*-Present Triggered Source Sample Response Checklist – All Sources**				
Background Information	**Yes**	**No**	**N/A**	**To Do List**
We review our sanitary survey results and respond to any recommendations affecting the microbial quality of our water supply.	☒	☐	☐	☐
We address any significant deficiencies identified during a sanitary survey.	☒	☐	☐	☐
There are contaminant sources within our Wellhead Protection Area that could affect the microbial quality of our source water, and If yes, we can eliminate them.	☒ ☐	☐ ☒	☐ ☐	☐ ☐
We routinely inspect our well site(s).	☒	☐	☐	☐
We have a good raw water sample tap installed at each source.	☒	☐	☐	☐
After we complete work on a source, we disinfect the source, flush, and collect an investigative sample.	☒	☐	☐	☐
Public Notice	**Yes**	**No**	**N/A**	**To Do List**
We discussed the requirement for immediate public notice of an *E. coli*-present source sample result with our water system's governing body (board of directors or commissioners) and received direction from them on our response plan.	☐	☐	☐	☒
We discussed the requirement for immediate public notice of an *E. coli*-present source sample result with our wholesale customers and encouraged them to develop a response plan.	☒	☐	☐	☐
We have prepared templates and a communications plan that will help us quickly distribute our messages.	☒	☐	☐	☐

COLIFORM MONITORING PLAN
FOR
SNO PUD 1 – WATER SYSTEMS
GROUND WATER SYSTEMS
APPENDIX-11 WARM BEACH

E. coli-Present Triggered Source Sample Response Checklist – Source SO1 & SO4 Warm Beach

Alternate Sources	**Yes**	**No**	**N/A**	**To Do List**
We can stop using this source and still provide reliable water service to our customers.	☒	☐	☐	☐
We have an emergency intertie with a neighboring water system that we can use until corrective action is complete (perhaps for several months).	☐	☒	☐	☐
We can provide bottled water to all or part of the distribution system for an indefinite period.	☒	☐	☐	☐
We can quickly replace our existing source of supply with a more protected new source.	☒	☐	☐	☐
Temporary Treatment	**Yes**	**No**	**N/A**	**To Do List**
This source is continuously chlorinated, and our existing facilities can provide 4-log virus treatment (CT = 6) before the first customer. If yes, at what concentration? 1.2 mg/L	☐	☒	☐	☐
We can quickly introduce chlorine into the water system and take advantage of the existing contact time to provide 4-log virus treatment to a large portion of the distribution system.	☐	☒	☐	☐
We can reduce the production capacity of our pumps or alter the configuration of our storage quantities (operational storage) to increase the amount of time the water stays in the system before the first customer to achieve CT = 6.	☐	☒	☐	☐
We can alter the demand for drinking water (maximum day or peak hour) through conservation messages to increase the time the water is in the system prior to the first customer in order to achieve 4-log virus treatment with chlorine.	☐	☒	☐	☐

*NOTE: If your system has multiple sources, you may want to complete a separate checklist for each source.

COLIFORM MONITORING PLAN
FOR
SNO PUD 1 – WATER SYSTEMS
GROUND WATER SYSTEMS
APPENDIX-11 WARM BEACH

E. coli-Present Triggered Source Sample Response Plan – Source SO1 & SO4 Warm Beach

If we have *E. coli* in Source SO5 or SO6water we will immediately:

1. Turn off untreated Well #2 (SO1). Leave on Well #4 (SO4)
2. Call DOH.
3. Repeat and source samples.
4. Sample Reservoir
5. Inspect Wellhead
6. Collect additional investigative samples as necessary.
7. Await repeat sample results
    - If repeats are satisfactory lift HA if one was issued
8. Discuss with DOH whether to issue a Health Advisory based on the findings.

APPENDIX-12

Coliform Monitoring Plan Holders List

The individuals and or agencies listed in Appendix-11 have been issued a copy of the Coliform Monitoring Plan for SNO PUD 1 – WATER SYSTEMS. If the plan is up-dated or revised the individual or agency will be provided a copy of the revision.

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APPENDIX-12

Coliform Monitoring Plan Holders List

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SNO PUD 1 – Water Resources Division
P.O. Box 1107
Everett, WA

- Water System Comprehensive Plan
- Coliform Monitoring Plan File
- Library, Lake Stevens Water Shop

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Appendix 10-1B

SnoPUD 1 2019 Surface Water Coliform Monitoring Plan with Appendices

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Snohomish County Public Utility District No. 1
2320 California Street
P.O. Box 1107
Everett, Washington 98206-1107

COLIFORM MONITORING PLAN
FOR
SNO PUD 1 - WATER SYSTEMS
SUPPLIED BY CITY OF EVERETT REGIONAL WATER SUPPLY SYSTEM

GROUP-A PUBLIC WATER SYSTEMS

SNO PUD 1 - LAKE STEVENS; System Identification No. 809071

SNO PUD 1 - STORM LAKE; System Identification No. 444316

SNO PUD 1 – CRESWELL; System Identification No. 06325V

Current Revision: January, 2019
Revised Document: March 2016
Original Document: October 2004

Prepared By

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Snohomish County Public Utility District No. 1
Water Resources Division

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COLIFORM MONITORING PLAN
FOR
SNO PUD 1 – WATER SYSTEMS
SUPPLIED BY CITY OF EVERETT REGIONAL WATER SUPPLY SYSTEM

1.0 WATER SOURCE INFORMATION

The three Water Systems addressed in this Coliform Monitoring Plan (CMP) are owned and operated by Snohomish County Public Utility District No. 1 (SNO PUD 1), and are supplied mainly by water purchased from the City of Everett Regional Water Supply System (ERWSS).

The source of water for the ERWSS is the Sultan River. The Sultan River Watershed is located about 25 miles east of Everett in the Cascade Mountains. Within the watershed area (the Sultan Basin), Culmback Dam was constructed by SNO PUD 1 to create Spada Lake from which water is diverted for municipal and industrial uses and for hydroelectric power generation. Spada Lake is located in Township 29N, Range 09E.

The storage volume of Spada Lake is (50) fifty-billion gallons. Spada Lake is the primary raw water storage source for the ERWSS. An additional (5) five-billion gallons of raw water storage is located eight miles west of Spada Lake in Lake Chaplain. Raw water is supplied to Lake Chaplain from Spada Lake through the SNO PUD 1 Henry Jackson Hydroelectric Project. Water flows from Spada Lake through an eight-mile power tunnel and pipeline to the Jackson Powerhouse. At the Powerhouse, four turbines generate electricity. Two turbines discharge water directly into the Sultan River at the Powerhouse, while two smaller turbines discharge water into a “return pipeline” which conveys water to Lake Chaplain.

The City of Everett Water Filtration Plant (EWFP) is located at the south end of Lake Chaplain. Under normal conditions, the plant intakes water directly from Lake Chaplain. However, water may also be diverted directly from the return pipeline to the plant’s intake piping, in the event of an algae bloom or other abnormal water quality occurrences in Lake Chaplain.

The treatment process units employed at the plant are listed below:

- Pre sedimentation - particle removal
- Pre chlorination - disinfection and iron/manganese oxidation
- Coagulation/Filtration - particulate removal
- Post chlorination - disinfection
- Corrosion control - pH and alkalinity adjustment
- Fluoridation - prophylaxis of dental disease

In September of 2012 the PUD completed construction of a new treatment facility in Lake Stevens area and began producing water from two wells. These wells, located northeast of down town Lake Stevens, were formally used as an emergency standby source. Now, after being treated for iron, manganese and chlorinated, the water is used as a additional source for the Lake Stevens Integrated Water system.

2.0 SYSTEM INFORMATION

2.1 SNO PUD 1 – LAKE STEVENS (GROUP-A WATER SYSTEM); ID# 809071:

Water Sources: The Lake Stevens Integrated Water System is supplied water from the ERWSS through six master meter connections; *refer to Appendix-1 and Appendix 3A*. five connections are located on the Everett No. 3 water transmission line (3-Line), and one connection draws water from the Joint Operating Agreement (JOA) Pipeline, which was funded and is owned by the City of Marysville, Tulalip Tribes and SNO PUD 1. At three of the five connections on the 3-Line, the Lake Stevens Integrated Water System is also capable of drawing water from intertie connections off the Everett 2-Line. These connections are typically used when the 3-Line is taken out-of-service for scheduled maintenance repair or during emergency situations. The free chlorine residual at the Everett connections is normally maintained in a range between 0.8 and 1.2 mg/L.

The Lake Stevens Integrated Water System has one (1) emergency water source including, an intertie connection with the City of Marysville Water Distribution System. Water from this source is only used on an “as needed” basis or during a major emergency. It is very rare that this source is used to supplement water supply for the Lake Stevens Integrated Water System.

Population Served: The number of service connections in the Lake Stevens Integrated Water System is 19,266 (June 2018). The residential population served is estimated at 50,107 (assuming 2.6 persons per residential unit). *According to Table-2 in Appendix-2*, this population requires that a minimum of sixty (60) routine coliform samples are collected monthly. However, the PUD targets collection of sixty- two (62) monthly routine coliform samples. *Refer to Appendix-3A* for a map of the sampling sites, and *Appendix-5A* for the sample collection site addresses. The population served by the Lake Stevens Integrated Water System will be reviewed annually by the SNO PUD 1 Water Superintendent to insure that the proper number of samples is collected.

Distribution System: The Lake Stevens Integrated Water System includes approximately 389 miles of pipe in 23 pressure zones. Maintenance of the minimum target chlorine residual of 0.2 mg/L in all areas of the system is accomplished by various methods which include; the use of circulating flow in reservoirs (top fill, bottom draw), looping of pipelines where possible and the periodic flushing of pipelines; especially in areas with “low flow” and “dead-end” pipelines.

Several rural areas in the eastern portion of the Lake Stevens Integrated Water System meet the “low flow and dead-end pipeline” criteria (Newberg Road, Lake Bosworth and north Jordan Road). Further, these areas are a considerable distance from the Everett connections, which results in a lower chlorine residual within these areas of the distribution system.

To achieve the minimum target chlorine residual, post chlorination is provided at the Granite Falls Booster Pump Station (GFBPS), which conveys water to these areas. The average incoming chlorine residual at the GFBPS is 0.5 mg/L, which is increased to 1.0-1.2 mg/L (seasonal chlorine residual target range) through the metered injection of liquid sodium hypochlorite solution (NaOCL), 12.0%.

The NaOCL is metered into the water supply with a peristaltic metering pump. The NaOCL is applied at a dosage rate of 0.5 to 0.7 mg/L (seasonal chlorine applied dosage rate) as the water flow exits the pump station and is conveyed into the distribution system and directed toward the Granite Falls Reservoir.

The peristaltic metering pump is pre-set to deliver a fixed rate of NaOCL into the water supply when a pump starts and is pre-set to stop metering the NaOCL when the pump shuts off.

In addition to the chemical injection of NaOCL, a chlorine residual analyzer is installed at the pump station which continuously measures and trends the chlorine residual level. The analyzer also provides a feedback loop signal to the chlorine metering pump to maintain the target chlorine residual level. The measured chlorine residual is transmitted to the Systems “SCADA” Automated Monitoring and Control System, which includes “low and high alarm set points” to allow for immediate indication and notification if the chlorine residual is out of the target range. When the system becomes activated an Operations Staff Member is alerted of critical alarms and immediately responds to make the appropriate correction.

An Operations Staff Member conducts a physical check and performs a thorough inspection of the GFBPS on a daily basis, Monday through Friday.

2.2 SNO PUD 1 – STORM LAKE (GROUP-A WATER SYSTEM); ID# 444316:

Water Source: The Storm Lake Ridge Water System is supplied water from the ERWSS through one connection on the Everett 5-Line, *Refer to Appendix-3D*. The free chlorine residual at the Everett connection is normally maintained between a range of 0.8 and 1.2 mg/L.

Population Served: The Storm Lake Ridge Water System serves 217 connections (June 2018). The population is estimated at 512 people (assuming 2.6 persons per connection). *According to Table-2 in Appendix-2*, this population requires that a minimum of one (1) monthly routine coliform sample is collected. *Refer to Appendix-3D* for a map of the sampling site locations, and *Appendix-5B* for the sample collection site addresses. The population served by the system will be reviewed annually by the SNO PUD 1 Water Superintendent to insure that the proper number of samples is collected.

Distribution System: The Storm Lake Ridge Water Distribution System includes approximately11 miles of pipeline in two (2) pressure zones. The Storm Lake System includes one reservoir with a storage capacity of 240,000 gallons. This system has a considerable amount of pipe, some dead-ends and a relatively modest number of connections.

2.4 SNO PUD 1 - Creswell (GROUP-A WATER SYSTEM); ID# 06325V:

Water Source: The Creswell Water System is supplied water from the ERWSS through one primary 8-inch connection and an alternate connection on the Everett 3-Line; *refer to Appendix-1 and Appendix-3E*. The chlorine residual at the Everett connection is normally maintained between the range of 0.8 and 1.0 mg/L.

Population Served: The Creswell Water System serves 23 connections. (June 2018). The Creswell system, formally known as Butterfield, was reclassified as a Group A system in December of 2010. The population is estimated at 57 people (assuming 2.6 persons per connection). *According to Table-2 in Appendix-2*, this population requires that a minimum of one (1) routine coliform sample is collected annually*. Refer to Appendix-3E* for a map of the sampling site location, and *Appendix-5B* for the sampling site location address. The population served by the Creswell System will be reviewed annually by the SNO PUD 1 Water Superintendent to insure that the proper number of samples is collected.

Distribution System: Prior to an expansion of the Creswell Water System in the later part of 2007 the System was supplied water from the ERWSS through one 8-inch connection on the Everett 3-Line at the 3700 block of Creswell Road. The System previously consisted of a 2-inch master meter, approximately 165 feet of 8-inch pipeline and three (3) water service connections.

In the later part of 2007 the Plat of Wardrum Woods was connected to the Creswell System. The expansion provided an additional connection to the Everett 3-Line, extended an 8-inch main to Creswell Road, the installation of an 8-inch master meter with telemetry capabilities which is linked to the SNO PUD 1 SCADA System and included approximately 1000 lineal feet of 12-inch ductile iron (DI) main and one (1) fire hydrant along Creswell Road to the Plat.

3.0 ROUTINE SAMPLING INFORMATION

3.1 Number of Monthly Samples:

The SNO PUD 1 Water Systems are required by the Washington State Department of Health (DOH) and the Washington Administrative Code (WAC), *WAC 246-290-300(3)(c)(i)* to collect no fewer than the numbers of samples specified in *Appendix-2, DOH WAC Table-2*, *Minimum Monthly Routine Coliform Sampling Requirements*. To insure compliance with this requirement, the SNO PUD 1 Coliform Monitoring Plan generally specifies and targets for more than the minimum specified number of monthly samples. *Table-1* contains a summary of this data for the fourwater systems addressed by this plan:

Table-1
Number of Monthly – Quarterly - Annual Coliform Samples

System Name	Population Served	DOH Minimum Number	PUD Target Number
Lake Stevens	50,107	60 Monthly	62 Monthly
Storm Lake Ridge	543	1 Monthly	1 Monthly
Creswell	57	1 Monthly	1 Monthly

3.2 Sample Collection Schedule:

Sample collection will be conducted during the first three weeks of each month. Normally, weekly samples will be collected on the first three days of the week. For efficiency, sample collection will be broken into two weekly groupings of sample locations. Each weekly group will be sampled according to geographically organized routes. *See: Appendix-5A and Appendix-5B (Routine Sample Site Routing List)*.

If holidays or scheduling conflicts occur, samples will be scheduled for collection on an alternate day or week, but within the required collection and reporting period. *The SNO PUD 1 Water Foreman is responsible for ensuring that any deferred sample collection is rescheduled and that all of the required samples are collected each month*.

3.3 Sample Site Location:

The coliform sample sites are located in areas within the referenced water systems. The sites were selected to be representative and indicative of each system's water quality. Where feasible, at least one site is located in each of the systems' major pressure zones. *Specific sample site locations are listed in Appendix-5A and 5B.*

(Routine Sample Site Location Lists) and displayed in Appendix-3A through Appendix-3E (System Coliform Sample Site Maps).

Site locations may be revised in response to changes in accessibility, population, "looping" of mains, addition of pressure zones, or extension of water service to new areas. Any time that sample collection site locations are revised, this plan shall be updated to reflect the revisions (*any such revisions will also be sent to the DOH*).

To improve efficiency, accessibility and avoid "false" unsatisfactory results (from contamination on the exterior of faucets or hose bibs); all routine sample collection sites are retrofitted with equipment that is specifically designed for precise and sanitary sample collection.

3.4 Sample Collection Procedures:

See: Appendix-6 (Routine Coliform Sample Collection Procedures) for detailed sample collection procedures for each of the two types of sampling stations.

To avoid false unsatisfactory results due to soil or groundwater exposure, sample stations shall be disinfected with a spray of liquid disinfectant and thoroughly flushed prior to each use.

To insure samples are representative of water quality within the main, all sample sites will be flushed for a minimum of two (2) minutes prior to sample collection. This minimum flush time will be increased as needed to address sample collection sites with large diameter or lengthy service lines.

3.5 Sample Integrity:

If the person collecting the samples determines that the sample collection process, including conditions during sampling or transport may have compromised the sample integrity and the sample should not be submitted for analysis; the collector shall discuss the issue with the Water Foreman or Water Superintendent. If it is agreed that the sample integrity has been compromised, the sample(s) shall be discarded and not be submitted for analysis.

If the discarded sample(s) reduce the number of samples to below the minimum required number, replacement sample(s) shall be collected as soon as possible within the same month.

3.6 Laboratory and Sample Analysis Methods:

The PUD utilizes the services of independent state-certified laboratories to perform all analysis of coliform samples. The standard analysis method used for routine testing by these laboratories is the presence/absence (P/A) chromogenic method

[SM 9223 B (2b)]. Other analysis methods may be used and performed by the lab upon request by SNO PUD 1 Staff.

Per WAC 246-290 requirements, the laboratory will analyze all unsatisfactory total coliform samples for *E. coli*.

3.7 Sample Invalidation:

The laboratory will define invalid samples as follows:

- Samples with excess debris
- Multiple tube technique cultures that are turbid without gas production
- P/A technique cultures that are turbid in the absence of acid
- Membrane filtration technique cultures with confluent growth patterns or growth TNTC (too numerous to count) colonies without a surface sheen.

Invalid samples will not be submitted for compliance. Any invalid samples will only be re-sampled if they are needed to meet the minimum monthly requirement. When re-sampling of sites with invalid initial samples is required to meet the minimum monthly requirement, sampling will be conducted from the same site as the original sample, and within twenty-four (24) hours of receipt of notification from the laboratory that the sample was invalid.

4.0 REPEAT SAMPLING INFORMATION

4.1 Number of Repeat Samples:

For systems where only one (1) routine sample is collected per month, a minimum of three (3) repeat samples will be collected if the routine sample was unsatisfactory. *Repeat samples are required from the following locations*:

- The same service connection as the original unsatisfactory routine sample
- An active service within five (5) active connections upstream of where the original unsatisfactory sample was taken
- An active service within five (5) active connections downstream from where the original unsatisfactory sample was taken
- Another location such as at the source or right after the storage tank, which will provide useful information for determining the source of contamination.

4.2 Number of Repeat Samples:

For Group-A system that have active Ground Water Ground water source, regardless of size, a minimum of four (4) repeat samples shall be collected if the routine sample was unsatisfactory. At least one of these repeat samples shall be a raw water sample taken prior to treatment from each ground water source in use at the time of the unsatisfactory sample. For Group-A ground water systems the repeat samples shall be collected at;

- The same tap as the original unsatisfactory routine sample
- An active service within five (5) active connections upstream of where the original unsatisfactory sample was taken
- An active service within five (5) active connections downstream from where the original unsatisfactory sample was taken.
- At all active ground water sources (well head), prior to treatment. A sample must be taken at each ground water source, which was active at the time of the unsatisfactory sample.
- An alternative sampling protocol approved by the Department of Health may be used.

4.3 Timing of Repeat Samples:

All repeat samples will be collected within twenty-four (24) hours of notification from the laboratory of an unsatisfactory result. If logistics prevents collection of repeat samples within twenty-four (24) hours of the notification, the responsible SNO PUD 1 Staff member will prepare a plan to collect the samples as soon as possible.

The person developing the plan will contact the DOH NW Region Office immediately for consultation, seeking DOH approval of the plan. *See: Appendix-9 (DOH and SNO PUD 1 Contact Information). Repeat sampling will then be conducted as specified by the DOH approved plan*.

All repeat samples will be collected on the same day.

5.0 FOLLOW-UP SAMPLING AFTER UNSATISFACTORY SAMPLES

If any of the repeat samples are unsatisfactory, the following steps shall be taken; 1) call DOH and discuss the issue, 2) Conduct a Level 1 or 2 Assessment. 3) perform the remediation actions, 4) following remediation, take follow-up samples using the same criteria as for repeat samples *(See Sections 4.1 and 4.2).*

- From the same tap as the original unsatisfactory result
- From a site within five (5) services upstream of the site that was unsatisfactory
- From a site within five (5) services downstream of the site that was unsatisfactory
- At all active ground water sources (well head), prior to treatment. A sample must be taken at each ground water source, active at the time of the unsatisfactory sample.
- For systems collecting only one (1) routine sample per month, another site that would provide useful information for determining the source of contamination.

If the unsatisfactory sample is from the first two (2) or last two (2) active services on a main, the DOH Region Office shall be contacted for direction on where and how to collect the repeat samples.

Confirmed coliform or E coli samples also activate Treatment Technique Triggers; and a Level 1 or Level 2 assessment must be performed. (*See section 7.0)*

6.0 SAMPLING THE MONTH AFTER UNSATISFACTORY RESULTS

Collect normal monthly number of samples (reduced from previous rule Coliform Rule).

7.0 REPORTING UNSATISFACTORY RESULTS

7.1 Reporting Responsibility:

When any total coliform or *E. coli* samples are unsatisfactory, the laboratory will notify the SNO PUD 1 Water Engineering, Operations Senior Manager (SM), or Water Superintendent *as soon as possible on the day the result is obtained*. If not available, the laboratory will contact the Water Foreman or Designee. *See: Appendix-9 for contact information*.

The Water Superintendent (WS) is responsible for reporting all unsatisfactory coliform samples to DOH. If the WS is not available, Water Engineering, Operations Senior Manager or the Water Foreman shall be responsible for reporting to DOH. The WS shall notify Water Resources staff prior to any planned absences.

7.2 Unsatisfactory Results for Routine or Repeat Samples:

The DOH NW Region Office will be contacted no later than ten (10) days after notification by the laboratory. Normally, this contact will be made by telephone, and on the same day that the notification was received. *See Appendix-9 for DOH contact information*.

7.3 E.coli Unsatisfactory Samples:

If a routine sample is unsatisfactory for fecal coliform or *E. coli* bacteria, the WS will be contacted before the close of business on the day the laboratory notification is received. Upon such notification the WS shall immediately contact the Water Sr. Manager, Water Foreman or other designated staff member to arrange for repeat sampling as specified in Section 4. Repeat samples shall be collected as soon as is practicable, and in no case beyond twenty-four (24) hours of the notice.

The WS will also contact the DOH NW Region Office on the same day. In the event the DOH NW Regional Office cannot be contacted directly, the WS or Designee shall leave a message on the DOH emergency number. If DOH does not respond to the message on the day it was left, the WS or designee will attempt to contact DOH again on the following day. Such efforts shall continue until contact has been made.

Note: An unsatisfactory fecal coliform or E. coli result in a routine sample does not represent a violation however it is a serious issue that warrants thorough consideration and triggered additional sampling, possible public notification and Level 1 or Level 2 Assessments. The SM, Water Superintendent and Water Foreman will evaluate the situation to determine if an "advisory" should be distributed to affected customers pending the results of repeat samples.

7.4 Treatment Technique Violation:

Treatment Technique Violation (TTV)

- Failure to conduct Level 1 or Level 2 assessments within 30 days of trigger
- Fail to correct all sanitary defects within 30 days or per a schedule approved by the state
- Seasonal system that fails to conduct its State approved start up procedure.

7.5 Public Reporting:

- An E.Coli MCL Violation (confirmed E.coli) requires public notification within 24 hours (Tier 1) See Appendix 10.
- A treatment technique violation must be reported to consumers within 30 days (Tier 2) See appendix 10A.
- Monitoring violations must be reported to consumers 365 days (Tier 3). Normally reported in the Consumer Confidence Report (CCR)

Public Notification Plan, which is located in the Water System Comprehensive Plan for additional information and specific procedures. Copies of the Public Notification plan are maintained in the SNO PUD 1 - Water System Comprehensive Plan, which is located in the library at the PUD Water Shop and in the offices of the SM and Water Superintendent.

8.0 Triggered Assessments:

8.1 Treatment Technique Triggers

Confirmed coliform or E coli samples now also activate Treatment Technique Triggers. Treatment Technique triggers are;

- A confirmed total coliform sample, meaning two or more samples in a month for small systems (taking fewer than 40 samples a month), or more than 5% total coliform positive in a month for systems taking more than 40 samples a month.
- Confirmed E.Coli. At least two total coliform positive samples with at least one of those also E.coli positive in a linked sample set of routine and repeats.
- Failure to collect required repeat samples.

8.2 Assessments

There are two levels of assessments Level 1 and Level 2.
A level one assessment is triggered by;

- A confirmed total coliform sample, meaning two or more samples in a month for small systems (taking fewer than 40 samples a month), or more than 5% total coliform positive in a month for systems taking more than 40 samples a month.
- Failure to collect required repeat samples after a positive routine coliform sample.

A level 2 assessment is triggered by;

- A routine E.coli positive and a total coliform positive repeat.
- A routine E.coli positive and a failure to take a repeat sample.
- A routine E.coli positive and an E. coli positive repeat sample.
- A coliform positive sample with an E.coli positive repeat sample.
- A coliform positive sample with a coliform positive sample that was not also tested for E.coli.
- If a water system has had multiple confirmed coliform events in the previous rolling 12 month period.

Level 1 assessments are performed by the purveyor using profession knowledge and Department of Health templates and guides. Assessments must be performed and submitted to the State within 30 days of the confirmed positive sample. As of 03/29/16 the Washington Department of Health is currently writing guidance materials and will be available at a future date and will be included in the appendices. Level 1 assessment will look for;

- Sanitary defects
- Problems in operations and maintenance.
- Review best management practices (BMP's)
- Submit plan for corrective action(s)

Level 2 Assessment must be performed by; a Professional Engineer (PE), a Water Distribution Manager 2 or greater, the Washington Department of Health or the Local Health Authority (Snohomish County Health District). Assessments must be performed and submitted to the State within 30 days of the confirmed positive sample. As of 03/29/16 the Washington Department of Health is currently writing guidance materials and will be available at a future date and will be included in the appendices. A level 2 assessment is more in-depth than a level one. Level 2 assessment will;

- Look for sanitary defects
- Problems in operations and maintenance.
- Review best management practices (BMP's)
- Submit plan for corrective action(s)

9.0 COLIFORM MONITORING PLAN (CMP) PREPARATION INFORMATION

9.1 CMP Revision Criteria:

The CMP shall be reviewed periodically and revised on an as needed basis. The conditions to be evaluated in future reviews include:

- Changes in regulations
- Population changes
- Loss of sample site availability
- Changes in sample site location
- Service to new areas
- Changes in pressure zones or flow patterns
- Consolidation of systems

9.2 CMP Preparation History:

Barbra Smith, with the SNO PUD 1 Water Resources Engineering Division prepared the first CMP in 1995.

The 1995 CMP was revised by SNO PUD 1 Water Superintendent Brian St. Clair in 1997 and 1998.

A complete revision of the SNO PUD 1 – LAKE STEVENS CMP was completed and submitted to the DOH for approval in October 2004. The CMP was prepared by Peggy Coker, Water Distribution Specialist, Scott Schuler, Water Foreman, Tracy Boggs, Water Utility Administrator and Paul J. Wolcott, Water Superintendent.

In August 2005, the SNO PUD 1 – LAKE STEVENS CMP was revised by Mark Spahr, (retired SM) and Paul J. Wolcott (Water Superintendent) to include all SNO PUD 1 – WATER SYSTEMS served by the City of Everett Regional Water Supply System (ERWSS).

In January 2008, the SNO PUD 1 – LAKE STEVENS CMP was updated by Water Superintendent Paul J. Wolcott.

In October 2010, the SNO PUD 1 – LAKE STEVENS CMP was updated by Water Superintendent Brett Gehrke.

In January 2012, the SNO PUD 1 – LAKE STEVENS CMP was updated by Water Superintendent Brett Gehrke.

In March 2016, the SNO PUD 1 – LAKE STEVENS CMP was updated by Water Superintendent Brett Gehrke.

In January 2019, the SNO PUD 1 – LAKE STEVENS CMP was updated by Water Superintendent Brett Gehrke.

Source and System Location Site Maps

The map is folded and inserted in a pocket in the binder insert behind this page

LAKE STEVENS INTERGRATED SYSTEM
CRESWELL SYSTEM
STORM LAKE RIDGE SYSTEM

LAKE STEVENS INTERGRATED SYSTEM

LAKE STEVENS INTERGRATED SYSTEM

CRESWELL SYSTEM

STORM LAKE RIDGE SYSTEM

Sunnyside Blvd SE
Sr 204
91St Ave SE
92Nd Ave SE
Frontage Road
E Lakeshore Dr
S Machias Road
Newberg Road
S Alder Ave
Machias Cutoff
Us Hwy 2 Brdg
20Th St SE
Cavalero Road
Sr 9 SE
87Th Ave SE
Bickford Ave
Carlson Road
Ok Mill Road
Dubuque Road
Skipley Road
Ritchey Road
56Th St SE
43Rd Ave SE
60Th St SE
83Rd Ave SE
139Th Ave SE
Three Lakes St SE
Three Lakes Road
Storm Lake Road
Woods Creek Road
Foster Slough Road
72Nd St SE
Thirteenth St
Tenth St
Pine Ave
Us Hwy 2
131St Ave SE
Lenora St
Fourth St
Ave D
First St
171St Ave SE
Westwick Road
159Th Ave SE

T Tap

Everett's Transmission Line
Major Roads

SNOHOMISH COUNTY PUD
PUBLIC UTILITY DISTRICT NO. 1

0 1,000 2,000 4,000 6,000 Feet

SNO PUD 1 - SURFACE WATER SYSTEMS SOURCE AND SYSTEMS LOCATIONS SITE MAP

APPENDIX 1

Table 2
DOH REQUIRED MINIMUM MONTHLY COLIFORM SAMPLES

Population Served[1] During Month		Minimum Number of Routine Samples/Calendar Month	
		When NO samples with a coliform presence were collected during the previous month	When ANY samples with a coliform presence were collected during the previous month
1 ----------	1,000	1[2]	5
1,001 ----------	2,500	2	5
2,501 ----------	3,300	3	5
3,301 ----------	4,100	4	5
4,101 ----------	4,900	5	5
4,901 ----------	5,800	6	6
5,801 ----------	6,700	7	7
6,701 ----------	7,600	8	8
7,601 ----------	8,500	9	9
8,501 ----------	12,900	10	10
12,901 ----------	17,200	15	15
17,201 ----------	21,500	20	20
21,501 ----------	25,000	25	25
25,001 ----------	33,000	30	30
33,001 ----------	41,000	40	40
41,001 ----------	50,000	50	50
50,001 ----------	59,000	60	60
59,001 ----------	70,000	70	70
70,001 ----------	83,000	80	80
83,001 ----------	96,000	90	90
96,001 ----------	130,000	100	100
130,001 ----------	220,000	120	120
220,001 ----------	320,000	150	150
320,001 ----------	450,000	180	180
450,001 ----------	600,000	210	210
600,001 ----------	780,000	240	240
780,001 ----------	970,000	270	270
970,001 ----------	1,230,000[3]	300	300

APPENDIX-3A

SNO PUD 1 – LAKE STEVENS

System Identification No. 809071

Coliform Sample Collection

Site Map

The map is folded and inserted in a pocket in the binder insert behind this page

Pressure Zones

- (270) 10th Street SE
- (460) Crest Lane
- (270) East Everett
- (610) Lake Cassidy
- (400) Blue Spruce
- (460) Cavaleros
- (296) Cedar Ln/Indian S.
- (326) Centennial
- (476) Engebretson
- (726) Granie Falls
- (580) Hillcrest
- (325) Jordan River Trails
- (520) Jordan
- (811) Lake Bosworth
- (500) Lake Stevens
- (270) Meeker Retreat
- (250) Pilchuck 10
- (420) Soper Hill
- (670) Sunset Ridge
- (270) Sunnyside
- (580) Walker Hill
- (460) Williams Road

Site	Address	Site	Address
1	4233 113th Dr SE	27	4621 71st Dr NE
2	10402 46th Pl SE	28	22620 29th Pl SE
3	3519 97th Dr SE	29	7722 191st St NE
4	7921 S Lk Stevens Rd	30	15220 79th St NE
5	11015 27th St SE	31	9130 Ray Gray Rd
6	1925 117th Dr SE	32	10133 169th Dr NE
7	12518 19th Pl SE	33	17705 115th St NE
8	1827 89th Dr SE	34	11821 174th Av NE
9	427 W. Shore Loop Rd	35	18009 123rd Pl NE
10	1102 102nd Dr SE	36	19908 Canyon Dr
11	12721 12th St SE	37	12502 Burn Rd
12	7427 10th St SE	38	13715 Jordan Trails Rd
13	205 83rd Dr SE	39	13611 168th St NE
14	609 98th Dr NE	40	16904 122nd Av NE
15	117 118th Dr NE	41	11832 28th St SE
16	1304 85th Dr NE	42	801 Stitch Rd
17	12908 13th Pl NE	43	3010 139th Av NE
18	2105 Sunnyside Blvd	44	17730 Engebretson Rd
19	2126 82nd Dr NE	45	5603 E Lk Bosworth Dr
20	2615 Lake Dr NE	46	7007 110TH AVE NE
21	2528 Spruce Rd NE	47	4525 87TH AVE SE
22	2530 120th Dr NE	48	13801 MERIDIAN ST
23	3426 87th Av NE	49	8302 158TH DR NE
24	3301 117th Av NE	50	21807 PILCHUCK PL
25	2020 155th Av NE	51	5807 147TH AVE NE
26	4624 Sunnyside Blvd	52	12625 2nd St SE

115Th Ave NE
228Th St NE
Jordan Road
N Alder Road
GRANITE FALLS RESERVOIR
GRANITE FALLS BOOSTER PUMP STATION
84Th St NE
Newberg Road
S Alder Ave
Grove St
State Ave
64Th St NE
Sr 9 NE
123Rd Ave NE
MARYSVILLE EMERGENCY INTERTIE
Sr 529
I-5
Sr 92
Soper Hill Road
Callow Road
Crayton Dr
N Machias Road
Lakeview Dr
SOPERWOOD JOA TAP
WALKER HILL RESERVOIR
S Machias Road
LAKE STEVENS EMERGENCY WELLS
Ok Mill Road
Lakeshore Dr
Us Hwy 2 Brdg
20Th St SE
Machias Cutoff
Carlson Road
Dubuque Road
HILLCREST RESERVOIR
Sr 9
43Rd Ave SE
Skipley Road
56Th St SE
CAVALEROS EVERETT TAP
EAST HEWITT EVERETT TAP
GLENWOOD EVERETT TAP
MACHIAS EVERETT TAP
WILLIAMS ROAD EVERETT TAP
Three Lakes Road
39Th Ave SE
131St Ave SE
Slough Road
Lenora St
First St
Second St
Pine Ave
Ave D
Airport Way
164Th St SE
100Th St SE
S 2Nd Ave

APPENDIX 3A (EW)

SNOHOMISH COUNTY PUD NO.1
LAKE STEVENS INTEGRATED

- Flow Direction
- Coliform Sample Location Sites
- Granite Falls Pump Station
- Reservoir
- Major Roads
- Everett's Transmission Line
- PUD Water Distribution System

SNOHOMISH COUNTY PUD PUBLIC UTILITY DISTRICT NO. 1

Feet
0 1,750 3,500 7,000 10,500

Y:\arcgis\MAPS\Coliform_Monitoring_Plan\Lake_Stevens_Integrated.mxd

SNO PUD 1 – STORM LAKE

System Identification No. 444316

Coliform Sample Collection

Site Map

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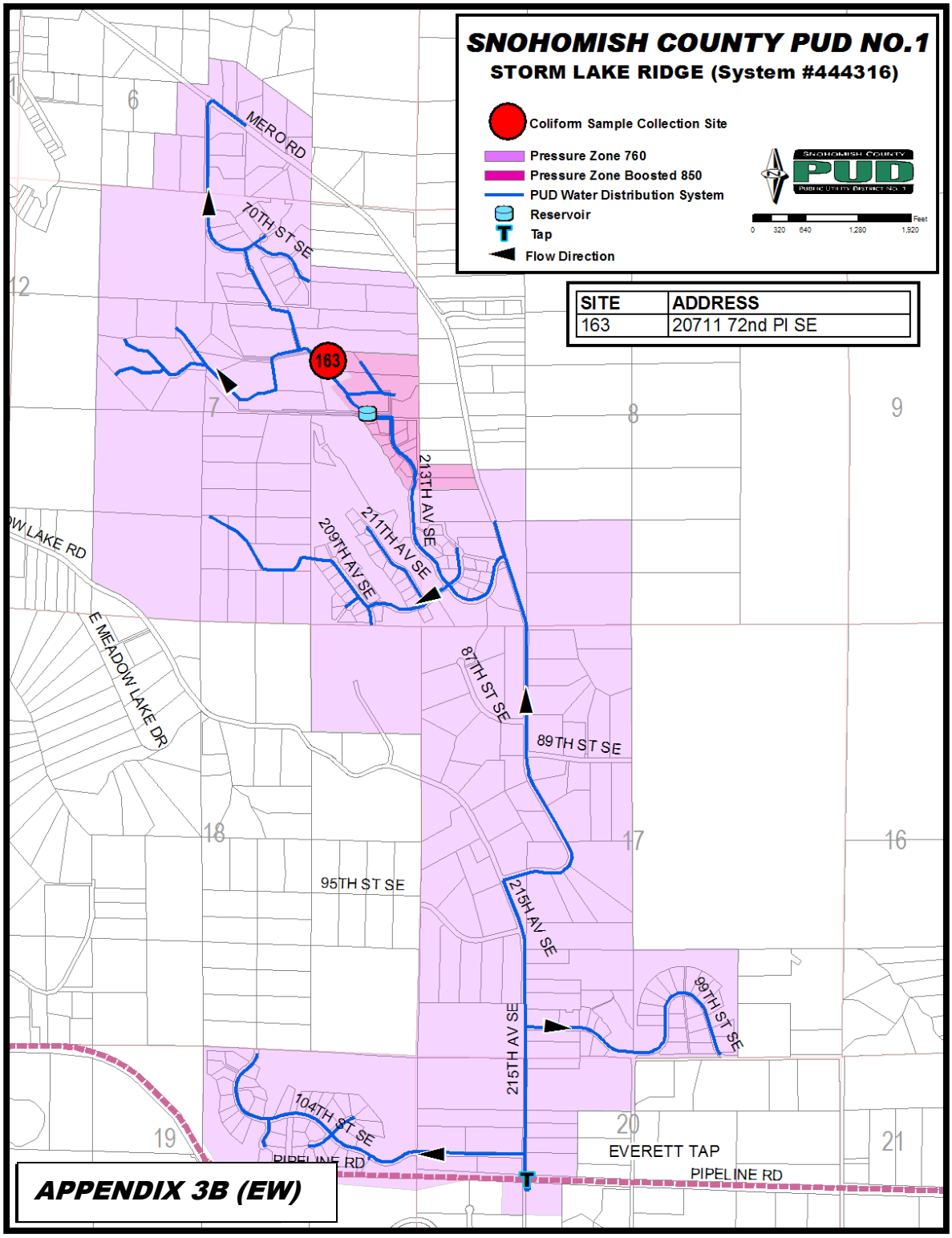
SNOHOMISH COUNTY PUD NO.1
STORM LAKE RIDGE (System #444316)
Coliform Sample Collection Site
Pressure Zone 760
Pressure Zone Boosted 850
PUD Water Distribution System
Reservoir
Tap
Flow Direction
SNOHOMISH COUNTY PUD PUBLIC UTILITY DISTRICT NO. 1
0 320 640 1,280 1,920 Feet
SITE | ADDRESS
163 | 20711 72nd Pl SE
MERO RD
70TH ST SE
163
213TH AV SE
211TH AV SE
209TH AV SE
W LAKE RD
E MEADOW LAKE DR
87TH ST SE
89TH ST SE
95TH ST SE
215TH AV SE
99TH ST SE
104TH ST SE
PIPELINE RD
EVERETT TAP
APPENDIX 3B (EW)

SNO PUD 1 – CRESWELL

System Identification No. 06325V

Coliform Sample Collection

Site Map

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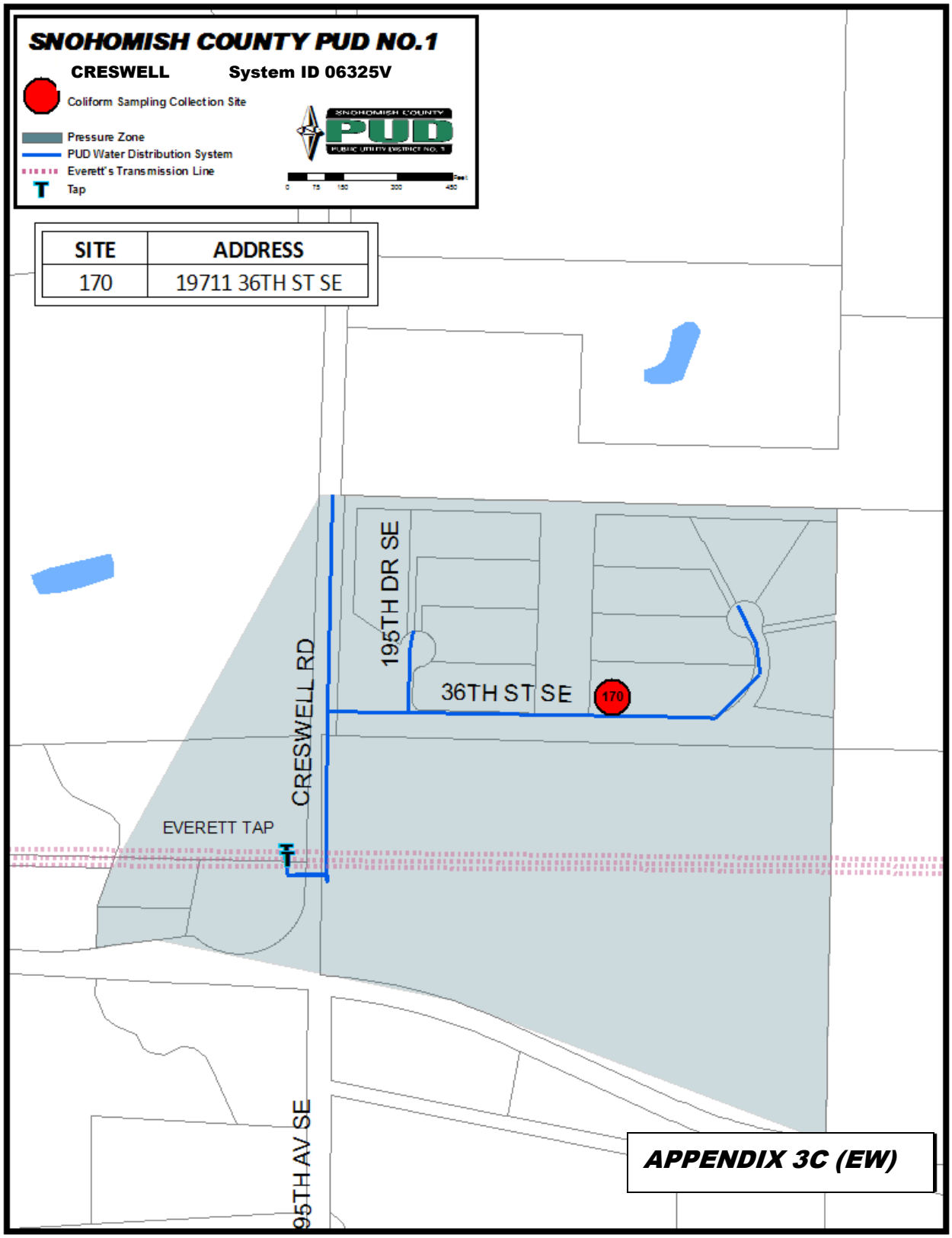
SNOHOMISH COUNTY PUD NO.1
CRESWELL
System ID 06325V
Coliform Sampling Collection Site
Pressure Zone
PUD Water Distribution System
Everett's Transmission Line
Tap
SNOHOMISH COUNTY PUD
PUBLIC UTILITY DISTRICT NO. 1
0 75 150 300 450 Feet
SITE
ADDRESS
170
19711 36TH ST SE
195TH DR SE
36TH ST SE
170
CRESWELL RD
EVERETT TAP
95TH AV SE
APPENDIX 3C (EW)

SUPPLIED BY CITY OF EVERETT REGIONAL WATER SUPPLY SYSTEM

APPENDIX-4A

SNO PUD 1 - LAKE STEVENS, SYSTEM ID No. 809071

ROUTINE & REPEAT COLIFORM SAMPLE COLLECTION SITES

Site 9	ADDRESS	PSI ZONE	COMMENTS
ROUTINE	427 W Shore Loop Rd	811	Above ground sample station
REPEAT UPSTREAM	431 W Shore Loop Rd	811	Hose bib
REPEAT DOWNSTREAM	323 W Shore Loop Rd	811	Hose bib
SITE 145	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE	3324 157th Ave SE	500	Above ground sample station
REPEAT UPSTREAM	3425 157th Ave SE	500	Hose bib
REPEAT DOWNSTREAM	3323 157th Ave SE	500	Hose bib
SITE 144	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE	12913 78th Pl SE	500	Above ground sample station
REPEAT UPSTREAM	7901 129th Dr SE	500	Hose bib
REPEAT DOWNSTREAM	7803 129th Dr SE	500	Hose bib
SITE 146	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE	12226 57th Pl SE	500	Above ground sample station
REPEAT UPSTREAM	5814 123rd Ave SE	500	Hose bib
REPEAT DOWNSTREAM	12218 57th Pl SE	500	Hose bib
Site 18	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE	2105 Sunnyside Blvd	270	Above ground sample station
REPEAT UPSTREAM	2131 Sunnyside Blvd	270	House hose bib
REPEAT DOWNSTREAM	2008 Sunnyside Blvd	270	House hose bib
Site 19	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE	2126 82nd Dr NE	500	Above ground sample station
REPEAT UPSTREAM	2128 82nd Dr NE	500	House hose bib
REPEAT DOWNSTREAM	2120 82nd Dr NE	500	House hose bib

COLIFORM MONITORING PLAN
FOR
SNO PUD 1 - WATER SYSTEMS

SUPPLIED BY CITY OF EVERETT REGIONAL WATER SUPPLY SYSTEM

APPENDIX-4A

SNO PUD 1 - LAKE STEVENS, SYSTEM ID No. 809071

ROUTINE & REPEAT COLIFORM SAMPLE COLLECTION SITES

Site 13	ADDRESS	PSI ZONE	COMMENTS
ROUTINE	205 83rd Dr SE	500	Above ground sample station
REPEAT UPSTREAM	201 83rd Dr SE	500	House hose bib
REPEAT DOWNSTREAM	209 83rd Dr SE	500	House hose bib
Site 16	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE	1304 85th Dr NE	500	Above ground sample station
REPEAT UPSTREAM	1310 85th Dr NE	500	House hose bib
REPEAT DOWNSTREAM	1030 102nd Dr SE	500	House hose bib
Site 20	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE	2615 Lake Dr NE	500	Above ground sample station
REPEAT UPSTREAM	2609 Lake Dr NE	500	House hose bib
REPEAT DOWNSTREAM	2623 Lake Dr NE	500	House hose bib
Site 46	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE	7007 110th Ave NE	610	Above ground sample station
REPEAT UPSTREAM	11003 69th St NE	610	House hose bib
REPEAT DOWNSTREAM	7125 110th Ave NE	610	House hose bib
Site 39	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE	13611 168th St NE	600	Above ground sample station
REPEAT UPSTREAM	13717 168th St NE	600	House hose bib
REPEAT DOWNSTREAM	13603 168th St NE	600	House hose bib
Site 34	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE	11821 174th Av NE	400	Above ground sample station
REPEAT UPSTREAM	11815 174th Av NE	400	House hose bib
REPEAT DOWNSTREAM	17232 119th Pl NE	400	House hose bib

COLIFORM MONITORING PLAN
FOR
SNO PUD 1 - WATER SYSTEMS

SUPPLIED BY CITY OF EVERETT REGIONAL WATER SUPPLY SYSTEM

APPENDIX-4A

SNO PUD 1 - LAKE STEVENS, SYSTEM ID No. 809071

ROUTINE & REPEAT COLIFORM SAMPLE COLLECTION SITES

Site 35	ADDRESS	PSI ZONE	COMMENTS
ROUTINE	18009 123rd Pl NE	600	Above ground sample station
REPEAT UPSTREAM	18017 123rd Pl NE	600	House hose bib
REPEAT DOWNSTREAM	18003 123rd Pl NE	600	House hose bib
Site 32	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE	10133 169th Dr NE	726	Above ground sample station
REPEAT UPSTREAM	10117 169th Dr NE	726	House hose bib
REPEAT DOWNSTREAM	10211 169th Dr NE	726	House hose bib
Site 50	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE	21807 Pilchuck Pl	726	Above ground sample station
REPEAT UPSTREAM	21803 Pilchuck Pl	726	House hose bib
REPEAT DOWNSTREAM	21901 Pilchuck Pl	726	House hose bib
Site 29	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE	7722 191st St NE	810	Above ground sample station
REPEAT UPSTREAM	7814 191st St NE	810	House hose bib
REPEAT DOWNSTREAM	7611 191st St NE	810	House hose bib
Site 28	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE	22620 29th Pl NE	250	Above Ground Sample Station
REPEAT UPSTREAM	22522 29th Pl NE	250	Hose Bib
REPEAT DOWNSTREAM	22623 29th P NE	250	Hose Bib
Site 45	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE	5603 E Lk Bosworth Dr	810	Above ground sample station
REPEAT UPSTREAM	5433 E Lk Bosworth Dr	810	House hose bib
REPEAT DOWNSTREAM	5615 E Lk Bosworth Dr	810	House hose bib

SUPPLIED BY CITY OF EVERETT REGIONAL WATER SUPPLY SYSTEM

APPENDIX-4A

SNO PUD 1 - LAKE STEVENS, System Identification No. 809071

ROUTINE & REPEAT COLIFORM SAMPLE COLLECTION SITES

Site 25	ADDRESS	PSI ZONE	COMMENTS
ROUTINE	2020 155th Av NE	810	Above ground sample station
REPEAT UPSTREAM	1826 155th Av NE	810	House hose bib
REPEAT DOWNSTREAM	2306 155th Av NE	810	House hose bib
Site 1	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE	4233 113th Dr SE	460	Above ground sample station
REPEAT UPSTREAM	4217 113th Dr SE	460	House hose bib
REPEAT DOWNSTREAM	4317 113th Dr SE	460	House hose bib
Site 5	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE	11015 27th St SE	460	Above ground sample station
REPEAT UPSTREAM	11027 27th St SE	460	House hose bib
REPEAT DOWNSTREAM	11011 27th St SE	460	House hose bib
Site 41	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE	11832 28th St SE	460	Above ground sample station
REPEAT UPSTREAM	11914 28th St SE	460	House hose bib
REPEAT DOWNSTREAM	11808 28th St SE	460	House hose bib
Site 6	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE	1925 117th DR SE	500	Above ground sample station
REPEAT UPSTREAM	1909 17th DR SE	500	House hose bib
REPEAT DOWNSTREAM	1929 117th Dr SE	500	House hose bib
Site 7	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE	12518 19th PL SE	500	Above ground sample station
REPEAT UPSTREAM	12514 19th PL SE	500	House hose bib
REPEAT DOWNSTREAM	12528 19th PL SE	500	House hose bib

SNO PUD 1 - LAKE STEVENS, System Identification No. 809071

ROUTINE & REPEAT COLIFORM SAMPLE COLLECTION SITES

Site 11	ADDRESS	PSI ZONE	COMMENTS
ROUTINE	12721 12th ST SE	500	Above ground sample station
REPEAT UPSTREAM	12707 12th ST SE	500	House hose bib
REPEAT DOWNSTREAM	12823 212th ST SE	500	House hose bib
Site 42	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE	801 Stitch Rd	500	Above ground sample station
REPEAT UPSTREAM	809 Stitch Rd	500	House hose bib
REPEAT DOWNSTREAM	725 Stitch Rd	500	House hose bib
Site 10	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE	1102 102nd DR SE	500	Above ground sample station
REPEAT UPSTREAM	1106 102nd DR SE	500	House hose bib
REPEAT DOWNSTREAM	10330 102nd DR SE	500	House hose bib
Site 14	**ADDRESS**	**PSI Zone**	**COMMENTS**
ROUTINE	609 98th DR NE	500	Above ground sample station
REPEAT UPSTREAM	603 98th DR NE	500	House hose bib
REPEAT DOWNSTREAM	617 98th DR NE	500	House hose bib
Site 36	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE	19908 Canyon Dr	726	Above ground sample station
REPEAT UPSTREAM	19920 Canyon Dr	726	House hose bib
REPEAT DOWNSTREAM	19904 Canyon Dr	726	House hose bib
Site 33	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE	17705 115th St NE	425	Above ground sample station
REPEAT UPSTREAM	17625 115th St NE	425	House hose bib
REPEAT DOWNSTREAM	17713 115th St NE	425	House hose bib

COLIFORM MONITORING PLAN
FOR
SNO PUD 1 - WATER SYSTEMS

SUPPLIED BY CITY OF EVERETT REGIONAL WATER SUPPLY SYSTEM

APPENDIX-4A

SNO PUD 1 - LAKE STEVENS, System Identification No. 809071

ROUTINE & REPEAT COLIFORM SAMPLE COLLECTION SITES

Site 44	ADDRESS	PSI ZONE	COMMENTS
ROUTINE	17730 Engebretson Rd	425	Above ground sample station
REPEAT UPSTREAM	17810 Engebretson Rd	425	House hose bib
REPEAT DOWNSTREAM	17718 Engebretson Rd	425	House hose bib
Site 31	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE	9130 Ray Gray Rd	726	Above ground sample station
REPEAT UPSTREAM	9402 Ray Gray Rd	726	House hose bib
REPEAT DOWNSTREAM	9120 Ray Gray Rd	726	House hose bib
Site 51	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE	5807 147th Ave NE	500	Above goung sample station
REPEAT UPSTREAM	5625 147th Ave NE	500	House hose bib
REPEAT DOWNSTREAM	5903 147th Ave NE	500	House hose bib
Site 43	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE	3010 139th Av NE	500	Above ground sample station
REPEAT UPSTREAM	2926 139th Av NE	500	House hose bib
REPEAT DOWNSTREAM	3102 139th AVE NE	500	House hose bib
Site 24	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE	3301 117th Av NE	500	Above ground sample station
REPEAT UPSTREAM	3219 117th Av NE	500	House hose bib
REPEAT DOWNSTREAM	3305 117th Av NE	500	House hose bib
Site 21	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE	2528 Spruce Rd NE	500	Above ground sample station
REPEAT UPSTREAM	2522 Spruce Rd NE	500	House hose bib
REPEAT DOWNSTREAM	2604 Spruce Rd NE	500	House hose bib

COLIFORM MONITORING PLAN
FOR
SNO PUD 1 - WATER SYSTEMS

SUPPLIED BY CITY OF EVERETT REGIONAL WATER SUPPLY SYSTEM

APPENDIX-4A

SNO PUD 1 - LAKE STEVENS, System Identification No. 809071

ROUTINE & REPEAT COLIFORM SAMPLE COLLECTION SITES

Site 22	ADDRESS	PSI ZONE	COMMENTS
ROUTINE	2530 120th Dr NE	500	Above ground sample station
REPEAT UPSTREAM	2608 120th Dr NE	500	House hose bib
REPEAT DOWNSTREAM	2524 120th Dr NE	500	House hose bib
Site 17	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE	12908 13th Pl NE	500	Above ground sample station
REPEAT UPSTREAM	13002 13th Pl NE	500	House hose bib
REPEAT DOWNSTREAM	12906 13th Pl NE	500	House hose bib
Site 48	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE	13801 Meridian ST	500	Above ground sample station
REPEAT UPSTREAM	13606 Meridian ST	500	House hose bib
REPEAT DOWNSTREAM	13822 Meridian ST		House hose bib
Site 15	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE	117 118th Dr NE	500	Above ground sample station
REPEAT UPSTREAM	109 118th Dr NE	500	House hose bib
REPEAT DOWNSTREAM	125 118th Dr NE	500	House hose bib
Site 40	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE	16904 122nd Av NE	726	Above ground sample station
REPEAT UPSTREAM	16732 122nd Av NE	726	House hose bib
REPEAT DOWNSTREAM	16920 122nd Av NE	726	House hose bib
Site 38	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE	13715 Jordan Trails Rd	600	Above ground sample station
REPEAT UPSTREAM	13703 Jordan Trails Rd	600	House hose bib
REPEAT DOWNSTREAM	13708 Jordan Trails Rd	600	House hose bib

COLIFORM MONITORING PLAN
FOR
SNO PUD 1 - WATER SYSTEMS

SUPPLIED BY CITY OF EVERETT REGIONAL WATER SUPPLY SYSTEM

APPENDIX-4A

SNO PUD 1 - LAKE STEVENS, System Identification No. 809071

ROUTINE & REPEAT COLIFORM SAMPLE COLLECTION SITES

Site 37	ADDRESS	PSI ZONE	COMMENTS
ROUTINE	12502 Burn Rd	726	Above ground sample station
REPEAT UPSTREAM	12421 Burn Rd	726	House hose bib
REPEAT DOWNSTREAM	12515 Burn Rd	726	House hose bib
Site 49	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE	8302 158th DR NE	500	Above ground sample station
REPEAT UPSTREAM	8324 158th DR NE	500	House hose bib
REPEAT DOWNSTREAM	8227 158th DR NE	500	House hose bib
Site 30	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE	15220 79th St NE	500	Above ground sample station
REPEAT UPSTREAM	15314 79th St NE	500	House hose bib
REPEAT DOWNSTREAM	15217 79th St NE	500	House hose bib
Site 52	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE	12625 2nd St SE	500	Above ground sample station
REPEAT UPSTREAM	12615 2nd St SE	500	House hose bib
REPEAT DOWNSTREAM	12712 2nd St SE	500	House hose bib
Site 2	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE	10402 46th Pl SE	500	Above ground sample station
REPEAT UPSTREAM	10326 46th Pl SE	500	House hose bib
REPEAT DOWNSTREAM	10408 46th Pl SE	500	House hose bib
Site 3	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE	3519 97th Dr SE	580	Above ground sample station
REPEAT UPSTREAM	3509 97th Dr SE	580	House hose bib
REPEAT DOWNSTREAM	3527 97th Dr SE	580	House hose bib

SUPPLIED BY CITY OF EVERETT REGIONAL WATER SUPPLY SYSTEM

APPENDIX-4A

SNO PUD 1 - LAKE STEVENS, System Identification No. 809071

ROUTINE & REPEAT COLIFORM SAMPLE COLLECTION SITES

Site 47	ADDRESS	PSI ZONE	COMMENTS
ROUTINE	4525 87th Ave SE	500	Above ground sample station
REPEAT UPSTREAM	4415 87th Ave SE	500	House hose bib
REPEAT DOWNSTREAM	3811 87th Ave SE	500	House hose bib
Site 4	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE	7921 S LK Stevens RD	400	Above ground sample station
REPEAT UPSTREAM	8103 S Lk Stevens RD	400	House hose bib
REPEAT DOWNSTREAM	7920 S LK Stevens RD	400	House hose bib
Site 12	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE	7424 10th St SE	320	Above ground sample station
REPEAT UPSTREAM	7601 10th St SE	320	House hose bib
REPEAT DOWNSTREAM	7427 10th St SE	320	House hose bib
Site 8	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE	1827 89th DR SE	500	Above ground sample station
REPEAT UPSTREAM	9015 19th PL SE	500	House hose bib
REPEAT DOWNSTREAM	1921 89th DR SE	500	House hose bib
Site 141	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE	4621 131st Ave SE	500	Above ground sample station
REPEAT UPSTREAM	4531 131st Ave SE	500	House hose bib
REPEAT DOWNSTREAM	4715 131st Ave SE	500	House hose bib
Site 143	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE	12309 80th ST SE	500	Above ground sample station
REPEAT UPSTREAM	12415 80th St SE	500	House hose bib
REPEAT DOWNSTREAM	12226 80th ST SE	500	House hose bib

COLIFORM MONITORING PLAN
FOR
SNO PUD 1 - WATER SYSTEMS

SUPPLIED BY CITY OF EVERETT REGIONAL WATER SUPPLY SYSTEM

APPENDIX-4A

SNO PUD 1 - LAKE STEVENS, System Identification No. 809071

ROUTINE & REPEAT COLIFORM SAMPLE COLLECTION SITES

Site 144	ADDRESS	PSI ZONE	COMMENTS
ROUTINE	12913 79th PL SE	500	Above ground sample station
REPEAT UPSTREAM	12924 79th PL SE	500	House hose bib
REPEAT DOWNSTREAM	7910 129th DR SE	500	House hose bib
Site 142	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE	8311 144th DR SE	500	Above ground sample station
REPEAT UPSTREAM	8221 144th DR SE	500	House hose bib
REPEAT DOWNSTREAM	8230 144th DR SE	500	House hose bib
Site 175	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE	3107 153rd AVE SE	500	Above ground sample station
REPEAT UPSTREAM	3112 153rd Ave SE	500	House hose bib
REPEAT DOWNSTREAM	3010 153rd Ave SE	500	House hose bib
Site 152	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE	1922 S Lk Roesiger Rd	811	Above ground sample station
REPEAT UPSTREAM	1916 S Lk Roesiger Rd	811	House hose bib
REPEAT DOWNSTREAM	1928 S Lk Roesiger Rd	811	House hose bib
Site 150	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE	2625 SW Lk Roesiger Rd	811	Above ground sample station
REPEAT UPSTREAM	2703 SW Lk Roesiger Rd	811	House hose bib
REPEAT DOWNSTREAM	2703 SW Lk Roesiger Rd	811	House hose bib
Site 9	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE	427 W Shore Loop Rd	811	Above ground sample station
REPEAT UPSTREAM	431 W Shore Loop Rd	811	House hose bib
REPEAT DOWNSTREAM	323 W Shore Loop Rd	811	House hose bib

COLIFORM MONITORING PLAN
FOR
SNO PUD 1 - WATER SYSTEMS

SUPPLIED BY CITY OF EVERETT REGIONAL WATER SUPPLY SYSTEM

APPENDIX-4A

SNO PUD 1 - LAKE STEVENS, System Identification No. 809071

ROUTINE & REPEAT COLIFORM SAMPLE COLLECTION SITES

Site 151	ADDRESS	PSI ZONE	COMMENTS
ROUTINE	310 239th Ave NE	811	Above ground sample station
REPEAT UPSTREAM	318 239th Ave NE	811	House hose bib
REPEAT DOWNSTREAM	304 239th Ave NE	811	House hose bib
Site 28	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE	22620 29th PL NE	811	Above ground sample station
REPEAT UPSTREAM	22312 29TH Pl NE	811	House hose bib
REPEAT DOWNSTREAM	22623 29TH Pl NE	811	House hose bib
Site	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE			Above ground sample station
REPEAT UPSTREAM			House hose bib
REPEAT DOWNSTREAM			House hose bib

Alternate Sites

Site	ADDRESS	PSI ZONE	COMMENTS
ROUTINE			Above groung sample station
REPEAT UPSTREAM			House hose bib
REPEAT DOWNSTREAM			House hose bib
Site 2	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE			Above ground sample station
REPEAT UPSTREAM			House hose bib
REPEAT DOWNSTREAM			House hose bib
Site	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE			Above ground sample station
REPEAT UPSTREAM			House hose bib
REPEAT DOWNSTREAM			House hose bib

COLIFORM MONITORING PLAN
FOR
SNO PUD 1 - WATER SYSTEMS
SUPPLIED BY CITY OF EVERETT REGIONAL WATER SUPPLY SYSTEM

APPENDIX-4B

SNO PUD 1 - STORM LAKE, SYSTEM ID No. 444316			
ROUTINE And REPEAT COLIFORM SAMPLE COLLECTION SITES			
SITE 163	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE	20711 72nd Pl SE	760	Above ground sample station
REPEAT UPSTREAM	21007 72nd Pl SE	760	Hose bib
REPEAT DOWNSTREAM	21021 72nd Pl SE	760	Hose bib
* REPEAT - SOURCE	10401 - 215th Ave SE	540	Pipe Tap - Pump Station. Prior to Booster Chlorinatior
FUTURE SAMPLE SITE	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE			
REPEAT UPSTREAM			
REPEAT DOWNSTREAM			
FUTURE SAMPLE SITE	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE			
REPEAT UPSTREAM			
REPEAT DOWNSTREAM			

COLIFORM MONITORING PLAN
FOR
SNO PUD 1 - WATER SYSTEMS
SUPPLIED BY CITY OF EVERETT REGIONAL WATER SUPPLY SYSTEM

APPENDIX-4B

SNO PUD 1 - CRESWELL, SYSTEM ID No. 06325V

ROUTINE And REPEAT COLIFORM SAMPLE COLLECTION SITES

SITE 170	ADDRESS	PSI ZONE	COMMENTS
ROUTINE	19711 36th Dr SE	460	Above ground sample station
REPEAT UPSTREAM	3521 195th Dr SE	460	Hose bib
REPEAT DOWNSTREAM	19813 36th St SE	460	Hose bib
REPEAT SOURCE	3715 - Creswell	460	Pipe tap - Master Meter.
FUTURE SAMPLE SITE	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE			
REPEAT UPSTREAM			
REPEAT DOWNSTREAM			
FUTURE SAMPLE SITE	**ADDRESS**	**PSI ZONE**	**COMMENTS**
ROUTINE			
REPEAT UPSTREAM			
REPEAT DOWNSTREAM			

SNO PUD 1 - LAKE STEVENS
System ID No.: 809071

COLIFORM SAMPLE AND CHLORINE RESIDUAL SAMPLE SITE LOCATIONS

Date	Cl_2 Res	Temp	Site #	Sample Site Address	Date	Cl_2 Res	Temp	Site #	Sample Site Address
			9	427 W Shore Loop				141	4621 131st Ave SE
			145	3324 - 157th Ave SE				143	12309 80th St SE
			144	12913 - 78th PL SE				144	12913 79th PL SE
			146	12226 - 57th PL SE				142	8311 144th Dr SE
			18	2105 Sunnyside Blvd				175	3107 153rd Ave SE
			19	2126 82nd Dr NE				152	1922 S Lake Roesiger Rd
			13	205 83rd Dr SE				150	2625 SW Lake Roesiger Rd
			16	1304 85th Dr NE				149	427 W Shore Loop Rd
			20	2615 Lake Dr				151	310 239th Ave NE
			46	7007 110th Ave NE				168	22620 29th Pl NE
			39	13611 168th St NE					
			34	11821 174th Ave NE					
			35	18009 123rd Pl NE					
			32	10133 169th Dr NE					
			50	21807 Pilchuck Pl					
			29	7722 191st Ave NE					
			28	22620 29th pl NE					
			45	5603 E Lk Bosworth Dr					
			25	2020 155th Ave NE					
			1	4233 113th Dr SE					
			5	11015 27th St SE					
			41	11832 28th St SE					
			6	1925 117th Dr SE					
			7	12518 19th Pl SE					
			11	12721 12th St SE					
			42	801 Stitch Rd					
			10	1102 102nd Dr SE					
			14	609 98th Dr NE					
			36	19908 Canyon Dr					
			33	17705 115th St NE					
			44	17730 Engebretson Rd					
			31	9130 Ray Gray Rd					
			51	5807 147th Ave NE					
			43	3010 139th Ave NE					
			24	3301 117th Ave NE					
			21	2528 Spruce Rd NE					
			22	2530 120th Dr NE					
			17	12908 13th Pl NE					
			48	13801 Meridian St					
			15	117 118th Dr NE					
			40	16904 122nd Ave NE					
			38	13715 Jordan Trails Rd					
			37	12502 Burn Rd					
			49	8302 158th Dr NE					
			30	15220 79th St NE					
			52	12625 2nd St SE					
			2	10402 46th Pl SE					
			3	3519 97th Dr SE					
			47	4525 87th Ave SE					
			4	7921 S Lk Stevens Rd					
			12	7427 10th St SE					
			8	1827 89th Dr SE					
					Min	**0.00**	**0**		
					Max	**0.00**	**0**		
					Avg	**#DIV/0!**	**#####**		

Reported On 00/00/00, By:

Brett Gehrke, Water Superintendent
Operator Certification No.: 007311
Water Resources Operations Maintenance and Engineering
Snohomish County Public Utility District No. 1
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Original Document: October 2004
Revised Document: February 2006
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COLIFORM MONITORING PLAN
FOR
SNO PUD 1 - WATER SYSTEMS
SUPPLIED BY CITY OF EVERETT REGIONAL WATER SUPPLY SYSTEM

APPENDIX-5B

SNO PUD 1 - STORM LAKE, SYSTEM ID No. 444316

ROUTINE SAMPLE SITE ADDRESSES and ROUTING LIST

Reporting Period:

Distribution System Disinfectant Residual Monitoring

Monthly Coliform Sample Chlorine Residual

Date	Cl_2 Res mg/L	Temp ˚ Celsius	Site #	Address	Sample Collection Frequency Month
			163	20711 72nd Pl SE	Monthly Sample Collection Site
Min	**0.00**	**0.0**			
Max	**0.00**	**0.0**			
Avg	**#DIV/0!**	**#DIV/0!**			

Weekly Distribution System Water Quality Analyses

Date	Cl_2 Res mg/L	Fluoride mg/L	Turbidity NTU	pH s.u.	Alkalinity CaCO3 mg/L	Hardness CaCO3 mg/L	Address
							20711 72nd Pl SE
							20711 72nd Pl SE
							20711 72nd Pl SE
							20711 72nd Pl SE
							20711 72nd Pl SE
							20711 72nd Pl SE
							20711 72nd Pl SE
							20711 72nd Pl SE
							20711 72nd Pl SE
							20711 72nd Pl SE
Min	**0.00**	**0.0**	**0.00**	**0.0**	**0.0**	**0.0**	
Max	**0.00**	**0.0**	**0.00**	**0.0**	**0.0**	**0.0**	
Avg	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	

Return completed report to DOH District Engineer within 10-days of the end of the reporting month

Report Submitted On 00/00/00, By:

Brett Gehrke
Operator Certification No.: 7311
Superintendent, Operations & Maintenance
Water Resources Division
Snohomish County Public Utility District No. 1
(425) 783-8914, Office
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COLIFORM MONITORING PLAN
FOR
SNO PUD 1 - WATER SYSTEMS
SUPPLIED BY CITY OF EVERETT REGIONAL WATER SUPPLY SYSTEM

APPENDIX-5B

SNO PUD 1 - CRESWELL, SYSTEM ID No. 06325V

ROUTINE SAMPLE SITE ADDRESSES and ROUTING LIST

Reporting Period:

Distribution System Disinfectant Residual Monitoring

Monthly Coliform Sample Chlorine Residual

Date	Cl_2 Res mg/L	Temp ˚ Celsius	Site #	Address	Sample Collection Frequency Month
			170	19711 36th St SE	Monthly Sample Collection Site
Min	**0.00**	**0.00**			
Max	**0.00**	**0.00**			
Avg	**#DIV/0!**	**#DIV/0!**			

Weekly Distribution System Water Quality Analyses

Date	Cl_2 Res mg/L	Fluoride mg/L	Turbidity NTU	pH s.u.	Alkalinity CaCO3 mg/L	Hardness CaCO3 mg/L	Address
							19333 Dubuque Rd
							19333 Dubuque Rd
							19333 Dubuque Rd
							19333 Dubuque Rd
							19333 Dubuque Rd
							19333 Dubuque Rd
							19333 Dubuque Rd
							19333 Dubuque Rd
							19333 Dubuque Rd
							19333 Dubuque Rd
Min	**0.00**	**0.0**	**0.00**	**0.0**	**0.0**	**0.0**	
Max	**0.00**	**0.0**	**0.00**	**0.0**	**0.0**	**0.0**	
Avg	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	

Return completed report to DOH District Engineer within 10-days of the end of the reporting month

Report Submitted On 00/00/00, By:

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APPENDIX-6

ROUTINE/REPEAT COLIFORM SAMPLE COLLECTION PROCEDURES
And
CHLORINE RESIDUAL SAMPLE COLLECTION PROCEDURES

PERSONNEL

Staffing Requirement

Routine/Repeat coliform and chlorine residual sample collection responsibilities are assigned to one “primary” SNO PUD 1 Water Distribution Specialist (WDS) staff member. The WDS is assigned and responsible for the entire routine/repeat coliform monitoring and sample collection program within all of the SNO PUD 1 - Water Systems. As scheduled priorities and personnel availability dictate, the SNO PUD 1 Water Foreman or Water Superintendent may assign other qualified personnel to collect the coliform and free chlorine residual samples.

Labor Requirement

The total labor requirement or time required for each weekly sample route is approximately 16 - 24 hours. The time will vary due to weather, driving time to the sample collection sites, and the number and location of sample sites scheduled on a specific route.

PROTECTIVE EQUIPMENT AND SAFETY

Latex or rubber gloves (when handling disinfectants or DPD reagents)

Leather work gloves (to prevent insect and spider bites when opening meter boxes)

Waste container for collecting and storing discarded or “spent” reagents

District radio (handheld/set to repeater scan and Water Shop frequency)

Traffic safety vest (WISHA / WASHDOT approved)

2–3 traffic cones

Vehicle with traffic warning flashers

Insulated “cooler” with pre-chilled refrigerator pack(s) or bagged ice

FIELD QUALITY CONTROL

The WDS sample collector should be diligent and exhibit care when performing the sample collection activity to prevent any possible contamination of the samples during the collection process. *See: Coliform Monitoring Plan for SNO PUD 1 – WATER SYSTEMS; Supplied by City of Everett Regional Water Supply System; Sections 3.4 and 3.5* for additional information and quality control procedures.

SITE LOCATION DETAILS

See Appendices 3A - 3E and 4A - 5B of the applicable Coliform Monitoring Plan

SAMPLE COLLECTION PROCEDURES

Discussion and Description

State and federal law requires water systems to monitor their distribution system's water quality for disinfectant residual (free chlorine) and the presence of coliform bacteria (total and fecal). The purpose of the monitoring is two-fold: 1). To verify the presence and maintenance of a detectable disinfectant residual to protect water quality in the event that microbial contaminants enter the distribution system, and 2). To detect any potential microbial contamination that might have entered the water distribution system.

Types of Sampling Stations

The SNO PUD 1 the above grade type of water sample collection stations to conduct this monitoring: A dedicated above ground water sample hydrants (Kupferle Eclipse No.88 or Gil EH101).

Sample Representation

An important goal of routine coliform bacteria and chlorine residual monitoring is to obtain samples that are representative of the water quality in the water main; not the tap, the household plumbing or the service line.

To accomplish this, water must be flushed from the sample station until fresh water from the main is drawn to the tap. In addition, care must be taken to insure that conditions at or in the sample tap do not falsely influence the test results.

Conditions That Can Lead to False Positive (Unsatisfactory) Results

- Bacterial contamination from soil
- Stagnant and inadequately flushed service lines
- Animal waste on or around the tap
- Oral contact of humans or animals with the tap
- Contact of the interior of the sample container with the sampler's hands
- Surface water drainage onto or into the sample tap
- Insects, slugs or rodents in contact with the sample tap
- Biofilms formed in the piping due to the absence of adequate disinfectant residual.

Conditions That Can Lead to False Negative (Satisfactory) Results

Inadequate flushing of chlorine solution from the sample tap after disinfection.

Prior to sample collection, care must be taken to adequately flush the tap with enough sample water to remove the disinfectant from the interior and exterior surfaces of the tap.

SITE SPECIFIC PROCEDURES

.

Procedures and Guidelines for Dedicated Above Ground Water Sample Hydrants

These devices are essentially configured like a fire hydrant, except that they do not have a subsurface drain. To prevent freezing and bacteria growth, the barrel of the hydrant must be pumped out after each use. Each station is connected to the water main by a dedicated water main service connection. Kupferle hydrants have an aluminum cover with a hinged door. Gil hydrants have a single piece plastic cover that must be removed to expose the sample tap.

- Unlock the cover on the sample station housing. For the hydrants, use a District series WTR key to unlock the padlock.

- Open the door (Kupferle Hydrant) or remove the station cover (Gil Hydrant). Inside there are two spigots, one large with a star shaped handle on top, a second, smaller one made of brass with a T-handle valve on the side. The tiny valve is connected to a short piece of ¼" copper tubing.

- Don rubber or latex gloves. With a handheld spray bottle filled with diluted Bacdown disinfectant, spray the sample spigots with disinfectant.

- On the Kupferle hydrants use the top end of a 6' service wrench (also called a curb key) to loosen the five sided nut on the round, black plastic, 3" valve box lid located in the ground near the base of the hydrant. Pry the loosened lid out of the "box" with a screwdriver.

- Lower the key end of the wrench into the valve box and place it on the valve nut. The valve is full open at ¼ of a turn. Leave the key wrench on the valve in the open position.

- Turn on the main sample tap valve. Let the tap run at high flow until any visible water discoloration or rust particles are flushed away, then reduce the flow and allow the tap to flush for at least two minutes.

- While the tap is flushing, fill out the Edge sample information form (see the example copy at the end of this Appendix) and place the sticker with the sample number on the lid of the coliform sample bottle. On the sample form, write the sample site number, date, time, and your name in the appropriate boxes. In the same section write in the free chlorine residual result as it is displayed on the analyzer.

- After flushing, readjust the sample flow valve to a lower, less turbulent flow rate and collect a 10 ml water sample into the glass sample vial for free chlorine residual analysis. For each sample, rinse the vial and cap out twice with tap water before conducting the analysis.

- Analyze the sample for free chlorine residual using a HACH pocket colorimeter™ (see the HACH field analysis procedures manual for details on free chlorine DPD analysis with this instrument).

- Check the Chlorine residual; if the residual chlorine concentration in the sample is greater than or equal to 0.2 mg/L, you are ok to proceed collecting a sample. If there is less than 0.2 mg/L of residual, continue flushing until the minimum residual is detected.

- Prior to collecting sample disinfect your hands with hand sanitizer.

- Confirm that the empty bottle lid is not loose, that the sterile seal has not been broken, and that the bottle is not cracked. If the cap is loose discard the bottle and use a new one. The bottle must be filled to or above the 100 ml mark and the cap must be replaced tightly. Do not overflow the bottles, they contain a de-chlorinating agent.

- After the sample bottle is filled, examine the sample for any visible debris or leaks from cracks in the bottle. If any of either are present, empty the container, discard it and collect another sample with a new bottle.

If you drop the cap when filling the bottle or touch the lip or interior of the bottle, discard it and repeat with a new bottle.

- Place the coliform sample into a cooler with a cold refrigerant pack or ice pack.
- Log the chlorine residual result onto the Edge sample information form.
- When sample collection is complete, shut the line valve with the service key (Kupferle) or turn the valve handle to the off position (Gil). This will stop the flow of water from the station.
- On the Kupferle hydrant, remove the key from the valve box, place the valve box lid back in the top of the tube and tighten the nut on the lid with the upper end of the 6' key.
- With the sample tap faucet still open, use the small T-handle to open the small valve on the ¼" copper tubing. Fit the suction end of the small bilge pump to the end of the copper tubing and pump until air is drawn in through the large sample tap. This step removes water from the barrel of the sample hydrant, which prevents freezing in cold weather. Removing the water also reduces the opportunity for bacteria to grow in the hydrant barrel between uses.
- Close the large tap faucet valve and the small ¼" valve.
- Close and lock the hydrant door (Kupferle) or replace and lock the cover (Gil).
- Flush out the HACH vial and cap with water from the sample station, refill the vial with sample water and cap it. This will dissolve any excess reagent before arriving at the next site.

Empty the contents of the free chlorine sample vial into the spent reagent collection bottle. At the conclusion of the sample collection day the spent reagents should be discarded by flushing the solution into a sanitary sewer.

Hose Bib Style Taps Located on the Outside Walls of Residences or Businesses

A pre-established agreement with the property owner for the use of routine sampling sites is preferred. If prior arrangements have not been made with the property owner, ask permission from the owner prior to collecting the sample.

- Disconnect any hoses, freeze covers, or other attachments connected to or covering the tap (leave air vacuum breakers in place).

- For outside hose bibs where the drainage will cause damage or a hazard, place a five-gallon plastic bucket under the tap to catch the sample water. Do not allow water to run into crawl space vents, under buildings or otherwise cause even minor damage to private property. In the winter, do not allow water to run over steps or sidewalks where it can create a fall hazard if it freezes. After sampling is completed, the bucket of water should be disposed of properly.

- Turn on the tap and let it flush for at least two minutes. The purpose of this flush is to draw water from the main through the service piping to the sample tap.

- To neutralize external contaminants on the exterior hose bib tap, spray bacdown disinfectant on the tap while flushing.

- While the tap is flushing, fill out the Edge sample information form (see the example copy at the end of this Appendix) and place the sticker with the sample number on the lid of the coliform sample bottle. On the sample form, write the sample site number, date, time, and your name in the appropriate boxes. In the same section write in the free chlorine residual result as it is displayed on the analyzer.

- After flushing the tap at high flow for at least two minutes; readjust the flow to a lower, less turbulent flow rate.

- Collect a 10 ml water sample into a glass sample vial from a HACH pocket colorimeter kit for free chlorine analysis with DPD. *(See the HACH field analysis procedures manual for details on free chlorine DPD analysis with this instrument)*. Rinse the vial and screw cap out with sample water at least twice before filling it with sample water.

- Check the Chlorine residual; if the residual chlorine concentration in the sample is greater than or equal to 0.2 mg/L, you are ok to proceed collecting a sample. If there is less than 0.2 mg/L of residual, continue flushing until the minimum residual is detected.

- Prior to collecting sample disinfect your hands with hand sanitizer.

- Confirm that the empty bottle lid is not loose, that the sterile seal has not been broken, and that the bottle is not cracked. If the cap is loose discard the bottle and use a new one. The bottle must be filled to or above the 100 ml mark and the

cap must be replaced tightly. Do not overflow the bottles, they contain a de-chlorinating agent.

- Examine the filled sample bottle for any visible debris or cracks. If any are present, empty and discard the bottle and then collect a new sample with a new bottle.

- Place the coliform sample into a cooler with a cold refrigerant pack and close the lid of the cooler.

- Write the chlorine residual result onto the Edge coliform sample form.

- Flush out the chlorine residual test vial and cap with water from the sample station, refill the vial with sample water and cap it. This will dissolve any excess reagent before arriving at the next site.

Empty the contents of the free chlorine sample vial into the spent reagent collection bottle. At the conclusion of the sample collection day the spent reagents should be discarded by flushing the solution into the sanitary sewer.

- Shut off the tap and replace any of the attachments you removed. Make sure the tap is not leaking and that any hose connections are firmly screwed back onto the hose bib. Freeze covers should be replaced in the position they were found.

These taps are located on the Customers' Private Property. The PUD does not want the owners to ask us to remove our sample site from their property because we have not left things exactly the way we found them.

Cold Water Taps located in Public Buildings or in Businesses

- Take a small pair of pliers, a lab towel, a new sample bottle and the HACH chlorine analysis kit into the building with you. Notify a representative of the building or business what you are doing, and what will be involved.

- If so equipped, remove the aeration screen from the end of the faucet. You may need pliers to do this. Use the towel to pad the jaws of the pliers so that the screen housing is not scratched.

- Turn on the cold water and allow the faucet to run for at least two minutes. The purpose of this flush is to draw water from the main up the service piping to the sample tap. In locations such as restrooms, flush each toilet and/or urinal to increase the draw of water from the main up the service line to the sampling

location in the building. Some locations may require numerous and repeated flushes to obtain a representative sample.

Sample sites located in large buildings should be scheduled for sample collection in late morning after the occupants of the building have drawn fresh water from the main through the plumbing.

- After flushing, readjust the sample flow to a lower, less turbulent flow rate.
- Collect a 10 ml water sample into a glass sample vial from a HACH pocket colorimeter kit for free chlorine analysis with DPD. *(See the HACH field analysis procedures manual for details on free chlorine DPD analysis with this instrument)*. Rinse the vial and screw cap out with sample water at least twice before filling it with sample water.
- Check the Chlorine residual; if the residual chlorine concentration in the sample is greater than or equal to 0.2 mg/L, you are ok to proceed collecting a sample. If there is less than 0.2 mg/L of residual, continue flushing until the minimum residual is detected.
- Prior to collecting sample disinfect your hands with hand sanitizer.
- Confirm that the empty bottle lid is not loose, that the sterile seal has not been broken, and that the bottle is not cracked. If the cap is loose discard the bottle and use a new one. The bottle must be filled to or above the 100 ml mark and the cap must be replaced tightly. Do not overflow the bottles, they contain a de-chlorinating agent.
- Examine the filled sample bottle for any visible debris or cracks. If any are present, empty and discard the bottle and then collect a new sample with a new bottle.
- Place the coliform sample into a cooler with a cold refrigerant pack and close the lid of the cooler.
- Rinse the sink thoroughly to remove any reagent water (pink color).
- After collection and chlorine analysis are complete, shut off all faucets and replace the faucet aeration screen. If there is a counter surrounding the sink, wipe it dry with a lab towel or a paper towel. Leave each location exactly as you found it, or better.

- Upon return to your vehicle, fill out the four-part Edge sample information form (see the example copy at the end of this Appendix)

- While the tap is flushing, fill out the Edge sample information form (see the example copy at the end of this Appendix) and place the sticker with the sample number on the lid of the coliform sample bottle. On the sample form, write the sample site number, date, time, and your name in the appropriate boxes. In the same section write in the free chlorine residual result as it is displayed on the analyzer.

- Log the chlorine residual result onto the coliform sample form on the line to the left of the circled "*Free"* and onto the distribution system coliform sample chlorine residual field log (see attached example).

COLIFORM MONITORING PLAN
FOR
SNO PUD 1 - WATER SYSTEMS
SUPPLIED BY CITY OF EVERETT REGIONAL WATER SUPPLY SYSTEM

APPENDIX-7

County: **Snohomish**
System Name: **SNO PUD 1 - LAKE STEVENS**
System ID No.: **809071**
Source No.: **SO1**

Reporting Period:

Monthly Routine Coliform Sample Collection

Number of coliform samples submitted:

Number of unsatisfactory coliform samples:

Monthly Coliform Sample Site-Free Chlorine Residual Results

Minimum chlorine residual: mg/L
Maximum chlorine residual: mg/L
Average chlorine residual: mg/L

Number of sites where no free chlorine residual was detected:

Continuous In-Line Chlorine Residual Monitoring @ Lake Stevens Pump Station

Minimum chlorine residual: mg/L
Maximum chlorine residual: mg/L
Average chlorine residual: mg/L

Weekly Distribution System Free Chlorine Residual Results
Chlorine Residual Results - After Post Chlorination @ Granite Falls Pump Station

Number of sites sampled during the month:

Minimum chlorine residual: mg/L
Maximum chlorine residual: mg/L
Average chlorine residual: mg/L

Number of sites where no free chlorine residual was detected:

Report Submitted On 00/00/00, By:

Brett Gehrke
Operator Certification No.: 7311
Superintendent, Operations & Maintenance
Water Resources Division
Snohomish County Public Utility District No. 1
(425) 397-3005, Office
bagehrke@snopud.com

Return completed report to DOH District Engineer within 10-days of the end of the reporting month

Current Revision: January 2019
Revised Document: August 2011
Original Document: October 2004
Y:\Water Quality\Coliform Monitoring Plan\SNO PUD 1 - WATER SYSTEMS - ERWSS

COLIFORM MONITORING PLAN
FOR
SNO PUD 1 - WATER SYSTEMS
SUPPLIED BY CITY OF EVERETT REGIONAL WATER SUPPLY SYSTEM

APPENDIX-7

County: **Snohomish**
System Name: **SNO PUD 1 - STORM LAKE RIDGE**
System ID No.: **444316**
Source No.: **SO1**

Reporting Period:

Monthly Routine Coliform Sample Collection

Number of coliform samples submitted:

Number of unsatisfactory coliform samples:

Monthly Coliform Sample Site-Free Chlorine Residual Results

Minimum chlorine residual: mg/L
Maximum chlorine residual: mg/L
Average chlorine residual: mg/L

Number of sites where no free chlorine residual was detected:

Weekly Distribution System Free Chlorine Residual Results

Number of sites sampled during the month:

Minimum chlorine residual: mg/L
Maximum chlorine residual: mg/L
Average chlorine residual: mg/L

Number of sites where no free chlorine residual was detected:

Report Submitted On 00/00/00, By:

Brett Gehrke
Operator Certification No.: 7311
Superintendent, Operations & Maintenance
Water Resources Division
Snohomish County Public Utility District No. 1
(425) 397-3005, Office
bagehrke@snopud.com

Return completed report to DOH District Engineer within 10-days of the end of the reporting month

COLIFORM MONITORING PLAN
FOR
SNO PUD 1 - WATER SYSTEMS
SUPPLIED BY CITY OF EVERETT REGIONAL WATER SUPPLY SYSTEM

APPENDIX-7

County: **Snohomish**
System Name: **SNO PUD 1 - CRESWELL**
System ID No.: **06325V**
Source No.: **SO1**

Reporting Period:

Monthly Routine Coliform Sample Collection

Number of coliform samples submitted:

Number of unsatisfactory coliform samples:

Monthly Coliform Sample Site-Free Chlorine Residual

Number of sites sampled during the month:

Minimum chlorine residual: mg/L
Maximum chlorine residual: mg/L
Average chlorine residual: mg/L

Number of sites where no free chlorine residual was detected:

Weekly Distribution System Free Chlorine Residual Results

Number of sites sampled during the month:

Minimum chlorine residual: mg/L
Maximum chlorine residual: mg/L
Average chlorine residual: mg/L

Number of sites where no free chlorine residual was detected:

Report Submitted On 00/00/00, By:

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(425) 397-3005, Office
bagehrke@snopud.com

Return completed report to DOH District Engineer within 10-days of the end of the reporting month

COLIFORM MONITOR PLAN
FOR
SNO PUD - WATER SYSTEMS
SUPPLIED BY CITY OF EVERETT REGIONAL WATER SUPPLY SYSTEM

APPENDIX-7A

SNO PUD 1 - LAKE STEVENS, SYSTEM ID No. 809071

DISTRIBUTION SYSTEM DISINFECTANT RESIDUAL MONITORING FORM

Reporting Period:

	Chlorine Residual Only		*HPC Only*		*Chlorine Residual and HPC*	
Date	**# Sites Sampled**	**# Samples Residual Not Detected**	**# Sites Sampled**	**# Sampled HPC >500/mL**	**# Sites Sampled**	**# Samples Residual Not Detected and HPC >500/mL**
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
Totals	**0**	**0**	**0**	**0**	**0**	**0**

Return completed report to DOH District Engineer within 10-days of the end of the reporting month

Report Submitted On 00/00/00, By:

Brett Gehrke
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Water Resources Division
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Current Revision: January 2019
Revised Document: January 2012
Original Document: October 2004
Y:\Water Quality\Coliform Monitoring Plan\SNO PUD 1 - WATER SYSTEMS - ERWSS

COLIFORM MONITOR PLAN

FOR

SNO PUD - WATER SYSTEMS

SUPPLIED BY CITY OF EVERETT REGIONAL WATER SUPPLY SYSTEM

APPENDIX-7A

SNO PUD 1 - STORM LAKE, SYSTEM ID No. 444316

DISTRIBUTION SYSTEM DISINFECTANT RESIDUAL MONITORING FORM

Reporting Period:

Distribution System Disinfectant Residual Monitoring

Monthly Coliform Sample Chlorine Residual

Date	Cl_2 Res mg/L	Temp ˚ Celsius	Site #	Address	Sample Collection Frequency Month
			163	20711 72nd Pl SE	Monthly Sample Collection Site
Min	**0.00**	**0.00**			
Max	**0.00**	**0.00**			
Avg	**#DIV/0!**	**#DIV/0!**			

Weekly Distribution System Water Quality Analyses

Date	Cl_2 Res mg/L	Fluoride mg/L	Turbidity NTU	pH s.u.	Alkalinity CaCO3 mg/L	Hardness CaCO3 mg/L	Address
							20711 72nd Pl SE
							20711 72nd Pl SE
							20711 72nd Pl SE
							20711 72nd Pl SE
							20711 72nd Pl SE
							20711 72nd Pl SE
							20711 72nd Pl SE
							20711 72nd Pl SE
							20711 72nd Pl SE
							20711 72nd Pl SE
Min	**0.00**	**0.0**	**0.00**	**0.0**	**0.0**	**0.0**	
Max	**0.00**	**0.0**	**0.00**	**0.0**	**0.0**	**0.0**	
Avg	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	

Return completed report to DOH District Engineer within 10-days of the end of the reporting month

Report Submitted On 00/00/00, By:

Brett Gehrke
Superintendent, Operations & Maintenance
Water Resources Division
Snohomish County Public Utility District No. 1
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COLIFORM MONITOR PLAN

FOR

SNO PUD - WATER SYSTEMS

SUPPLIED BY CITY OF EVERETT REGIONAL WATER SUPPLY SYSTEM

APPENDIX-7A

SNO PUD 1 - CRESWELL, SYSTEM ID No. 06325V

DISTRIBUTION SYSTEM DISINFECTANT RESIDUAL MONITORING FORM

Reporting Period:

Distribution System Disinfectant Residual Monitoring

Monthly Coliform Sample Chlorine Residual

Date	Cl_2 Res mg/L	Temp ˚ Celsius	Site #	Address	Sample Collection Frequency Month
			170	19711 36th St SE	Monthly Sample Collection Site
Min	**0.00**	**0.00**			
Max	**0.00**	**0.00**			
Avg	**#DIV/0!**	**#DIV/0!**			

Weekly Distribution System Water Quality Analyses

Date	Cl_2 Res mg/L	Fluoride mg/L	Turbidity NTU	pH s.u.	Alkalinity CaCO3 mg/L	Hardness CaCO3 mg/L	Address
							19711 36th St SE
Min	**0.00**	**0.0**	**0.00**	**0.0**	**0.0**	**0.0**	
Max	**0.00**	**0.0**	**0.00**	**0.0**	**0.0**	**0.0**	
Avg	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	

Return completed report to DOH District Engineer within 10-days of the end of the reporting month

Report Submitted On 00/00/00, By:

Brett Gehrke
Operator Certification No.: 7311
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Snohomish County Public Utility District No. 1
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bagehrke@snopud.com

SNO PUD 1 - LAKE STEVENS
System ID No.: 809071
COLIFORM SAMPLE AND CHLORINE RESIDUAL SAMPLE SITE LOCATIONS
Appendix 7B

Date	Cl_2 Res	Temp	Site #	Sample Site Address	Date	Cl_2 Res	Temp	Site #	Sample Site Address
			9	427 W Shore Loop				141	4621 131st Ave SE
			145	3324 - 157th Ave SE				143	12309 80th St SE
			144	12913 - 78th PL SE				144	12913 79th PL SE
			146	12226 - 57th PL SE				142	8311 144th Dr SE
			18	2105 Sunnyside Blvd				175	3107 153rd Ave SE
			19	2126 82nd Dr NE				152	1922 S Lake Roesiger Rd
			13	205 83rd Dr SE				150	2625 SW Lake Roesiger Rd
			16	1304 85th Dr NE				149	427 W Shore Loop Rd
			20	2615 Lake Dr				151	310 239th Ave NE
			46	7007 110th Ave NE				168	22620 29th Pl NE
			39	13611 168th St NE					
			34	11821 174th Ave NE					
			35	18009 123rd Pl NE					
			32	10133 169th Dr NE					
			50	21807 Pilchuck Pl					
			29	7722 191st Ave NE					
			28	22620 29th pl NE					
			45	5603 E Lk Bosworth Dr					
			25	2020 155th Ave NE					
			1	4233 113th Dr SE					
			5	11015 27th St SE					
			41	11832 28th St SE					
			6	1925 117th Dr SE					
			7	12518 19th Pl SE					
			11	12721 12th St SE					
			42	801 Stitch Rd					
			10	1102 102nd Dr SE					
			14	609 98th Dr NE					
			36	19908 Canyon Dr					
			33	17705 115th St NE					
			44	17730 Engebretson Rd					
			31	9130 Ray Gray Rd					
			51	5807 147th Ave NE					
			43	3010 139th Ave NE					
			24	3301 117th Ave NE					
			21	2528 Spruce Rd NE					
			22	2530 120th Dr NE					
			17	12908 13th Pl NE					
			48	13801 Meridian St					
			15	117 118th Dr NE					
			40	16904 122nd Ave NE					
			38	13715 Jordan Trails Rd					
			37	12502 Burn Rd					
			49	8302 158th Dr NE					
			30	15220 79th St NE					
			52	12625 2nd St SE					
			2	10402 46th Pl SE					
			3	3519 97th Dr SE					
			47	4525 87th Ave SE					
			4	7921 S Lk Stevens Rd					
			12	7427 10th St SE					
			8	1827 89th Dr SE					
					Min	**0.00**	**0**		
					Max	**0.00**	**0**		
					Avg	**#DIV/0!**	**#####**		

Reported On 00/00/00, By:

Brett Gehrke, Water Superintendent
Water Resources Operations Maintenance and Engineering
Snohomish County Public Utility District No. 1
(425) 397-3005, Office
(425)267-6776, Fax
bagehrke@snopud.com

COLIFORM MONITORING PLAN
FOR
SNO PUD 1 - WATER SYSTEMS
SUPPLIED BY CITY OF EVERETT REGIONAL WATER SUPPLY SYSTEM

APPENDIX-7B

SNO PUD 1 - STORM LAKE, SYSTEM ID No. 444316

COLIFORM SAMPLE SITE - FREE CHLORINE RESIDUAL MONITORING FORM

Reporting Period:

Distribution System Disinfectant Residual Monitoring

Monthly Coliform Sample Chlorine Residual

Date	Cl_2 Res mg/L	Temp ° Celsius	Site #	Address	Sample Collection Frequency Month
			163	20711 72nd Pl SE	Monthly Sample Collection Site
Min	**0.00**	**0.00**			
Max	**0.00**	**0.00**			
Avg	**#DIV/0!**	**#DIV/0!**			

Weekly Distribution System Water Quality Analyses

Date	Cl_2 Res mg/L	Fluoride mg/L	Turbidity NTU	pH s.u.	Alkalinity CaCO3 mg/L	Hardness CaCO3 mg/L	Address
							20711 72nd Pl SE
							20711 72nd Pl SE
Min	**0.00**	**0.0**	**0.00**	**0.0**	**0.0**	**0.0**	
Max	**0.00**	**0.0**	**0.00**	**0.0**	**0.0**	**0.0**	
Avg	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	

Return completed report to DOH District Engineer within 10-days of the end of the reporting month

Report Submitted On 00/00/00, By:

Brett Gehrke
Operator Certification No.: 7311
Superintendent, Operations & Maintenance
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Snohomish County Public Utility District No. 1
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bagehrke@snopud.com

COLIFORM MONITORING PLAN
FOR
SNO PUD 1 - WATER SYSTEMS
SUPPLIED BY CITY OF EVERETT REGIONAL WATER SUPPLY SYSTEM

APPENDIX-7B

SNO PUD 1 - Creswell, SYSTEM ID No. 06325V

COLIFORM SAMPLE SITE - FREE CHLORINE RESIDUAL MONITORING FORM

Reporting Period:

Distribution System Disinfectant Residual Monitoring

Monthly Coliform Sample Chlorine Residual

Date	Cl_2 Res mg/L	Temp ° Celsius	Site #	Address	Sample Collection Frequency Month
				3521 195th Dr SE	
Min	0.00	0.00			
Max	0.00	0.00			
Avg	#DIV/0!	#DIV/0!			

Weekly Distribution System Water Quality Analyses

Date	Cl_2 Res mg/L	Fluoride mg/L	Turbidity NTU	pH s.u.	Alkalinity CaCO3 mg/L	Hardness CaCO3 mg/L	Address
							19333 Dubuque Rd
							19333 Dubuque Rd
							19333 Dubuque Rd
							19333 Dubuque Rd
							19333 Dubuque Rd
							19333 Dubuque Rd
							19333 Dubuque Rd
							19333 Dubuque Rd
							19333 Dubuque Rd
							19333 Dubuque Rd
Min	0.00	0.0	0.00	0.0	0.0	0.0	
Max	0.00	0.0	0.00	0.0	0.0	0.0	
Avg	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	

Return completed report to DOH District Engineer within 10-days of the end of the reporting month

Report Submitted On 00/00/00, By:

Brett Gehrke
Operator Certification No.: 7311
Superintendent, Operations & Maintenance
Water Resources Division
Snohomish County Public Utility District No. 1
(425) 397-3005, Office
bagehrke@snopud.com

COLIFORM MONITORING PLAN
FOR
SNO PUD 1 - WATER SYSTEMS
SUPPLIED BY CITY OF EVERETT REGIONAL WATER SUPPLY SYSTEM

SNO PUD 1 - LAKE STEVENS, SYSTEM ID No. 809071

APPENDIX-8

GRANITE FALLS PUMP STATION - POST DISINFECTION TREATMENT FACILITY MONITORING FORM

FINISHED WATER PRODUCTION				CHEMICAL USAGE NaOCL 12.00%		PLANT WATER QUALITY										SYSTEM WATER QUALITY				
Date	Flow Meter Totalizer	Total Cubic Ft	Flow MG	Solution Used Gals	Dosage Rate mg/L	Cl_2 Res Pre - NaOCL mg/L	Cl_2 Res Post - NaOCL mg/L	Cl_2 Res Analyzer mg/L	Temp ° Celsius	pH s.u.	Condutivity	Alkalinity CaCO3 mg/L	Hardness CaCO3 mg/L	Turbidity NTU	Fluoride mg/L	Cl_2 Res mg/L	Temp ° Celsius	pH s.u.	Turbidity NTU	Fluoride mg/L
1			0.00		#DIV/0!															
2			0.00		#DIV/0!															
3			0.00		#DIV/0!															
4			0.00		#DIV/0!															
5			0.00		#DIV/0!															
6			0.00		#DIV/0!															
7			0.00		#DIV/0!															
8			0.00		#DIV/0!															
9			0.00		#DIV/0!															
10			0.00		#DIV/0!															
11			0.00		#DIV/0!															
12			0.00		#DIV/0!															
13			0.00		#DIV/0!															
14			0.00		#DIV/0!															
15			0.00		#DIV/0!															
16			0.00		#DIV/0!															
17			0.00		#DIV/0!															
18			0.00		#DIV/0!															
19			0.00		#DIV/0!															
20			0.00		#DIV/0!															
21			0.00		#DIV/0!															
22			0.00		#DIV/0!															
23			0.00		#DIV/0!															
24			0.00		#DIV/0!															
25			0.00		#DIV/0!															
26			0.00		#DIV/0!															
27			0.00		#DIV/0!															
28			0.00		#DIV/0!															
29			0.00		#DIV/0!															
30			0.00		#DIV/0!															
31			0.00		#DIV/0!															
Total		**0**	**0.00**	**0.0**																
Min		**0**	**0.00**	**0.00**	**#DIV/0!**	**0.00**	**0.00**	**0.00**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.00**	**0.00**	**0.00**	**0.0**	**0.0**	**0.00**	**0.00**
Max		**0**	**0.00**	**0.00**	**#DIV/0!**	**0.00**	**0.00**	**0.00**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.00**	**0.00**	**0.00**	**0.0**	**0.0**	**0.00**	**0.00**
Avg		**#DIV/0!**	**0.00**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**

Return completed report to DOH District Engineer within 10-days of the end of the reporting month

Report Submitted On 00/00/00, By:

Brett Gehrke
Operator Certification No.: 7311
Superintendent, Operations & Maintenance
Water Resources Division
Snohomish County Public Utility District No. 1
(425) 397-3005, Office
bagehrke@snopud.com

NOTIFICATION CONTACT INFORMATION for DOH and SNO PUD 1

Dept. of Health, NW Regional Office Contact List:
NORTHWEST DRINKING WATER OPERATIONS
20435 72nd Ave S, Suite 200, K17-12
Kent WA 98032-2358
MAIN (253) 395-6750 • FAX (253) 395-6760 • TTY Relay Service 1-800-833-6388

DOH - After Hours Hotline for Drinking Water Emergencies: (877) 481-4901

Carol Stuckey; NW Regional Office Coliform Program Manager
(253) 395-6775
Carol.Stuckey@doh.wa.gov

Erika Lindsey; Snohomish County Regional Engineer
(253) 395-6766
Jolyn.Leslie@doh.wa.gov

Derek Pell; NW Assistant Regional Manager
(253) 395-6763
Derek.Pell@doh.wa.gov

Snohomish County Public Utility District No. 1 - Water Resources Division Contact List:

P.O. Box 1107
Everett, Washington 98206-1107

SNO PUD 1 – Emergency After Hours Contact Numbers:

(***425) 879-6735, Water On-Call Duty Phone***
(425) 783-1000, SNO PUD 1 – Dispatch Center

Brant Wood, Water Resources Operations and Maintenance, Engineering, Senior Manager
(425) 397-3003, Office
(425) 903-1025, Cell
bewood@snopud.com

Brett Gehrke, Water Resources Division Operations and Maintenance, Superintendent
(425) 397-3005, office
(425) 359-0403, cell phone
bagehrke@snopud.com

NOTIFICATION CONTACT INFORMATION for DOH and SNO PUD 1

Zach McKinney, Water Resources Division Operations and Maintenance, Water Foreman
(425) 397-3050, Office
(425) 238-0897, Cell
zsmckinney@snopud.com

Alan Luna, Water Resources Division Operations and Maintenance, Water Foreman
(425) 397-3052, Office
(425) 239-6471, Cell
ajluna@snopud.com

Dale Aschenbrenner, Water Resources Division Operations and Maintenance, Water Crew Coordinator
(425) 397-3051, Office
(425) 239-5763, Cell
daaschenbrenner@snopud.com

APPENDIX-10A

SNO PUD 1 – Public Notification Example Letter

Coliform Maximum Contaminant Level (MCL) Exceeded

E.Coli MCL Violation – *E. coli* Bacteria

The Public Notification (Example) Letter for exceeding an Acute MCL is inserted in the binder insert behind this page. A similar letter will be distributed to customers within the effected water system.

EXAMPLE LETTER

DRINKING WATER WARNING

The Snohomish County Public Utility Water System **XXXXXX**, **ID# XXXXXX** located in Snohomish County is contaminated with *E. coli* bacteria.

E. coli bacteria were detected/confirmed in the water supply on (date). These bacteria can make you sick and are a particular concern for people with weakened immune systems.

DO NOT DRINK THE WATER WITHOUT BOILING IT FIRST. Bring all water to a boil, let it boil 3 – 5 minutes, and let it cool before using. Boiled or purchased bottled water should be used for drinking, making ice, brushing teeth, washing dishes, and food preparation until *further notice*. Boiling kills bacteria and other organisms in the water.

E. coli are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, some of the elderly, and people with severely compromised immune systems.

The symptoms above are not caused only by organisms in drinking water. If you experience any of these symptoms and they persist, you may want to seek medical advice. People at increased risk should seek advice about drinking water from their health care provider.

What happened? What is the suspected or known source of contamination?

The following is being done to correct the problem:

We will consult with the State Department of Health about this incident. We will notify you when you no longer need to boil the water. We anticipate resolving the problem by (date).

For more information regarding this issue please contact; Brett Gehrke, Superintendent of Operations and Maintenance, Water Resources Division, Snohomish County PUD No. 1. You may contact Brett at telephone number (425) 397-3005 or Email address; bagehrke@snopud.com

Please share this notice with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distribution copies by hand or mail.

This notice is sent to you on (date), by; Brant E. Wood, P.E., Senior Manager, Water Resources Operations, Maintenance and Engineering, Snohomish County PUD No. 1. You may contact Brant at telephone number (425) 397-3003 or Email address; bewood@snopud.com

Example Non Community Notice

DRINKING WATER WARNING – *E. coli* MCL Violation

The _____Water System, ID _____, located in _____ County is contaminated with *E. coli* bacteria.

E. coli bacteria were detected in the water supply on _____. These bacteria can make you sick and are a particular concern for people with compromised immune systems. Boiled or purchased bottled water should be used for drinking, making ice, brushing teeth, washing dishes, and food preparation until further notice. Boiling kills bacteria and other organisms in the water.

What should you do? **Until further notice, only use water from the water sources that are marked "yes" in the table below and follow the directions listed for each.**

YES	SOURCE OF WATER
	If using water from this water system **DO NOT DRINK THE WATER WITHOUT BOILING IT FIRST**. Bring all water to a rolling boil, for one minute, and let it cool before using.
	We are furnishing purchased bottled water (or water from a source approved by the State Department of Health). It is available at:_____
	You must furnish your own bottled water.
	Other

E. coli are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Human pathogens in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a greater health risk for infants, young children, the elderly, and people with severely compromised immune systems.

The symptoms above are not caused only by organisms in drinking water. If you experience any of these symptoms and they persist, you may want to seek medical advice. People at increased risk should seek advice about drinking water from their health care provider.

What happened? What is the suspected or known source of contamination?

The following is being done to correct the problem:

We will consult with the State Department of Health about this incident. We will provide you notification when you no longer need to boil the water. We anticipate resolving the problem by _____.

For more information please contact:_____
(owner/operator) (phone #) (address) (email)

Washington State Department of Health
Division of Environmental Health
Office of Drinking Water

PUBLIC NOTICE CERTIFICATION
E. coli-MCL Violation

Within 10 days after notifying your customers about an *E. coli*-MCL violation, you must complete this form and send it to our regional office along with a copy of each type of notice you distributed to your customers (hand-delivered notices, news releases, newspaper articles, and so on).

By completing this form, you certify that:

- You met all of the public notification requirements.
- You will meet future requirements for notifying new billing units of the violation or situation.

If the boil water advisory remains in effect more than three months, you must re-notify your water users and send another completed copy of this *Public Notice Certification* to us.

Complete the following items, sign the form and mail it to the nearest regional office, addresses below:

Water System:_____ ID #_____ County:_____

Violation Date:_____ / _____ / _____ Violation Type_____

This public water system certifies that it gave this public notice to water users, following state and federal requirements for delivery, content, and deadlines. ☐ **Yes** ☐ **No**

Distribution was completed Yes ☐ **No** ☐ **on** ____ **/** ____ **/**____**.**

Check all that apply:

☐ Hand delivery,
☐ News release (TV, radio, newspaper)
☐ Posting at_____ (by DOH approval only),
☐ Other _____ (by DOH approval only).

Were the water users notified within 24 hours? Yes ☐ **No** ☐

_____ _____ _____
Signature of owner or operator | Position | Date

If you need this publication in an alternative format, call 800.525.0127 (TDD/TTY call 711). This and other publications are available at www.doh.wa.gov/drinkingwater.

Northwest Regional Office:
20425 72nd Ave S Suite 310
Kent WA 98032
(253) 395-6775
Fax: (253) 395-6760
Email: dw.nwro@doh.wa.gov

Southwest Regional Office:
PO Box 47823
Olympia WA 98504-7823
(360) 236-3030
Fax (360) 664-8058
Email: swro.coli@doh.wa.gov

Eastern Regional Office:
16201 E Indiana Ave Suite 1500
Spokane Valley WA 99216
(509) 329-2100
Fax: (509) 329-2104
Email: mark.steward@doh.wa.gov

APPENDIX-10A

SNO PUD 1 – Public Notification Example Letter

The Public Notification (Example) Letter for a Treatment Technique violation is inserted in the binder insert behind this page. A similar letter will be distributed to customers within the effected water system.

A Treatment Technique Notification Certification Form is inserted in the binder behind the example letter. The form is required to be completed and submitted to the DOH immediately following the distribution of the Public Notification Letter.

EXAMPLE LETTER

IMPORTANT NOTICE ABOUT YOUR WATER SYSTEM
Coliform Maximum Contaminant Level (MCL)

The Snohomish County PUD No. 1 **XXXXXX Water System**, **ID# XXXXXX** in Snohomish County routinely monitors for the presence of total coliform bacteria. The District recently detected and confirmed (coliform / E.coli bacteria)_____ in recent sampling. The District did not conduct a(n) (assessment/ correct sanitary defects)_____ in a 30 day timeframe as outlined by the Washington Department of Health. Although this incident was not an emergency, as our customer, you have a right to know what happened and what we did or are doing to correct the situation.

Coliforms are bacteria which are naturally present in the environment and are used as an indicator that other; potentially-harmful, bacteria may be present. Coliforms were found in more samples than allowed and this was a warning of potential problems

You do not need to boil your water. People with severely compromised immune systems, infants, and some elderly may at be an increased risk and may want to contact their health care provider for additional guidance.

What happened? What is the suspected or known source of contamination?

At this time:
- ☐ The problem is resolved.
- ☐ We anticipate completing the corrective action by ____ / ____ / ____.
- ☐ Other _____.

For more information regarding this issue please contact; Brett Gehrke, Superintendent of Operations and Maintenance, Water Resources Division, Snohomish County PUD No. 1. You may contact Brett at telephone number (425) 397-3005 or Email address; bagehrke@snopud.com

Please share this notice with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

This notice is sent to you on (date), by; Brant E. Wood, P.E., Senior Manager, Water Resources Operations, Maintenance and Engineering, Snohomish County PUD No. 1. You may contact Brant at telephone number (425) 397-3003 or Email address; bewood@snopud.com

Washington State Department of Health
Division of Environmental Health
Office of Drinking Water

Coliform Treatment Technique Public Notice Certification Form

The purpose of this form (below) is to provide documentation to the department that public notice was distributed.
Please check the appropriate box and fill in the date that the notice was distributed:

- ☐ Notice was mailed to all water customers on ____ / ____/____.
- ☐ Notice was hand delivered to all water customers on ___ / ___ /___.
- ☐ Notice was posted (*with department approval*) at:

  _____ on ___ / ___ /____.

_____ _____

_____

Signature of owner or operator:_____ _____(Date)

Brant E. Wood, P.E.
Senior Manager
Water Resources Operations, Maintenance and Engineering
Snohomish County PUD No. 1
(425) 397-3003, Office
(425) 267-6202, Fax
bewood@snopud.com

The Department of Health is an equal opportunity agency. For persons with disabilities, this form is available on request in other formats. To submit a request, please call 1-800-525-0127 (TTY 1-800-833-6388).

Send copy of completed notification and certification to:

- ☐ ***Eastern Drinking Water Operations, 1500 West Fourth Ave., Suite 305, Spokane WA 99204 or fax to (509) 456-2997***
- ☐ ***Northwest Drinking Water Operation, 20435 72nd Ave South, Suite 200, Kent WA 98032 or fax to (253) 395-6760***
- ☐ ***Southwest Drinking Water Operation, PO Box 47823, Olympia WA 98504 or fax to (360) 664-8058***

SNOHOMISH COUNTY PUD
PUBLIC UTILITY DISTRICT NO. 1

425-397-3000

WARNING:

Do not drink tap water without boiling it first!

☐ **Fecal coliform**
☐ **E. coli bacteria**
☐ **Other:** _____

were detected in the water supply on:
(date) _____.

Boiling kills bacteria and other organisms in the water:

- **Bring water to a rolling boil for one minute**
- **Let water cool before using**

To avoid possible illness: use boiled or purchased bottled water for drinking, making ice, brushing teeth, washing dishes, and food preparation until further notice.

Contact your doctor, if you experience one or more of these symptoms: nausea, cramps, diarrhea, jaundice, headache and/or fatigue. People with chronic illnesses, infants and the elderly may be at higher risk and should seek medical advice.

Water System: _____
I.D.: _____
County: _____
Contact: _____
Telephone: _____
Date notice distributed: _____

What is fecal coliform and E. coli?

Fecal coliform and E. coli are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these waters can cause short-term effects, such as diarrhea, cramps, nausea, headaches or other symptoms. They may pose a special health risk for infants, young children, some of the elderly, and people with severely compromised immune systems.

How long will this warning be in effect?

We will consult with the Washington State Department of Health about this incident. We will notify you when you no longer need to boil the water.

Vea al reverso para la versión en Español.

SNOHOMISH COUNTY PUD
PUBLIC UTILITY DISTRICT NO. 1

425-397-3000

WARNING:

Do not drink tap water without boiling it first!

☐ Fecal coliform
☐ E. coli bacteria
☐ Other: _____

were detected in the water supply on:
(date) _____.

Boiling kills bacteria and other organisms in the water:

- Bring water to a rolling boil for one minute
- Let water cool before using

To avoid possible illness: use boiled or purchased bottled water for drinking, making ice, brushing teeth, washing dishes, and food preparation until further notice.

Contact your doctor, if you experience one or more of these symptoms: nausea, cramps, diarrhea, jaundice, headache and/or fatigue. People with chronic illnesses, infants and the elderly may be at higher risk and should seek medical advice.

Water System: _____
I.D.: _____
County: _____
Contact: _____
Telephone: _____
Date notice distributed: _____

What is fecal coliform and E. coli?

Fecal coliform and E. coli are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these waters can cause short-term effects, such as diarrhea, cramps, nausea, headaches or other symptoms. They may pose a special health risk for infants, young children, some of the elderly, and people with severely compromised immune systems.

How long will this warning be in effect?

We will consult with the Washington State Department of Health about this incident. We will notify you when you no longer need to boil the water.

Vea al reverso para la versión en Español.

SNOHOMISH COUNTY PUD
PUBLIC UTILITY DISTRICT NO. 1

425-397-3000

ADVERTENCIA:

¡No tome el agua de la llave sin antes hervirla!

☐ **Bacteria coliforme fecal**
☐ **Bacteria E. coli**
☐ **Otra:** _____

fueron encontradas en su sistema de agua:
(el día)_____.

Hervir el agua mata a las bacterias y otros organismos en el agua:

- **Ponga el agua en la estufa hasta que hierva y deje hervir el agua por un minuto**
- **Deje enfriar el agua antes de usarla**

Para evitar posibles enfermedades y hasta nuevo aviso: use agua hervida o agua potable embotellada para tomar, hacer hielo, limpiarse los dientes, lavar los platos y para preparar comidas.

Hable con su doctor si usted tiene uno o más de los siguientes síntomas: náusea, dolor estomacal, diarrea, ictericia, dolores de cabeza y/o cansancio. La gente con enfermedades crónicas, bebés y personas mayores de edad, pueden estar en situación de alto riesgo y deben consultar con su médico o proveedores de servicios médicos.

Sistema de agua: _____
I.D.: _____
Condado: _____
Contacto: _____
Teléfono: _____
Fecha de notificación: _____

¿Qué son las bacterias coliforme fecal y E. coli?

Coliformes fecales o E. coli son bacterias cuya presencia indica que el agua esta contaminada con desechos humanos o de animales. Microbios de esos desechos pueden causar diarrea, dolor estomacal, náusea, dolores de cabeza u otros síntomas. Pueden representar un peligro para la salud de bebés, niños y niñas de corta edad y personas con sistemas inmunológicos en alto riesgo.

¿Por cuánto tiempo va a estar en efecto esta advertencia?

Vamos a consultar con el Departamento de Salud del estado de Washington acerca de este incidente. Le vamos a notificar cuando ya no sea necesario hervir el agua.

See reverse side for English version.

SNOHOMISH COUNTY PUD
PUBLIC UTILITY DISTRICT NO. 1

425-397-3000

ADVERTENCIA:

¡No tome el agua de la llave sin antes hervirla!

☐ **Bacteria coliforme fecal**
☐ **Bacteria E. coli**
☐ **Otra:** _____

fueron encontradas en su sistema de agua:
(el día)_____.

Hervir el agua mata a las bacterias y otros organismos en el agua:

- **Ponga el agua en la estufa hasta que hierva y deje hervir el agua por un minuto**
- **Deje enfriar el agua antes de usarla**

Para evitar posibles enfermedades y hasta nuevo aviso: use agua hervida o agua potable embotellada para tomar, hacer hielo, limpiarse los dientes, lavar los platos y para preparar comidas.

Hable con su doctor si usted tiene uno o más de los siguientes síntomas: náusea, dolor estomacal, diarrea, ictericia, dolores de cabeza y/o cansancio. La gente con enfermedades crónicas, bebés y personas mayores de edad, pueden estar en situación de alto riesgo y deben consultar con su médico o proveedores de servicios médicos.

Sistema de agua: _____
I.D.: _____
Condado: _____
Contacto: _____
Teléfono: _____
Fecha de notificación: _____

¿Qué son las bacterias coliforme fecal y E. coli?

Coliformes fecales o E. coli son bacterias cuya presencia indica que el agua esta contaminada con desechos humanos o de animales. Microbios de esos desechos pueden causar diarrea, dolor estomacal, náusea, dolores de cabeza u otros síntomas. Pueden representar un peligro para la salud de bebés, niños y niñas de corta edad y personas con sistemas inmunológicos en alto riesgo.

¿Por cuánto tiempo va a estar en efecto esta advertencia?

Vamos a consultar con el Departamento de Salud del estado de Washington acerca de este incidente. Le vamos a notificar cuando ya no sea necesario hervir el agua.

See reverse side for English version.

COLIFORM MONITORING PLAN
FOR
SNO PUD 1 – WATER SYSTEMS
SUPPLIED BY CITY OF EVERETT REGIONAL WATER SUPPLY SYSTEM

APPENDIX-11

A. *E. coli*-Present Sample Response

Distribution System *E. coli* Response Checklist				
Background Information	**Yes**	**No**	**N/A**	**To Do List**
We inform staff members about activities within the distribution system that could affect water quality.	☒	☐	☐	☐
We document all water main breaks, construction & repair activities, and low pressure and outage incidents.	☒	☐	☐	☐
We can easily access and review documentation on water main breaks, construction & repair activities, and low pressure and outage incidents.	☒	☐	☐	☐
Our Cross-Connection Control Program is up-to-date.	☒	☐	☐	☐
We test all cross-connection control devices annually as required, with easy access to the proper documentation.	☒	☐	☐	☐
We routinely inspect all treatment facilities for proper operation.	☒	☐	☐	☐
We identified one or more qualified individuals who are able to conduct a Level 2 assessment of our water system.	☒	☐	☐	☐
We have procedures in place for disinfecting and flushing the water system if it becomes necessary.	☒	☐	☐	☐
We can activate an emergency intertie with an adjacent water system in an emergency.	☒	☐	☒	☐
We have a map of our service area boundaries.	☒	☐	☐	☐
We have consumers who may not have access to bottled or boiled water.	☐	☒	☐	☐
There is a sufficient supply of bottled water immediately available to our customers who are unable to boil their water.	☒	☐	☐	☐
We have identified the contact person at each day care, school, medical facility, food service, and other customers who may have difficulty responding to a Health Advisory.	☐	☒	☐	☐
We have messages prepared and translated into different languages to ensure our consumers will understand them.	☐	☒	☐	☐
We have the capacity to print and distribute the required number of notices in a short time period.	☒	☐	☐	☐
Policy Direction	**Yes**	**No**	**N/A**	**To Do List**
We have discussed the issue of *E. coli*-present sample results with our policy makers.	☐	☐	☐	☒

If we find *E. coli* in a routine distribution sample, the policy makers want to wait until repeat test results are available before issuing advice to water system customers.	☐	☐	☒	☐

Distribution System *E. coli* Response Checklist

Potential Public Notice Delivery Methods	Yes	No	N/A	To Do List
It is feasible to deliver a notice going door-to-door.	☐	☒	☐	☐
We have a list of all of our customers' addresses.	☒	☐	☐	☐
We have a list of customer telephone numbers or access to a Reverse 9-1-1 system.	☒	☐	☐	☐
We have a list of customer email addresses.	☐	☒	☐	☐
We encourage our customers to remain in contact with us using social media.	☒	☐	☐	☐
We have an active website we can quickly update to include important messages.	☒	☐	☐	☐
Our customers drive by a single location where we could post an advisory and expect everyone to see it.	☐	☒	☐	☐
We need a news release to supplement our public notification process.	☒	☐	☐	☐

Distribution System *E. coli* Response Plan

If we have *E. coli* in our distribution system we will immediately:

1. Call DOH.
2. Collect repeat and triggered source samples per Part D. Collect additional investigative samples as necessary.
3. Inspect our Water Facilities, including reservoir and treatment plants for proper operations
4. Review construction activities, water main breaks recent outages or low pressure events that may of recently occurred.
5. Interview staff to determine if anything unusual had recently happened in the water system.
6. Review Cross connection control program status.
7. Notify SNO PUD Corp Comm.
8. Discuss if a Heath advisory is warranted based on findings of steps 3 through 6
9. Notify Wholesale customer's; City of Granite Falls 24 hr. #(360) 583-1781, City of Arlington 24 hr. #(360) 386-5926. Wholesale supplier; City of Everett 24 hr. # (425) 257-8200
10. Await repeat sample results
    - If Repeats are satisfactory lift HA if one was issued

- If any repeats return as unsatisfactory issue HA if one not in place already. Host DOH for System Inspection and respond appropriately

11. Discuss with DOH whether to issue a Health Advisory based on the findings of steps 3-6.

COLIFORM MONITORING PLAN
FOR
SNO PUD 1 – WATER SYSTEMS
SUPPLIED BY CITY OF EVERETT REGIONAL WATER SUPPLY SYSTEM

APPENDIX-11

E. coli-Present Triggered Source Sample Response Checklist – All Sources

Background Information	**Yes**	**No**	**N/A**	**To Do List**
We review our sanitary survey results and respond to any recommendations affecting the microbial quality of our water supply.	☒	☐	☐	☐
We address any significant deficiencies identified during a sanitary survey.	☒	☐	☐	☐
There are contaminant sources within our Wellhead Protection Area that could affect the microbial quality of our source water, and If yes, we can eliminate them.	☒ ☐	☐ ☒	☐ ☐	☐ ☐
We routinely inspect our well site(s).	☒	☐	☐	☐
We have a good raw water sample tap installed at each source.	☒	☐	☐	☐
After we complete work on a source, we disinfect the source, flush, and collect an investigative sample.	☒	☐	☐	☐
Public Notice	**Yes**	**No**	**N/A**	**To Do List**
We discussed the requirement for immediate public notice of an *E. coli*-present source sample result with our water system's governing body (board of directors or commissioners) and received direction from them on our response plan.	☐	☐	☐	☒
We discussed the requirement for immediate public notice of an *E. coli*-present source sample result with our wholesale customers and encouraged them to develop a response plan.	☒	☐	☐	☐
We have prepared templates and a communications plan that will help us quickly distribute our messages.	☒	☐	☐	☐

COLIFORM MONITORING PLAN
FOR
SNO PUD 1 – WATER SYSTEMS
SUPPLIED BY CITY OF EVERETT REGIONAL WATER SUPPLY SYSTEM

APPENDIX-11

E. coli-Present Triggered Source Sample Response Checklist – Source SO5 & SO6 Lake Stevens Wells

Alternate Sources	**Yes**	**No**	**N/A**	**To Do List**
We can stop using this source and still provide reliable water service to our customers.	☒	☐	☐	☐
We have an emergency intertie with a neighboring water system that we can use until corrective action is complete (perhaps for several months).	☐	☒	☐	☐
We can provide bottled water to all or part of the distribution system for an indefinite period.	☒	☐	☐	☐
We can quickly replace our existing source of supply with a more protected new source.	☒	☐	☐	☐
Temporary Treatment	**Yes**	**No**	**N/A**	**To Do List**
This source is continuously chlorinated, and our existing facilities can provide 4-log virus treatment (CT = 6) before the first customer. If yes, at what concentration? 1.2 mg/L	☐	☒	☐	☐
We can quickly introduce chlorine into the water system and take advantage of the existing contact time to provide 4-log virus treatment to a large portion of the distribution system.	☐	☒	☐	☐
We can reduce the production capacity of our pumps or alter the configuration of our storage quantities (operational storage) to increase the amount of time the water stays in the system before the first customer to achieve CT = 6.	☐	☒	☐	☐
We can alter the demand for drinking water (maximum day or peak hour) through conservation messages to increase the time the water is in the system prior to the first customer in order to achieve 4-log virus treatment with chlorine.	☐	☒	☐	☐

*NOTE: If your system has multiple sources, you may want to complete a separate checklist for each source.

E. coli-Present Triggered Source Sample Response Plan – Source SO5 & SO6 Lake Stevens Wells

If we have *E. coli* in Source SO5 or SO6water we will immediately:

1. Turn off Wells.
2. Call DOH.
3. Notify Wholesale customer's; City of Granite Falls 24 hr. #(360) 583-1781, City of Arlington 24 hr. #(360) 386-5926.
4. Use Everett source while conducting investigation.
5. Repeat and source samples
6. Collect additional investigative samples as necessary.
7. Await repeat sample results
    - If repeats are satisfactory lift HA if one was issued
8. Discuss with DOH whether to issue a Health Advisory based on the findings.

APPENDIX-11

Coliform Monitoring Plan Holders List

The individuals and or agencies listed in Appendix-11 have been issued a copy of the Coliform Monitoring Plan for SNO PUD 1 – WATER SYSTEMS. If the plan is up-dated or revised the individual or agency will be provided a copy of the revision.

Carol Stuckey
Coliform Monitoring Program Manager
Washington State Department of Health
Northwest Drinking Water Operations
20435 72nd Ave S. Suite 200, K17-12
Kent, WA 98032-2358
Carl.Stuckey@doh.wa.gov

Erika Lindsey Regional Engineer-Snohomish County
Northwest Drinking Water Operations
Washington State Department of Health
20435 72nd Ave S. Suite 200, K17-12
Kent, WA 98032-2358
(253) 395-6766
Jolyn.Leslie@doh.wa.gov

Bruce Straughn
Senior Sanitarian
Snohomish Health District
3020 Rucker Avenue
Everett, WA 98201
(425) 339-5250
bstraughn@shd.snohomish.wa.gov

Brant Wood
Water Resources Operations and Maintenance-Engineering, Senior Manager
SNO PUD 1
P.O. Box 1107
Everett, WA. 98206-1107
bewood@snopud.com

Brett Gehrke
Water Resources Operations and Maintenance, Superintendent
SNO PUD 1
P.O. Box 1107
Everett, WA 98206-1107
bagehrke@snopud.com

APPENDIX-11

Coliform Monitoring Plan Holders List

Dale Aschenbrenner Water Resources Operations and Maintenance, Foreman
SNO PUD 1
P.O. Box 1107
Everett, WA. 98206-1107
rsschuller@snopud.com

Tom Heaphy Water Resources Operations and Maintenance, Water Distribution Specialist 6
SNO PUD 1
P.O. Box 1107
Everett, WA 98206-1107
pmcoker@snopud.com

SNO PUD 1 – Water Resources Division
P.O. Box 1107
Everett, WA

- Water System Comprehensive Plan
- Coliform Monitoring Plan File
- Library, Lake Stevens Water Shop

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Appendix 10-2

Disinfection By-Product Monitoring Plans

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DBP Monitoring Plan
(Quarterly Schedule)

This template should be used by:

* Surface water systems who serve more than 500 population and are not on reduced monitoring
* Surface water systems who serve more than 10,000 population on reduced monitoring
* Groundwater systems who serve more than 10,000 population and are not on reduced monitoring
* Any system that is on increased quarterly monitoring

For more information, refer to the Reference Sheets on the separate tabs

System Name:	SNO PUD 1 - LAKE STEVENS
PWSID#:	80907
Population:	50,107
Type of Source Water:	**PURCHASED SURFACE WATER + GROUNDWATER**
Completed by:	KAREN HENEGHAN
Date:	3/25/2019

Routine Monitoring Requirments

Monitoring Frequency (Routine Monitoring):	Quarterly
Number of TTHM Samples Required:	8
Number of HAA5 Samples Required:	8

See Routine Monitoring Reference tab to determine number of samples required

Monitoring Locations and Month Assigned

Monitoring Location (Name of Site)	Assigned Sampling Month			
	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr
3519 97th Dr SE (Site 3)	Feb	May	Aug	Nov
2615 Lake Dr NE (Site 20)	Feb	May	Aug	Nov
2020 155th Ave NE (Site 25)	Feb	May	Aug	Nov
801 Stitch Rd (Site 42)	Feb	May	Aug	Nov
5603 E Lake Bosworth Dr (Site 45)	Feb	May	Aug	Nov
3324 157th Ave SE (Site 145)	Feb	May	Aug	Nov
12226 57th Pl SE (Site 146)	Feb	May	Aug	Nov
3107 153rd Ave SE (Site 175)	Feb	May	Aug	Nov

Determining Compliance for TTHM and HAA5

Our system is required to monitor quarterly. Each quarter we will calculate a locational running annual average (LRAA) for TTHM and HAA5 at each monitoring location. Compliance will be achieved if the TTHM and the HAA5 LRAA at each monitoring location for the four most recent quarters is less than or equal to 0.080 mg/L for TTHM and less than or equal to 0.060 mg/l for HAA5.

Because compliance is based on a locational running annual average, the same location(s) must be used each quarter.

Operational Evaluation Level (OEL)
Calculated each quarter using the most recent 3 quarters of sample results, with Q3 being the most recent (multiplied by 2) and Q1 being the first of the 3 quarters.

$$\mathbf{OEL} = \frac{\mathbf{[Q1 + Q2 + 2\times(Q3)]}}{4}$$

If the calculated OEL exceeds the MCLs for TTHM (0.080 mg/L) or HAA5 (0.060 mg/L) then the system has an OEL exceedance and is required to conduct an operational evaluation and submit a report within 90 days.

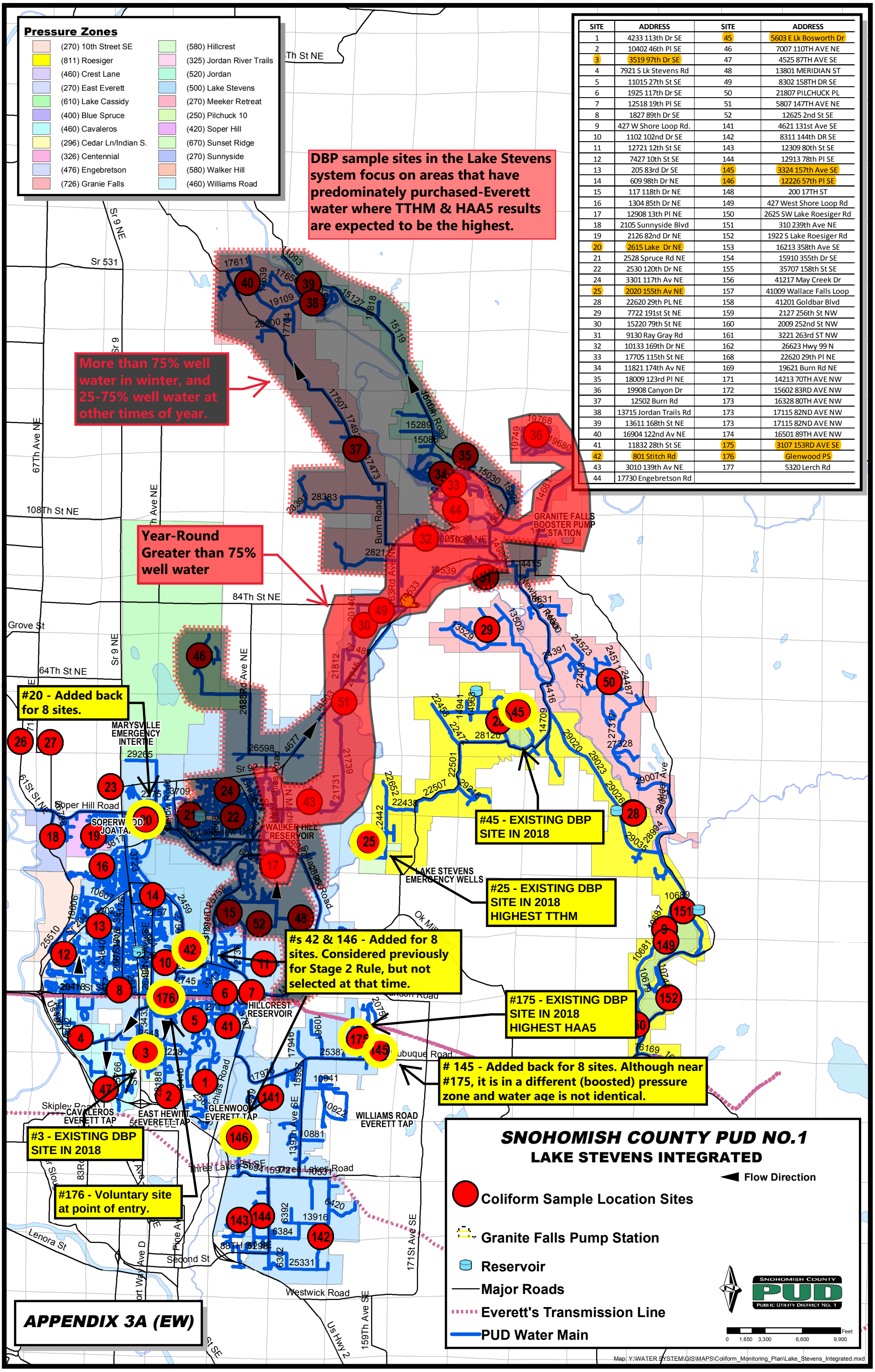
To qualify for reduced monitoring:
The TTHM LRAA must be less than or equal to 0.040 mg/L AND the HAA LRAA must be less than or equal to 0.030 mg/L at each monitoring location.

AND for systems that use surface water the source water annual average TOC level, before any treatment, must be less than or equal to 4.0 mg/L (based on routine monthly samples or reduced quarterly samples). Please note, if you are a wholesale customer, you will need to get this data from your supplying system.

Disinfectant Residual Monitoring
Chlorine residuals must be measured at the same time and place as routine or repeat coliform samples MRDL for chlorine and chloramines = 4.0 mg/l as Cl2

Determining Compliance for disinfectant residuals
Compliance is based on the running annual average (RAA) of 12 consecutive months.
Daily residual measurements will / will not be included in the compliance calculations (circle one)

(Attach a distribution map with sample locations. You will need to print a hard copy for your records and make it available upon request. You do not need to submit a copy to DOH. If you need this publication in an alternate format, call (800) 525-0127. For TTY/TDD call (800) 833-6388.)



SITE	ADDRESS	SITE	ADDRESS
1	4233 113th Dr SE	45	5603 E Lk Bosworth Dr
2	10402 46th Pl SE	46	7007 110TH AVE NE
3	3519 97th Dr SE	47	4525 87TH AVE SE
4	7921 S Lk Stevens Rd	48	13801 MERIDIAN ST
5	11015 27th St SE	49	8302 158TH DR SE
6	1925 117th Dr SE	50	21807 PILCHUCK PL
7	12518 19th Pl SE	51	5807 147TH AVE NE
8	1827 89th Dr SE	52	12625 2nd St SE
9	427 W Shore Loop Rd.	141	4621 131st Ave SE
10	1102 102nd Dr SE	142	8311 144th DR SE
11	12721 12th St SE	143	12309 80th St SE
12	7427 10th St SE	144	12913 78th Pl SE
13	205 83rd Dr SE	145	3324 157th Ave SE
14	609 98th Dr NE	146	12226 57th Pl SE
15	117 118th Dr NE	148	200 17TH ST
16	1304 85th Dr NE	149	427 West Shore Loop Rd
17	12908 13th Pl NE	150	2625 SW Lake Roesiger Rd
18	2105 Sunnyside Blvd	151	310 239th Ave NE
19	2126 82nd Dr NE	152	1922 S Lake Roesiger Rd
20	2615 Lake Dr NE	153	16213 358th Ave SE
21	2528 Spruce Rd NE	154	15910 355th Dr SE
22	2530 120th Dr NE	155	35707 158th St SE
24	3301 117th Av NE	156	41217 May Creek Dr
25	2020 155th Av NE	157	41009 Wallace Falls Loop
28	22620 29th PL NE	158	41201 Goldbar Blvd
29	7722 191st St NE	159	2127 256th St NW
30	15220 79th St NE	160	2009 252nd St NW
31	9130 Ray Gray Rd	161	3221 263rd ST NW
32	10133 169th Dr NE	162	26623 Hwy 99 N
33	17705 115th St NE	168	22620 29th Pl NE
34	11821 174th Av NE	169	19621 Burn Rd NE
35	18009 123rd Pl NE	171	14213 70TH AVE NW
36	19908 Canyon Dr	172	15602 83RD AVE NW
37	12502 Burn Rd	173	16328 80TH AVE NW
38	13715 Jordan Trails Rd	173	17115 82ND AVE NW
39	13611 168th St NE	173	17115 82ND AVE NW
40	16904 122nd Av NE	174	16501 89TH AVE NW
41	11832 28th St SE	175	3107 153RD AVE SE
42	801 Stitch Rd	176	Glenwood PS
43	3010 139th Av NE	177	5320 Lerch Rd
44	17730 Engebretson Rd		

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Washington State Department of Health
Division of Environmental Health
Office of Drinking Water
DOH 331-464
December 2011

Stage 2 DBP Monitoring Plan - Surface Water (Routine Monitoring)

System Name	Sno PUD 1 - Storm Lake
PWSID#	44431
Date	5/2/2012
Completed by	Karen Heneghan
Population	390

Initial Stage 2 Sampling Period First sampling period following **April 1, 2012**

Number of Samples Required 2 Samples per Year (1 TTHM and 1 HAA5)

You are required to take individual TTHM and HAA5 samples (instead of a dual sample set at the locations with the highest TTHM and HAA5 concentrations, respectively. **If the highest TTHM and HAA5 concentrations occur at the same location (and month, if monitored annually) only one location with a dual sample set per monitoring period is needed.**

	Stage 2 Compliance Monitoring Site ID	Projected Sampling Date (Date or Week)
Highest TTHM Site	**163**	**3rd week of May**
Highest HAA5 Site	**163**	**3rd week of May**

If any annual sample exceeds the MCL (0.080 ug/l for TTHM or 0.060 ug/l for HAA5) you must begin quarterly monitoring for both TTHM and HAA5 for at least four consecutive quarters to determine if you exceed the MCL.

Determining Compliance for TTHM and HAA5

Our system is required to monitor annually. For compliance, we will determine that each sample taken is less than the MCL. If any sample exceeds the MCL, we must increase monitoring to dual sample sets once per quarter (taken every 90 days) at all locations. If the locational running annual average (LRAA) exceeds the MCL for either TTHM (0.080 mg/l) or HAA5 (0.060 mg/l), an MCL violation will have occurred. The LRAA is calculated based on four consecutive quarters of monitoring. Compliance will then be achieved if the TTHM and the HAA5 LRAA at each monitoring location for the four most recent quarters is less than or equal to 0.080 mg/l for TTHM and less than or equal to 0.060 mg/l for HAA5.

Disinfectant Monitoring

Chlorine residuals must be measured at the same time and place as routine or repeat coliform samples
MRDL for chlorine and chloramines = 4.0 mg/l as Cl_2

Determining Compliance for disinfectant residuals

Compliance is based on the running annual average (RAA) of 12 consecutive months
Daily residual measurements will / <u>will not</u> be included in the compliance calculations (circle one)

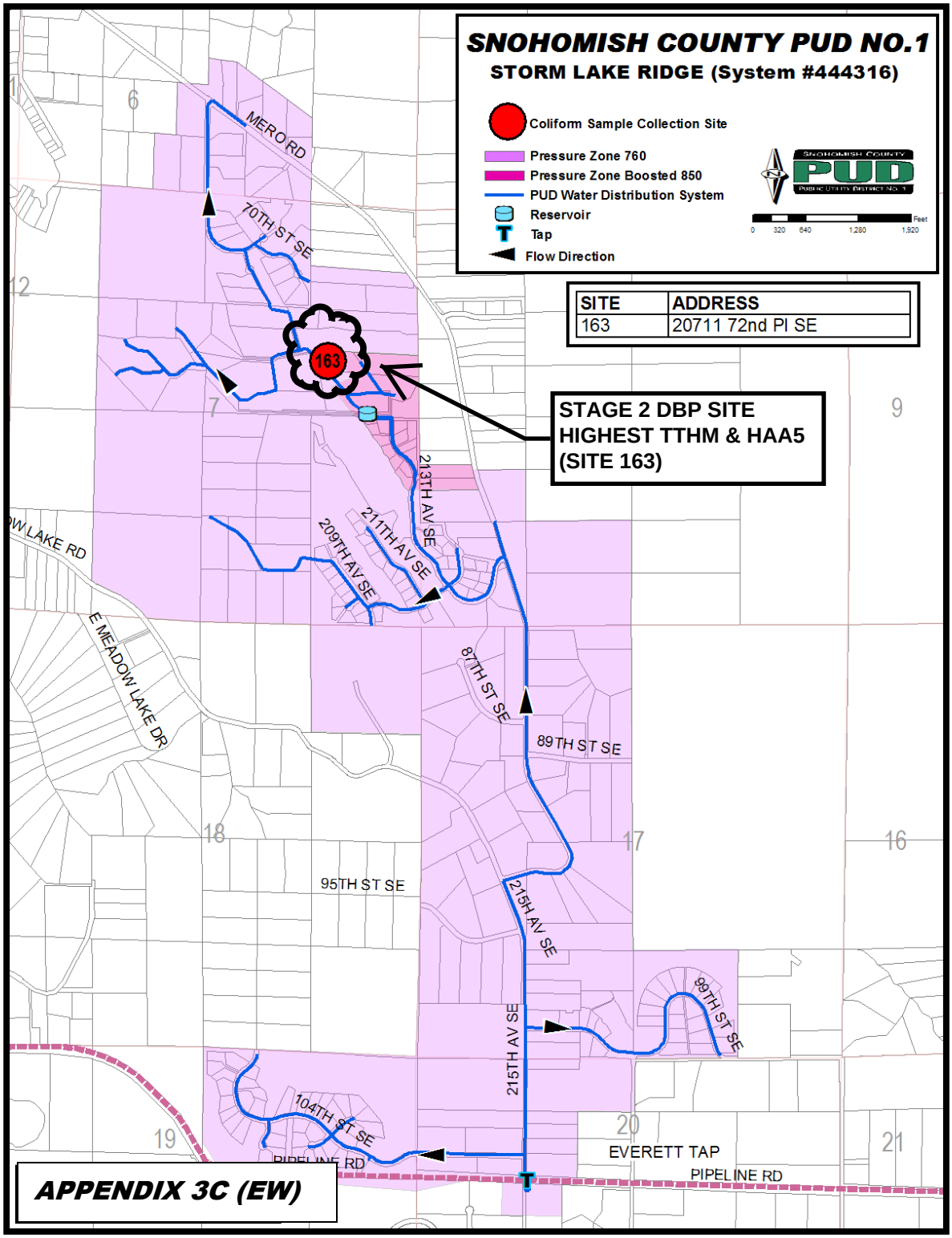
Attach a distribution map with sample locations

Comments

(1) Based on historic quarterly sample results from 2005 through 2011, the highest TTHM and HAA5 results typically occur in the second quarter.
(2) There is no data showing that the highest TTHM and HAA5 samples occur at different locations. Therefore, only one sample site with a dual sample set is needed.

You will need to print a hard copy for your records and make it available upon request. You do not need to submit a copy to DOH.

If you need this publication in an alternate format, call (800) 525-0127. For TTY/TDD call (800) 833-6388.


SNOHOMISH COUNTY PUD NO.1
STORM LAKE RIDGE (System #444316)
Coliform Sample Collection Site
Pressure Zone 760
Pressure Zone Boosted 850
PUD Water Distribution System
Reservoir
Tap
Flow Direction
SNOHOMISH COUNTY PUD PUBLIC UTILITY DISTRICT NO. 1
0 320 640 1,280 1,920 Feet
SITE | ADDRESS
163 | 20711 72nd Pl SE
STAGE 2 DBP SITE
HIGHEST TTHM & HAA5
(SITE 163)
MERO RD
70TH ST SE
213TH AV SE
211TH AV SE
209TH AV SE
W LAKE RD
E MEADOW LAKE DR
87TH ST SE
89TH ST SE
95TH ST SE
215TH AV SE
99TH ST SE
104TH ST SE
PIPELINE RD
EVERETT TAP
APPENDIX 3C (EW)

Washington State Department of Health
Division of Environmental Health
Office of Drinking Water
DOH 331-464
December 2011

Stage 2 DBP Monitoring Plan - Surface Water (Routine Monitoring)

System Name	Sno PUD 1 - Creswell
PWSID#	06325
Date	5/3/2012
Completed by	Karen Heneghan
Population	52

Initial Stage 2 Sampling Period First sampling period following **April 1, 2012**

Number of Samples Required 2 Samples per Year (1 TTHM and 1 HAA5)

You are required to take individual TTHM and HAA5 samples (instead of a dual sample set at the locations with the highest TTHM and HAA5 concentrations, respectively. If the highest TTHM and HAA5 concentrations occur at the same location (and month, if monitored annually) only one location with a dual sample set per monitoring period is needed.

	Stage 2 Compliance Monitoring Site ID	Projected Sampling Date (Date or Week)
Highest TTHM Site	**170**	**3rd week of May**
Highest HAA5 Site	**170**	**3rd week of May**

If any annual sample exceeds the MCL (0.080 ug/l for TTHM or 0.060 ug/l for HAA5) you must begin quarterly monitoring for both TTHM and HAA5 for at least four consecutive quarters to determine if you exceed the MCL.

Determining Compliance for TTHM and HAA5

Our system is required to monitor annually. For compliance, we will determine that each sample taken is less than the MCL. If any sample exceeds the MCL, we must increase monitoring to dual sample sets once per quarter (taken every 90 days) at all locations. If the locational running annual average (LRAA) exceeds the MCL for either TTHM (0.080 mg/l) or HAA5 (0.060 mg/l), an MCL violation will have occurred. The LRAA is calculated based on four consecutive quarters of monitoring. Compliance will then be achieved if the TTHM and the HAA5 LRAA at each monitoring location for the four most recent quarters is less than or equal to 0.080 mg/l for TTHM and less than or equal to 0.060 mg/l for HAA5.

Disinfectant Monitoring

Chlorine residuals must be measured at the same time and place as routine or repeat coliform samples
MRDL for chlorine and chloramines = 4.0 mg/l as Cl_2

Determining Compliance for disinfectant residuals

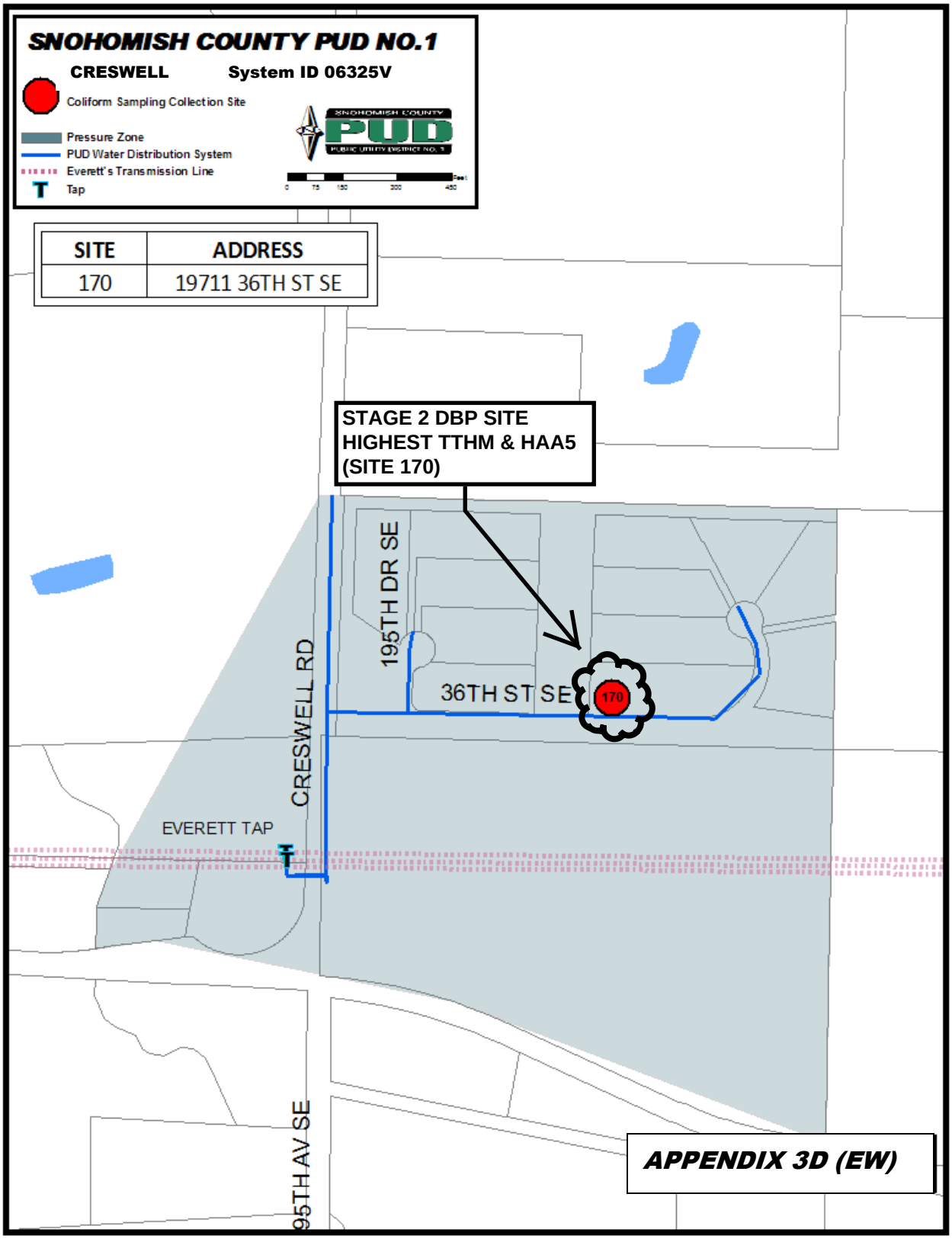
Compliance is based on the running annual average (RAA) of 12 consecutive months
Daily residual measurements will / <u>will not</u> be included in the compliance calculations (circle one)

Attach a distribution map with sample locations

Comments

(1) Based on historic quarterly sample results from 2005 through 2011, the highest TTHM and HAA5 results typically occur in the second quarter.
(2) There is no data showing that the highest TTHM and HAA5 samples occur at different locations. Therefore, only one sample site with a dual sample set is needed.

You will need to print a hard copy for your records and make it available upon request. You do not need to submit a copy to DOH.


SNOHOMISH COUNTY PUD NO.1
CRESWELL
System ID 06325V
Coliform Sampling Collection Site
Pressure Zone
PUD Water Distribution System
Everett's Transmission Line
Tap
SNOHOMISH COUNTY PUD
PUBLIC UTILITY DISTRICT NO. 1
0 75 150 300 450 Feet
SITE
ADDRESS
170
19711 36TH ST SE
STAGE 2 DBP SITE
HIGHEST TTHM & HAA5
(SITE 170)
195TH DR SE
CRESWELL RD
36TH ST SE
170
EVERETT TAP
95TH AV SE
APPENDIX 3D (EW)

Washington State Department of Health
Environmental Public Health
Office of Drinking Water

DOH 331-464
Updated July 2013

Stage 2 DBP Monitoring Plan - Groundwater (Reduced Monitoring) BEGINNING 2016

System Name	SNO PUD 1 - MAY CREEK
PWSID#	52105
Date	2/16/2016
Completed by	KAREN HENEGHAN
Population	1115

First Stage 2 REDUCED Sampling Period **First sampling period following 12/31/2015**

Number of Samples Required 1 TTHM and 1 HAA5 per Year

Samples must be collected at the location and during the quarter with the highest TTHM single measurement and one at the location and during the quarter with the highest HAA5 single measurement; 1 dual sample set per sample period if the highest TTHM and HAA5 measurements ocurred at the same location and quarter.

	Stage 2 Compliance Monitoring Site ID	Projected Sampling Date
Highest TTHM Site	**148**	**3rd wk Aug**
Highest HAA5 Site	**148**	**3rd wk Aug**

If any annual or triennial sample exceeds the MCL (0.080 mg/l for TTHM or 0.060 mg/l for HAA5) you must begin quarterly monitoring for both TTHM and HAA5 for at least four consecutive quarters to determine if you exceed the MCL.

To remain on reduced monitoring:

The TTHM LRAA must be less than or equal to 0.060 mg/l AND the HAA LRAA must be less than or equal to 0.045 mg/l at each monitoring location.

What happens if you exceed any of the above levels?

You must return to routine monitoring.

Determining Compliance

Our system is required to monitor **annually**. For compliance, we will determine that each sample taken is less than the MCL. If any sample exceeds the MCL, we must increase monitoring to dual sample sets once per quarter (taken every 90 days) at all locations. If the locational running annual average (LRAA) exceeds the MCL for either TTHM (0.080 mg/l) or HAA5 (0.060 mg/l), an MCL violation will have occurred. The LRAA is calculated based on four consecutive quarters of monitoring. Compliance will then be achieved if the TTHM and the HAA5 LRAA at each monitoring location for the four most recent quarters is less than or equal to 0.080 mg/l for TTHM and less than or equal to 0.060 mg/l for HAA5.

Disinfectant Monitoring for TTHM and HAA5

Chlorine residuals must be measured at the same time and place as routine or repeat coliform samples
MRDL for chlorine and chloramines = 4.0 mg/l as Cl_2

Determining Compliance for disinfectant residuals

Compliance is based on the running annual average (RAA) of 12 consecutive months

Daily residual measurements will / will not be included in the compliance calculations (circle one)

Attach a distribution map with sample locations

Comments

According to 40 CFR 141.623(a), Stage 2 DPB monitoring can be reduced when the LRAA of data collected in accordance with 40 CFR 141.621 (Stage 2 routine monitoring) is less than or equal to 0.040 mg/L for TTHM and 0.030 mg/L for HAA5. May Creek met this criteria with the two dual TTHM/HAA5 samples collected in 2015. The attached May Creek sampling history justifies selection of a single dual sample site for reduced monitoring, in accordance with the provision for this in 40 CFR 141.623(a) for systems with groundwater supply serving 500-9,999 population.

You will need to print a hard copy for your records and make it available upon request. You do not need to submit a copy to DOH.

If you need this publication in an alternate format, call (800) 525-0127. For TTY/TDD call (800) 833-6388.

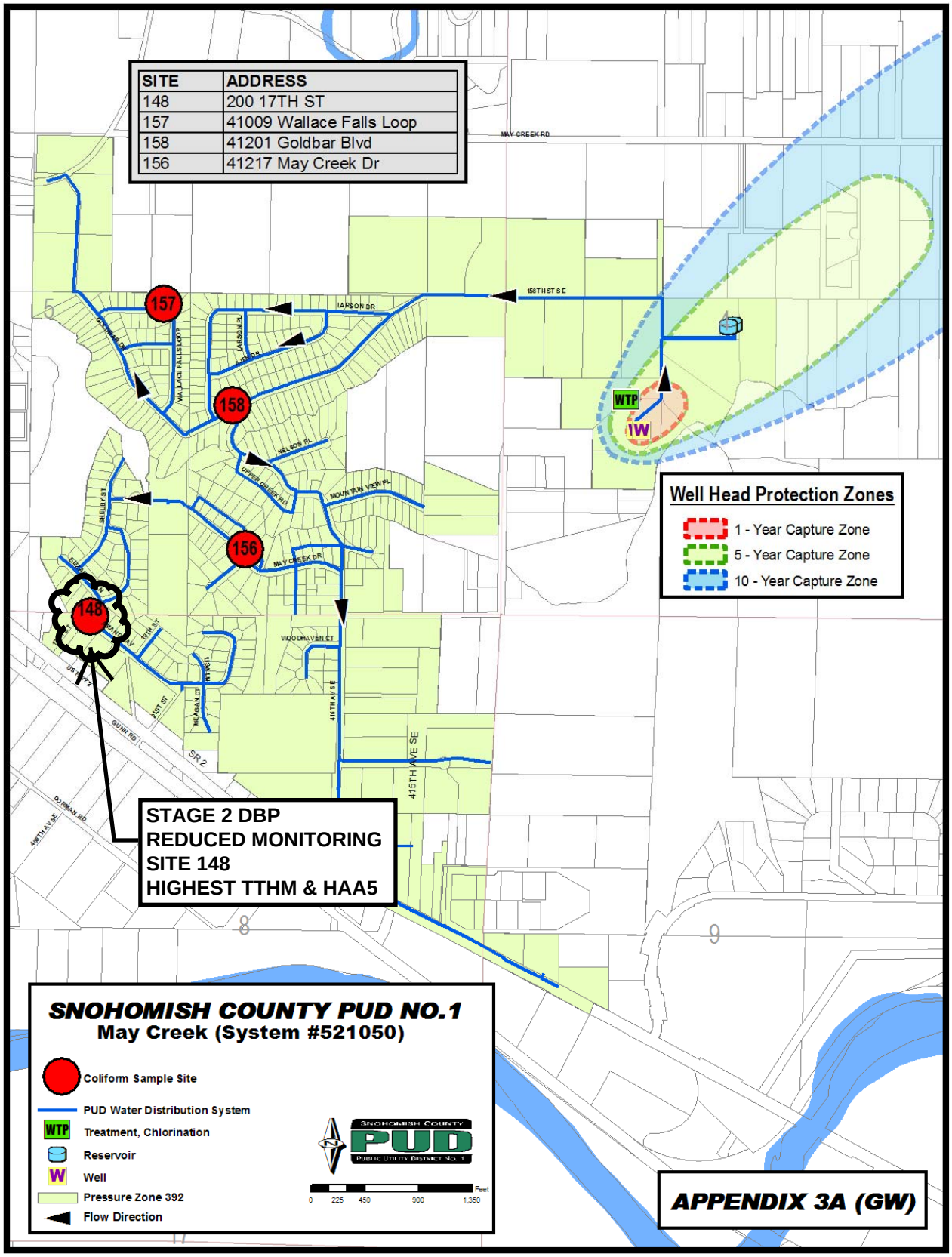
SNO PUD 1 MAY CREEK WATER SYSTEM (ID 52105) - HISTORIC DBP MEASUREMENTS

Disinfection Byproduct Sample Results					LRAA		Notes:
Year	Site	Date	TTHM ppb	HAA5 ppb	TTHM ppb	HAA5 ppb	
1999	156	04/19/99	0.6		0.6	0.0	
2004	158	09/21/04	0.6	ND	0.6	ND	
2005	158	02/24/05	0.6	ND			Stage 1 requirement one dual TTHM/HAA5 sample per year, during month of warmest water temperature. Snohomish PUD voluntarily sampled quarterly in 2005 & 2006.
	156	05/05/05	0.7	2.2			
	156	08/04/05	0.6	0.6			
	158	11/08/05	0.6	ND	0.6	1.4	
2006	148	02/15/06	0.8	0.6			Moved Stage 1 sampling to Site 148 because it was expected that higher TTHM results would occur here.
	148	05/12/06	1.0	ND			
	148	08/16/06	1.6	1.1			
	148	11/09/06	1.3	<15	1.2	0.9	
2007	148	08/21/07	4.0	0.8	4.0	0.8	Qualified for triennial reduced monitoring under Stage 1 DBPR, but sampled annually.
2008	158	08/18/08	ND	ND	0.6	ND	Collected dual samples at two sites in 2008 to confirm location of highest TTHM and HAA5.
	148	08/18/08	2.2	1.4	2.2	1.4	
2009	148	08/17/09	1.6	1.3	1.6	1.3	Continued annual monitoring under Stage 1 Rule, although could have reduced to triennial sampling.
2010	148	08/17/10	2.5	1.0	2.5	1.0	
2011	148	08/17/11	2.3	<15	2.3	<15	
2012	148	08/16/12	1.8	1.2	1.8	1.2	
2013	148	08/21/13	3.6	1.3	3.6	1.3	
2014	148	08/19/14	4.7		4.7		First year of Stage 2 monitoring. Selected Site 148 for TTHM and Site 156 for HAA5, based on highest historic measurements on record. Thought single TTHM and HAA5 samples were required at location of highest results. Sampling repeated before the end of 2014 because DOH pointed out two Stage 2 TTHM & HAA5 measurements were needed for population >500.
	156	08/19/14		ND		ND	
	148	12/29/14	1.5		3.1		
	156	12/29/14		ND		ND	
2015	**148**	**08/18/15**	**6.2**	**ND**	**6.2**	**ND**	Collected two dual TTHM & HAA5 samples in 2015, fully meeting Stage 2 requirements. Now officially qualified for reduced monitoring with TTHM < 40 ppb and HAA5 < 30 ppb.
	156	08/18/15	1.2	ND	1.2	ND	

Going forward, recommend using Site 148 annually for both TTHM & HAA5 under Stage 2 reduced monitoring.

There is not strong evidence to support that HAA5 would be consistently higher at Site 156, compared to 148.

- ~ Although highest HAA5 result on record (only 2.2 ppb) occurred at Site 156 in 2005, Site 148 was not sampled at that same time.
- ~ In 2008 when sites 148 & 158 were sampled, both TTHM & HAA5 were highest at Site 148. (Residence time at Site 158 is similar to Site 156.)
- ~ When dual samples were collected from 148 & 156 in 2015, HAA5 was non-detect in both samples.
- ~ HAA5 was also non-detect at Site 156 in 2014 (first year of Stage 2 monitoring).


SITE | ADDRESS
148 | 200 17TH ST
157 | 41009 Wallace Falls Loop
158 | 41201 Goldbar Blvd
156 | 41217 May Creek Dr
MAY CREEK RD
LARSON DR
158TH ST SE
WALLACE FALLS LOOP
NELSON PL
UPPER CREEK RD
MOUNTAIN VIEW PL
MAY CREEK DR
VIOODHAVEN CT
415TH AVE SE
SR 2
GUNN RD
WTP
IW
Well Head Protection Zones
1 - Year Capture Zone
5 - Year Capture Zone
10 - Year Capture Zone
STAGE 2 DBP
REDUCED MONITORING
SITE 148
HIGHEST TTHM & HAA5
SNOHOMISH COUNTY PUD NO.1
May Creek (System #521050)
Coliform Sample Site
PUD Water Distribution System
Treatment, Chlorination
Reservoir
Well
Pressure Zone 392
Flow Direction
SNOHOMISH COUNTY PUD
Public Utility District No. 1
0 225 450 900 1,350 Feet
APPENDIX 3A (GW)

Washington State Department of Health
Division of Environmental Health
Office of Drinking Water
DOH 331-464
December 2011

Stage 2 DBP Monitoring Plan - Groundwater (Reduced Monitoring)

System Name	Sno PUD 1 - Skylite
PWSID#	802201
Date	11/20/2012
Completed by	Karen Heneghan
Population	377

Initial Stage 2 Sampling Period First sampling period following **October 1, 2013**

Number of Samples Required 1 TTHM and 1 HAA5 every 3 years

Samples must be collected at the location and during the quarter with the highest TTHM single measurement and one at the location and during the quarter with the highest HAA5 single measurement; 1 dual sample set per sample period if the highest TTHM and HAA5 measurements ocurred at the same location and quarter.

	Stage 2 Compliance Monitoring Site ID	Projected Sampling Date
Highest TTHM Site	**155**	**3rd Week of Aug**
Highest HAA5 Site	**155**	**3rd Week of Aug**

If any annual or triennial sample exceeds the MCL (0.080 ug/l for TTHM or 0.060 ug/l for HAA5) you must begin quarterly monitoring for both TTHM and HAA5 for at least four consecutive quarters to determine if you exceed the MCL.

To remain on reduced monitoring:

The TTHM LRAA must be less than or equal to 0.060 mg/l AND the HAA LRAA must be less than or equal to 0.045 mg/l at each monitoring location.

What happens if you exceed any of the above levels?

You must return to routine monitoring.

Determining Compliance

Our system is required to monitor annually (or triennially). For compliance, we will determine that each sample taken is less than the MCL. If any sample exceeds the MCL, we must increase monitoring to dual sample sets once per quarter (taken every 90 days) at all locations. If the locational running annual average (LRAA) exceeds the MCL for either TTHM (0.080 mg/l) or HAA5 (0.060 mg/l), an MCL violation will have occurred. The LRAA is calculated based on four consecutive quarters of monitoring. Compliance will then be achieved if the TTHM and the HAA5 LRAA at each monitoring location for the four most recent quarters is less than or equal to 0.080 mg/l for TTHM and less than or equal to 0.060 mg/l for HAA5.

Disinfectant Monitoring for TTHM and HAA5

Chlorine residuals must be measured at the same time and place as routine or repeat coliform samples
MRDL for chlorine and chloramines = 4.0 mg/l as Cl_2

Determining Compliance for disinfectant residuals

Compliance is based on the running annual average (RAA) of 12 consecutive months
Daily residual measurements will / will not be included in the compliance calculations (circle one)

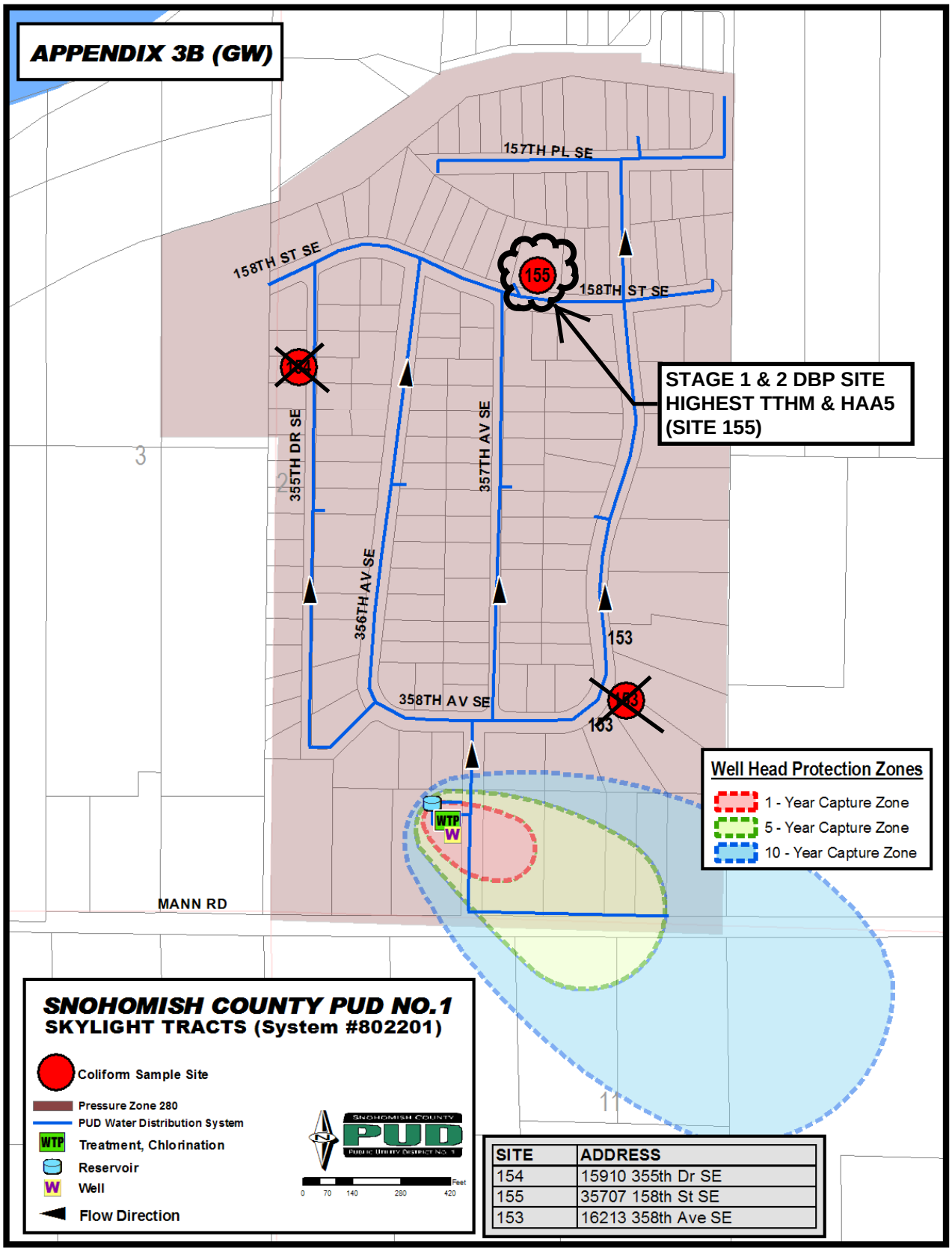
Attach a distribution map with sample locations

Comments

The month of August is selected as allowed by EPA guidance, because this is the month of warmest water temperature. Also, although DBP results qualify the Skylite system for triennial reduced monitoring, the District chooses to continue sampling on an annual basis.

You will need to print a hard copy for your records and make it available upon request. You do not need to submit a copy to DOH.

If you need this publication in an alternate format, call (800) 525-0127. For TTY/TDD call (800) 833-6388.


APPENDIX 3B (GW)
157TH PL SE
158TH ST SE
158TH ST SE
155
154
STAGE 1 & 2 DBP SITE
HIGHEST TTHM & HAA5
(SITE 155)
355TH DR SE
357TH AV SE
356TH AV SE
153
358TH AV SE
153
Well Head Protection Zones
1 - Year Capture Zone
5 - Year Capture Zone
10 - Year Capture Zone
WTP
W
MANN RD
SNOHOMISH COUNTY PUD NO.1
SKYLIGHT TRACTS (System #802201)
Coliform Sample Site
Pressure Zone 280
PUD Water Distribution System
WTP Treatment, Chlorination
Reservoir
W Well
Flow Direction
SNOHOMISH COUNTY PUD
Public Utility District No. 1
0 70 140 280 420 Feet
SITE ADDRESS
154 15910 355th Dr SE
155 35707 158th St SE
153 16213 358th Ave SE

Washington State Department of Health
Division of Environmental Health
Office of Drinking Water
DOH 331-464
December 2011

Stage 2 DBP Monitoring Plan - Groundwater (Routine Monitoring)

System Name	Sno PUD 1 - Sunday Lake
PWSID#	85205
Date	11/30/2012
Completed by	Karen Heneghan
Population	387

Initial Stage 2 Sampling Period First sampling period following **October 1, 2013**

Number of Samples Required 2 Samples per Year (1 TTHM and 1 HAA5)

You are required to take individual TTHM and HAA5 samples (instead of a dual sample set at the locations with the highest TTHM and HAA5 concentrations, respectively. If the highest TTHM and HAA5 concentrations occur at the same location (and month, if monitored annually) only one location with a dual sample set per monitoring period is needed.

	Stage 2 Compliance Monitoring Site ID	Projected Sampling Date
Highest TTHM Site	**160**	**3rd Week of Aug**
Highest HAA5 Site	**160**	**3rd Week of Aug**

If any annual sample exceeds the MCL (0.080 ug/l for TTHM or 0.060 ug/l for HAA5) you must begin quarterly monitoring for both TTHM and HAA5 for at least four consecutive quarters to determine if you exceed the MCL.

Determining Compliance for TTHM and HAA5

Our system is required to monitor annually. For compliance, we will determine that each sample taken is less than the MCL. If any sample exceeds the MCL, we must increase monitoring to dual sample sets once per quarter (taken every 90 days) at all locations. If the locational running annual average (LRAA) exceeds the MCL for either TTHM (0.080 mg/l) or HAA5 (0.060 mg/l), an MCL violation will have occurred. The LRAA is calculated based on four consecutive quarters of monitoring. Compliance will then be achieved if the TTHM and the HAA5 LRAA at each monitoring location for the four most recent quarters is less than or equal to 0.080 mg/l for TTHM and less than or equal to 0.060 mg/l for HAA5.

Disinfectant Monitoring

Chlorine residuals must be measured at the same time and place as routine or repeat coliform samples
MRDL for chlorine and chloramines = 4.0 mg/l as Cl_2

Determining Compliance for disinfectant residuals

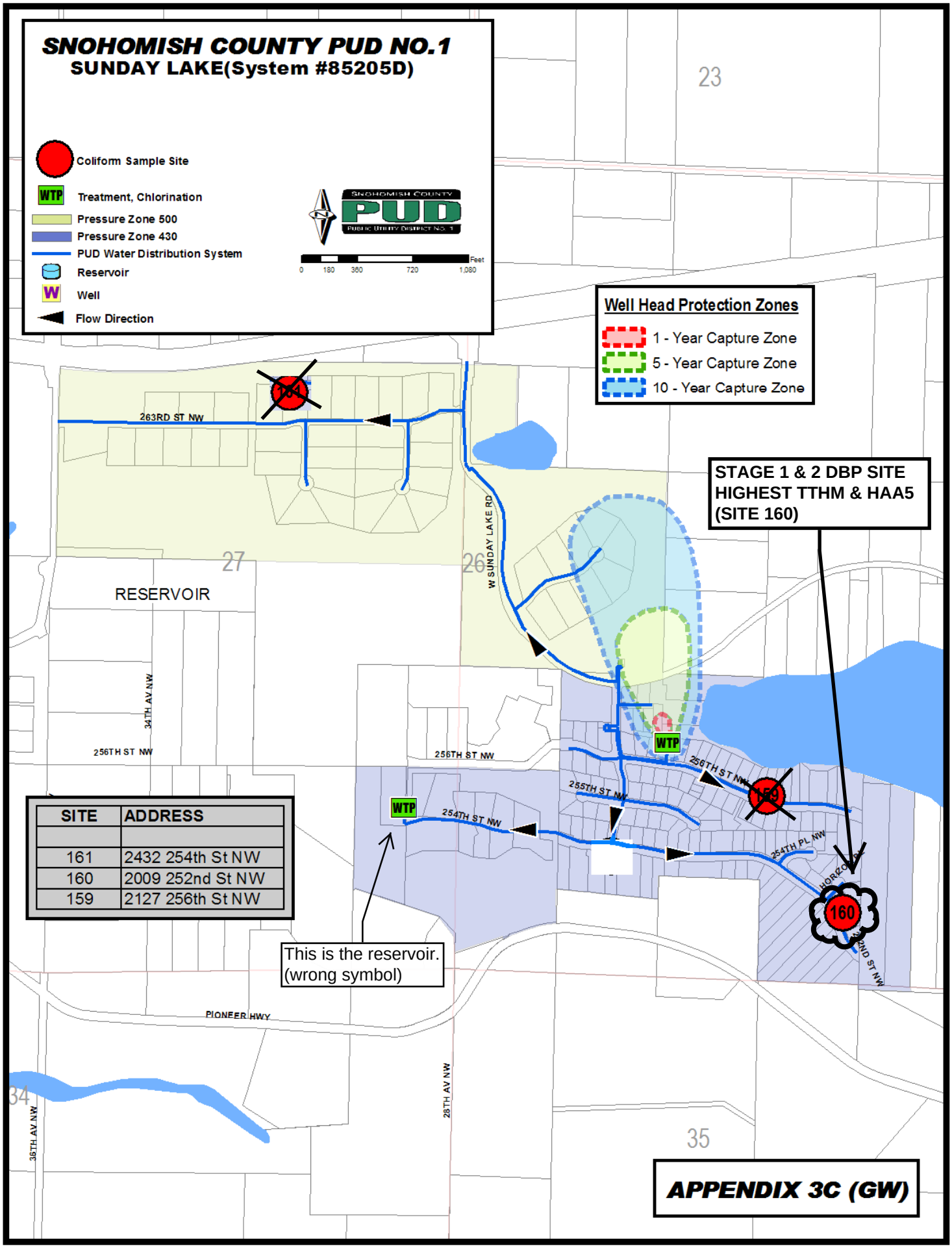
Compliance is based on the running annual average (RAA) of 12 consecutive months
Daily residual measurements will / will not be included in the compliance calculations (circle one)

Attach a distribution map with sample locations

Comments

(1) In Aug 2012, we collected an investigative sample at Site 161 (3221 263rd St NW), in addition to the Stage 1 sample at Site 160. The highest TTHM and HAA5 results were both located at Site 160.
(2) We are collecting the annual samples in the month with the warmest water temperature (which is August).

You will need to print a hard copy for your records and make it available upon request. You do not need to submit a copy to DOH.


SNOHOMISH COUNTY PUD NO.1
SUNDAY LAKE(System #85205D)
Coliform Sample Site
WTP Treatment, Chlorination
Pressure Zone 500
Pressure Zone 430
PUD Water Distribution System
Reservoir
W Well
Flow Direction
SNOHOMISH COUNTY PUD
PUBLIC UTILITY DISTRICT NO. 1
0 180 360 720 1,080 Feet
Well Head Protection Zones
1 - Year Capture Zone
5 - Year Capture Zone
10 - Year Capture Zone
STAGE 1 & 2 DBP SITE
HIGHEST TTHM & HAA5
(SITE 160)
23
27
26
RESERVOIR
263RD ST NW
161
W SUNDAY LAKE RD
34TH AV NW
256TH ST NW
255TH ST NW
254TH ST NW
254TH PL NW
159
160
WTP
PIONEER HWY
28TH AV NW
36TH AV NW
34
35
This is the reservoir.
(wrong symbol)
SITE ADDRESS
161 2432 254th St NW
160 2009 252nd St NW
159 2127 256th St NW
APPENDIX 3C (GW)

Washington State Department of Health
Environmental Public Health
Office of Drinking Water

DOH 331-464
Updated July 2013

Stage 2 DBP Monitoring Plan - Groundwater (Reduced Monitoring) BEGINNING 2016

System Name	SNO PUD 1 - KAYAK
PWSID#	23111
Date	2/16/2016
Completed by	KAREN HENEGHAN
Population	917

First Stage 2 REDUCED Sampling Period **First sampling period following 12/31/2015**

Number of Samples Required 1 TTHM and 1 HAA5 per Year

Samples must be collected at the location and during the quarter with the highest TTHM single measurement and one at the location and during the quarter with the highest HAA5 single measurement; 1 dual sample set per sample period if the highest TTHM and HAA5 measurements ocurred at the same location and quarter.

	Stage 2 Compliance Monitoring Site ID	Projected Sampling Date
Highest TTHM Site	**174**	**3rd wk Aug**
Highest HAA5 Site	**174**	**3rd wk Aug**

If any annual or triennial sample exceeds the MCL (0.080 mg/l for TTHM or 0.060 mg/l for HAA5) you must begin quarterly monitoring for both TTHM and HAA5 for at least four consecutive quarters to determine if you exceed the MCL.

To remain on reduced monitoring:

The TTHM LRAA must be less than or equal to 0.060 mg/l AND the HAA LRAA must be less than or equal to 0.045 mg/l at each monitoring location.

What happens if you exceed any of the above levels?

You must return to routine monitoring.

Determining Compliance

Our system is required to monitor **annually**. For compliance, we will determine that each sample taken is less than the MCL. If any sample exceeds the MCL, we must increase monitoring to dual sample sets once per quarter (taken every 90 days) at all locations. If the locational running annual average (LRAA) exceeds the MCL for either TTHM (0.080 mg/l) or HAA5 (0.060 mg/l), an MCL violation will have occurred. The LRAA is calculated based on four consecutive quarters of monitoring. Compliance will then be achieved if the TTHM and the HAA5 LRAA at each monitoring location for the four most recent quarters is less than or equal to 0.080 mg/l for TTHM and less than or equal to 0.060 mg/l for HAA5.

Disinfectant Monitoring for TTHM and HAA5

Chlorine residuals must be measured at the same time and place as routine or repeat coliform samples
MRDL for chlorine and chloramines = 4.0 mg/l as Cl_2

Determining Compliance for disinfectant residuals

Compliance is based on the running annual average (RAA) of 12 consecutive months

Daily residual measurements will / will not be included in the compliance calculations (circle one)

Attach a distribution map with sample locations

Comments

According to 40 CFR 141.623(a), Stage 2 DPB monitoring can be reduced when the LRAA of data collected in accordance with 40 CFR 141.621 (Stage 2 routine monitoring) is less than or equal to 0.040 mg/L for TTHM and 0.030 mg/L for HAA5. Kayak met this criteria with the two dual TTHM/HAA5 samples collected in 2015. The attached Kayak sampling history justifies the selection of a single dual sample site for reduced monitoring, in accordance with the provision for this in 40 CFR 141.623(a) for systems with groundwater supply serving 500-9,999 population.

You will need to print a hard copy for your records and make it available upon request. You do not need to submit a copy to DOH.

If you need this publication in an alternate format, call (800) 525-0127. For TTY/TDD call (800) 833-6388.

SNO PUD 1 - KAYAK WATER SYSTEM (ID 23111) - HISTORIC DBP MEASUREMENTS

Disinfection Byproduct Sample Results					LRAA	
Year	Site	Date	TTHM (µg/L)	HAA5 (µg/L)	TTHM (µg/L)	HAA5 (µg/L)
2009	173	08/17/09	11.3	4.7	11.3	4.7
	172	08/17/09	7.0	1.4	7.0	1.4
	174	08/17/09	13.7	5.6	13.7	5.6
2010	173	08/17/10	6.9	ND	6.9	ND
2011	173	08/18/11	6.2	ND	6.2	ND
2012	174	08/16/12	6.2	1.2	6.2	1.2
2013	174	08/21/13	8.4	ND	8.4	ND
2014	174	08/19/14	10.6	2.3	10.6	2.3
	174	12/29/14	8.5	3.0	9.6	2.7
2015	173	08/26/15	7.7	1.0	7.7	1.0
	174	**08/26/15**	**11.9**	**3.9**	**11.9**	**3.9**

Highest result out of all samples.

Second highest result out of all samples.

Site	Location
172	15602 83rd Ave NW
173	17115 82nd Ave NW
174	16501 89th Ave NW

Chlorination of the Kayak system started in 2009. Therefore, no TTHM or HAA5 data exists prior to 2009.

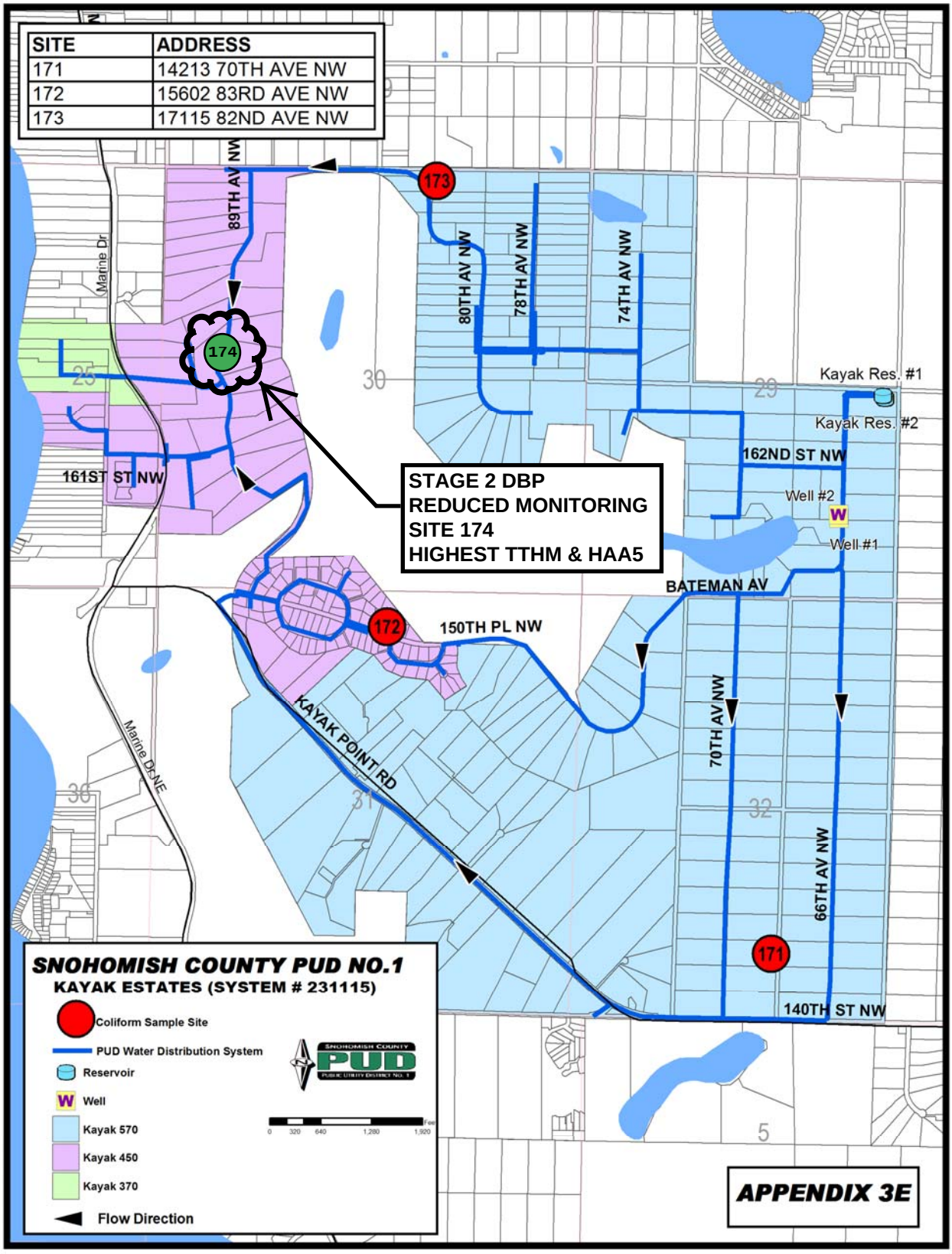
Sampling at three sites in 2009 was designed to identify locations with the highest TTHM and HAA5 concentrations for Stage 2 sample sites. The District used its hydraulic model to identify Site 174 in an area of oldest water age, where it would be practical to install a sample station. Of the sample stations in existance in 2009, Sites 172 and 173 represented the next oldest water ages. The highest 2009 TTHM and HAA5 results both occurred at Site 174, and the next highest results both occurred at Site 173. Initially, Site 173 was used for the Stage 1 DBP sampling. The sampling site was moved to Site 174 after the new sample station was installed.

Under the Stage 1 DBP Rule (prior to Oct 1, 2013) the Kayak system qualified for triennial reduced monitoring. However, the District chose to continue sampling annually until the Stage 2 Rule began. Under the Stage 2 Rule, sampling cannot be less frequent than annual for water systems of this size.

When starting Stage 2 DBPR sampling in 2014, it was thought that the Kayak system qualified for annual reduced monitoring, with a dual sample at the location of highest TTHM & HAA5 results (Site 174). In response to a phone call from DOH indicating that a second dual sample was needed, sampling was repeated at Site 174 in December 2014.

In 2015, the District collected two dual TTHM & HAA5 samples at Sites 173 and 174, which were the locations of the highest and second highest results in 2009. Now that those samples are also below 0.040 mg/L TTHMs and 0.030 mg/L HAA5, the Kayak system officially meets the Stage 2 reduced sampling criteria under 40 CFR 141.623(a). Reduced monitoring consists of *1 TTHM and 1 HAA5 sample: one at the location and during the quarter with the highest TTHM single measurement, one at the location and during the quarter with the highest HAA5 single measurement;* ***1 dual sample set per year if the highest TTHM and HAA5 measurements occurred at the same location and quarter .***

Because the highest TTHM and HAA5 results in 2015 both occurred at Site 174, that is the selected site for future reduced monitoring in the Kayak water system.


SITE | ADDRESS
171 | 14213 70TH AVE NW
172 | 15602 83RD AVE NW
173 | 17115 82ND AVE NW
89TH AV NW
Marine Dr
173
80TH AV NW
78TH AV NW
74TH AV NW
174
25
30
29
Kayak Res. #1
Kayak Res. #2
162ND ST NW
161ST ST NW
Well #2
Well #1
STAGE 2 DBP
REDUCED MONITORING
SITE 174
HIGHEST TTHM & HAA5
BATEMAN AV
172
150TH PL NW
KAYAK POINT RD
Marine Dr NE
36
31
32
70TH AV NW
66TH AV NW
171
140TH ST NW
5
SNOHOMISH COUNTY PUD NO.1
KAYAK ESTATES (SYSTEM # 231115)
Coliform Sample Site
PUD Water Distribution System
Reservoir
Well
Kayak 570
Kayak 450
Kayak 370
Flow Direction
0 320 640 1,280 1,920
APPENDIX 3E

DBP Monitoring Plan
(Annual Schedule)

This template should be used by:
* Surface water systems who serve less than 500 population
* Surface water systems who serve between 500-3,300 population on reduced monitoring
* Groundwater systems who serve less than 10,000 population
* **Groundwater systems who serve 500-99,999 population on reduced monitoring**

For more information, refer to the Reference Sheets on the separate tabs

System Name:	SNO PUD 1 - WARM BEACH
PWSID#:	93000 F
Population:	1535
Type of Source Water:	GROUNDWATER
Completed by:	KAREN HENEGHAN
Date:	4/24/2019

Monitoring Requirments

Monitoring Frequency:	**Annual**
Number of TTHM Samples Required:	1
Number of HAA5 Samples Required:	1

Monitoring Locations and Month Assigned

Monitoring Location (Name of Site)	Month Assigned
19108 Soundview Dr NW (204)	August

Determining Compliance for TTHM and HAA5

Our system is required to monitor annually. Compliance will be achieved if the TTHM and the HAA5 at each monitoring location is less than or equal to 0.080 mg/L for TTHM and less than or equal to 0.060 mg/l for HAA5. If these levels are exceeded the monitoring frequency will be increased to quarterly.

To qualify for reduced monitoring:

The TTHM LRAA must be less than or equal to 0.040 mg/l AND the HAA LRAA must be less than or equal to 0.030 mg/l at each monitoring location.

If your system is on reduced annual monitoring, to remain on reduced monitoring:

The TTHM LRAA must be less than or equal to 0.060 mg/l AND the HAA LRAA must be less than or equal to 0.045 mg/l at each monitoring location. If these levels are exceeded, but the MCL is not exceeded, the monitoring frequency will be returned to quarterly.

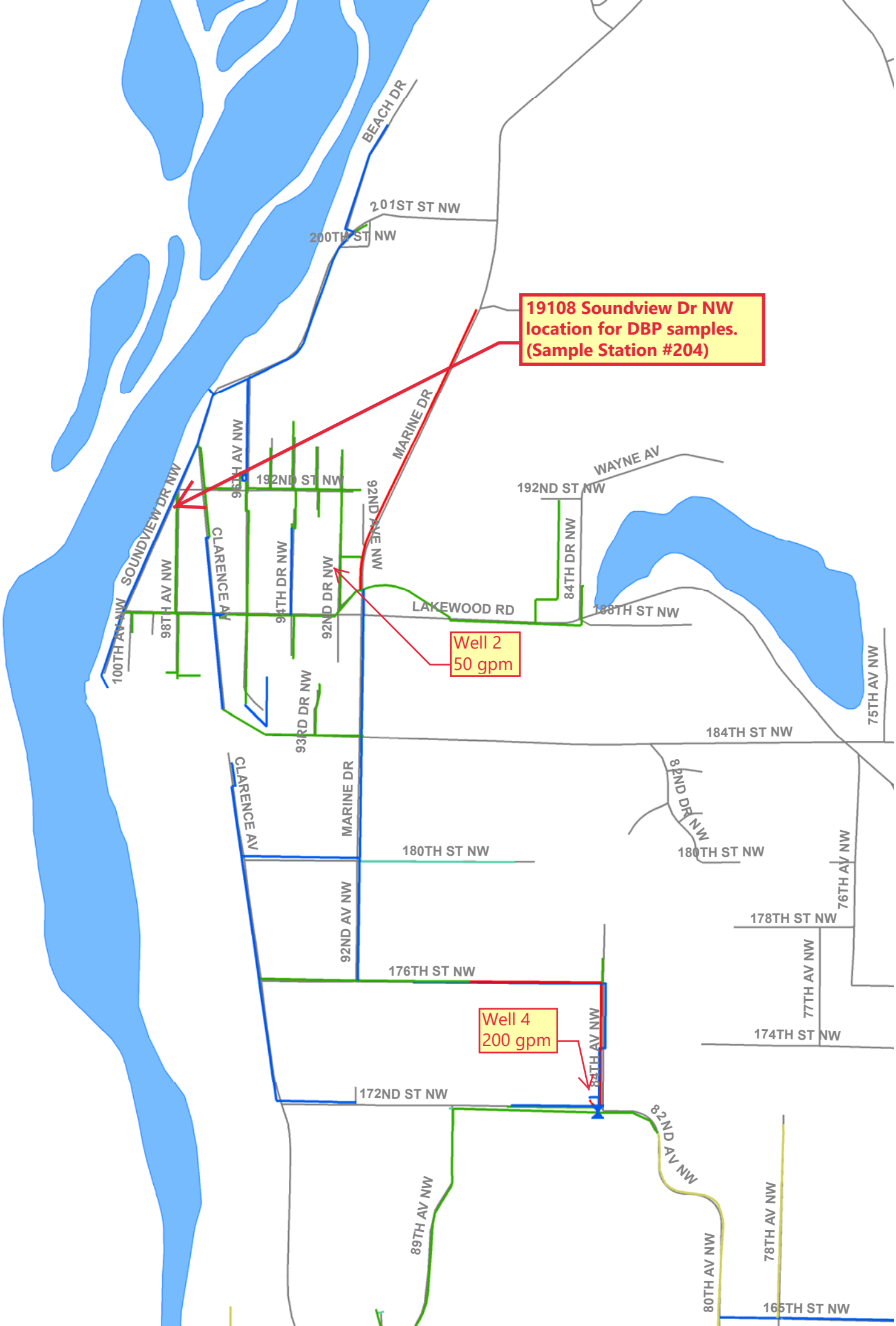
Disinfectant Residual Monitoring

Chlorine residuals must be measured at the same time and place as routine or repeat coliform samples
MRDL for chlorine and chloramines = 4.0 mg/l as Cl_2

Determining Compliance for disinfectant residuals

Compliance is based on the running annual average (RAA) of 12 consecutive months
Daily residual measurements will / will not be included in the compliance calculations (circle one)

(Attach a distribution map with sample locations. You will need to print a hard copy for your records and make it available upon request. You do not need to submit a copy to DOH. If you need this publication in an alternate format, call (800) 525-0127. For TTY/TDD call (800) 833-6388.)


19108 Soundview Dr NW
location for DBP samples.
(Sample Station #204)
Well 2
50 gpm
Well 4
200 gpm
BEACH DR
201ST ST NW
200TH ST NW
MARINE DR
SOUNDVIEW DR NW
100TH AV NW
98TH AV NW
CLARENCE AV
96TH AV NW
192ND ST NW
94TH DR NW
92ND DR NW
92ND AVE NW
93RD DR NW
WAYNE AV
192ND ST NW
84TH DR NW
LAKEWOOD RD
188TH ST NW
75TH AV NW
184TH ST NW
82ND DR NW
180TH ST NW
180TH ST NW
76TH AV NW
178TH ST NW
92ND AV NW
176TH ST NW
77TH AV NW
174TH ST NW
84TH AV NW
172ND ST NW
82ND AV NW
89TH AV NW
80TH AV NW
78TH AV NW
165TH ST NW

Appendix 10-3

Monitoring Requirements

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Water Quality Sampling – Regulatory Compliance Monitoring

Analysis – Test Method	*Frequency*	*Site – Location*
Microbiology - Bacteriological		
Routine Presence/Absence (P/A)	Monthly	**Surface Water Systems** Creswell, Dubuque, Lake Stevens, Lake Roesiger, Storm Lake *Collect sample at selected sample collection sites after treatment*
Routine Presence/Absence (P/A)	Monthly	**Groundwater Supply System's** Kayak Estates, May Creek, 212th Market, Pilchuck -10 Skylite Tracts, Sunday Lake. *Collect sample at selected sample collection sites after treatment*
Routine Presence Absence (P/A)	Quarterly	Otis *(Group B system)*
Analysis – Test Method	***Frequency***	***Site – Location***
Disinfectant - Disinfection By-Products		
Total Trihalomethanes (TTHM)	Quarterly	Lake Stevens, Lake Roesiger, Dubuque, Storm Lake, Creswell *Sample taken at selected sample sites after teatment & mamximum residence time in distribution system.*
Haloacetic Acid (HAA5)	Quartlery	Lake Stevens, Lake Roesiger, Dubuque, Storm Lake, Creswell *Sample taken at selected sample sites after teatment & mamximum residence time in distribution system.*
Total Trihalomethanes (TTHM)	Annually	May Creek, Skylite Tracts, Sunday Lake, 212th St Market, Pilchuck 10, Kayak Estates *Sample taken at selected sample sites after teatment & mamximum residence time in distribution system.*
Haloacetic Acid (HAA5)	Annually	May Creek, Skylite Tracts, Sunday Lake, 212th St Market, Pilchuck 10, Kayak Estates *Sample taken at selected sample sites after teatment & mamximum residence time in distribution system.*
Analysis – Test Method	***Frequency***	***Site – Location***
Complete Inorganic Compounds (IOC), Primary/Secondary *(Arsenic & Nitrate-N/Nitrite-N are included in the IOC Sample Analyses)*	Required Every 3-Years	May Creek (SO1) May Creek (SO2) Skylite Tracts (SO1) Sunday Lake (SO3) 212'⊓ Street Market & Deli Kayak Estates (SO2) Kayak Estates (SO1) *Sample Taken from a point representative of the source, after treatment & prior to entry into distribution system.*

Analysis – Test Method	Frequency	Site – Location
Arsenic & Nitrate-N/Nitrite-N	Required Annually *(unless collecting complete IOC)*	May Creek (SO1) May Creek (SO2) Skylite Tracts (SO1) Sunday Lake (SO3) Kayak Estates (SO2) Kayak Estates (SO1) 212th Street Market (SO1) Pilchuck-10 (SO1) Otis *Sample Taken from a point representative of the source, after treatment & prior to entry into distribution system.*
Analysis – Test Method	***Frequency***	***Site – Location***
Volatile Organic Compounds (VOC)	Required Every 3-Years	May Creek (SO1) May Creek (SO2) Skylite Tracts (SO1) Sunday Lake (SO3) 212'n Street Market & Deli Kayak Estates (SO2) Kayak Estates (SO1) *Sample Taken from a point representative of the source, after treatment & prior to entry into distribution system.*
Analysis – Test Method	***Frequency***	***Site – Location***
Synthetic Organic Compounds (SOC)	Required Every 3-Years	May Creek (SO2) May Creek (SO1) Skylite Tracts (SO1) Sunday Lake (SO3) Kayak Estates (SO2) Kayak Estates (SO1) *Sample Taken from a point representative of the source, after treatment & prior to entry into distribution system.*
Analysis – Test Method	***Frequency***	***Site – Location***
Lead & Copper	Required Every 3-Years	Lake Stevens, Lake Roesiger, Dubuque, Storm Lake, Creswell May Creek, Skylite Tracts, Sunday Lake, Kayak Estates *Samples Taken after treatment at cutomer's tap.*

Analysis – Test Method	***Frequency***	***Site – Location***
Radionuclide, Gross Alpha and Radium 228	Required Every 3-Years	May Creek (SO2) May Creek (SO1) Skylite Tracts (SO1) Sunday Lake (SO3) Kayak Estates (SO1) Kayak Estates (SO2) 212th Street Market & Deli *Sample Taken from a point representative of the source, after treatment & prior to entry into distribution system.*
Analysis – Test Method	***Frequency***	***Site – Location***
Asbestos	Required every 9-Years; Systems with >10% AC	Lake Stevens Dubuque *Take sample from the distibution system, or source if directed by DOH*

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Appendix 10-4

Consumer Confidence Reports

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Snohomish County PUD Integrated Water System

2021 Annual Water Quality Report

Inside

SNOHOMISH COUNTY PUD is pleased to report that your drinking water safely complies with federal and state drinking water quality standards. This report summarizes the key findings of the PUD's 2021 water quality testing program. It illustrates the utility's commitment to delivering the highest quality drinking water.

Each year, the PUD prepares a Water Quality Report for its customers. We want you to know where your water comes from, how it is treated and that it is safe to drink. The purpose of this report is to help people, especially those with special health needs, make informed decisions about their drinking water.

Special Health Information

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons – such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly and infants – can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water hotline (1-800-426-4791).

Where Your Water Comes From

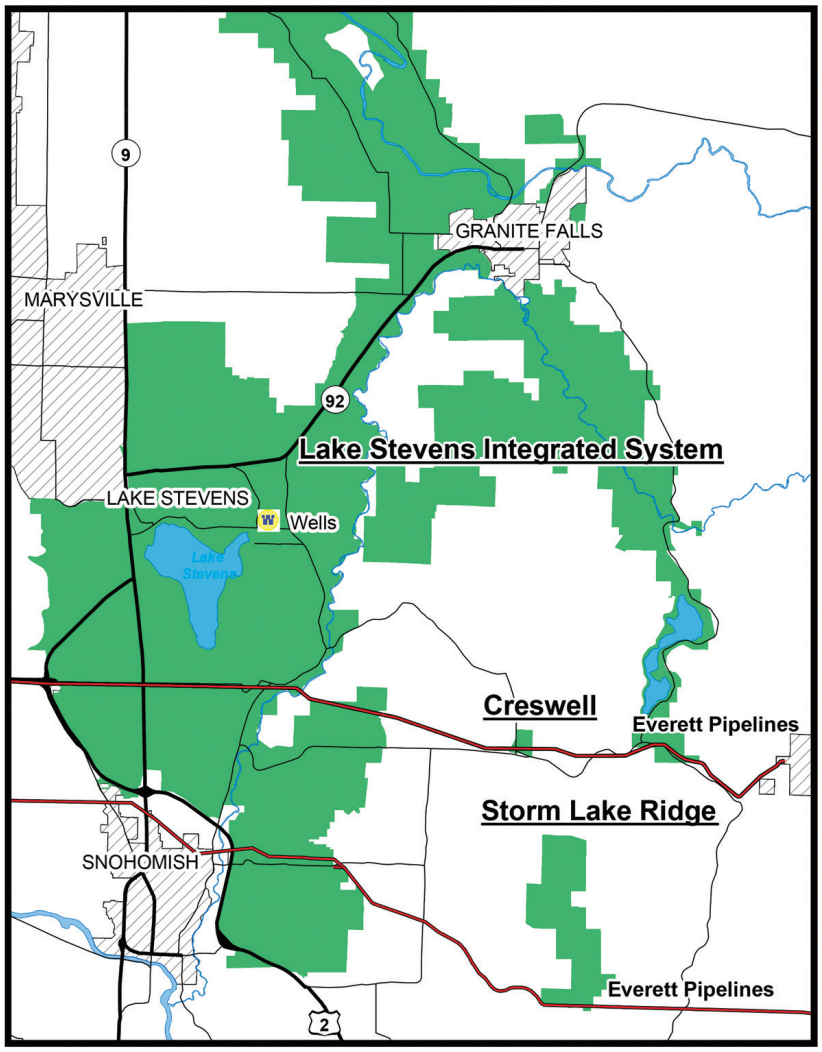
The majority of the water distributed to your home is purchased from the City of Everett. The water comes from the Spada Lake Reservoir, which is located at the headwaters of the Sultan River about 30 miles east of Everett.

Spada Reservoir is located in the Sultan Basin Watershed, which covers nearly 84 square miles. A watershed is a geographic area where all precipitation drains into a single body of water. In the Sultan Basin Watershed, rainfall and snowmelt from the Cascade Mountains flow into Spada Reservoir. One of the wettest watersheds in the continental United States, the basin's average rainfall is about 165 inches.

Created in 1965 by construction of the Culmback Dam, and increased in size in 1984, Spada Lake Reservoir holds approximately 50 billion gallons of water. Water from Spada Lake travels eight miles by tunnel and pipeline to the PUD's Jackson Hydroelectric Project where turbines generate enough power to supply electricity to about 35,800 homes.

The water is then routed by pipeline from the powerhouse to Everett's Lake Chaplain, where it is held in preparation for treatment. Everett's treatment plant uses coagulation and advanced filtration techniques to remove suspended particles that may contaminate the water. The pH (acidity) of the water is adjusted to reduce its corrosiveness, thereby reducing the likelihood of lead and copper being leached from household plumbing. Chlorine is added as a disinfectant to make sure the water is free of harmful microorganisms, and fluoride is added for enhanced dental protection. The levels of these two additives are monitored constantly to assure proper dosages are being used.

In September 2012, the PUD completed the construction of a new treatment facility in Lake Stevens (northeast of the downtown area) and began producing water from two wells. The water from these wells receives treatment for iron and manganese removal and is chlorinated. Fluoride is added to match levels found in the City of Everett drinking water. The water from this treatment facility is then blended with water received from the City of Everett in the distribution system.



System Improvements

In 2021, the PUD completed improvements to, and the repainting of, its Lake Stevens Walker Hill 2 MG reservoir and replaced an aging section of water main crossing SR 9 at 32nd Street SE. In addition, staff worked closely with its consultant to draft an updated Water System Plan that looks at all Water Utility needs over the next 20 years, and started the design and planning effort to replace all water meters as part of the PUD's Connect Up infrastructure and technology program that includes new metering technology. The PUD also continued making needed improvements to its Warm Beach Water System, which is described in a separate water quality report.

General Information About Drinking Water

Substances Expected to be in Drinking Water

To ensure that tap water is safe to drink, the Washington State Department of Health (DOH) and the U.S. Environmental Protection Agency (EPA) set regulations limiting the amount of certain contaminants in the water provided by public water systems. The U.S. Food & Drug Administration (FDA) and the Washington State Department of Agriculture regulations establish limits for contaminants in bottled water that must provide the same protection for public health. Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline at 1-800-426-4791.

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals – in some cases, radioactive material – and substances resulting from the presence of animals or from human activity. The following substances may be present in source water (drinking water quality is determined by testing for these contaminants).

Microbial contaminants *such as viruses and bacteria*	*May come from wildlife, agricultural livestock or septic systems.*
Inorganic contaminants *such as salts and metals*	*Can occur naturally or may result from urban storm-water runoff, industrial or domestic wastewater discharges, mining or farming.*
Pesticides & herbicides	*May come from a variety of sources such as farming, urban stormwater runoff, and homes or businesses.*
Organic contaminants *including synthetic & organic chemicals*	*Are by-products of industrial processes and petroleum production and may also come from gas stations, urban stormwater runoff and septic systems.*
Radioactive contaminants	*Can be naturally occurring or may be the result of oil and gas production and mining activities.*

Water Conservation Requirements

The Water Use Efficiency Rule sets planning requirements, leakage standards and water conservation goal setting and reporting requirements. The PUD's 2021 demand-side and supply-side conservation goal results:

	Goal	2021 Results	How Goal was Met
Demand-Side	Participate in Everett's program to help reduce regional water demand by about 1.4 MGD between 2020 and 2029 (about a 2% reduction compared to projected 2029 demand, or 0.2% savings annually).	The total regional savings were estimated to be 0.63 MGD.	Public outreach and education, including school presentations, plus distribution of indoor/outdoor conservation kits.
Supply-Side	Maintain the PUD's distribution system leakage below the state standard of 10% and strive to progressively achieve lower percentages of non-revenue water, where possible.	5.34% PUD Distribution System Leakage (combined result for all PUD water systems)	Continued emphasis on accurate water usage reporting with PUD crews and local fire departments and with repair of discovered leaks.

Definition of Terms Used in This Report

How Do I Read This Report?

The **Maximum Allowable** column provides you with the maximum level established by the EPA or the DOH. These are standards that all drinking water suppliers serving over 15 customers must meet.

The **Minimum/Maximum Range** and **Average Value** show you the contaminant level detected in the water analysis test.

The **last column tells you whether or not the test complies** with regulations. A "YES" indicates that the range detected is within EPA regulations.

Snohomish County PUD also regularly performs tests for unregulated compounds for which state and federal agencies have not set standards at this time.

AL (Action Level): The concentration of a contaminant, which, if exceeded, triggers treatment or other requirements that a water system must follow.

MCL (Maximum Contaminant Level): The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible, using the best available treatment technology.

MCLG (Maximum Contaminant Level Goal): The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

MRDL (Maximum Residual Disinfectant Level): The highest level of disinfectant allowed in drinking water. There is convincing evidence that the addition of a disinfectant (e.g., chlorine, chloramines, chlorine dioxide) is necessary for control of microbial contaminants.

MRDLG (Maximum Residual Disinfectant Level Goal): The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

N/A: The EPA has not set MCLGs for these substances.

N/D: Not detected.

NTU (Nephelometric Turbidity Units): Measurement of the clarity, or turbidity, of water.

ppm (parts per million): One part per million (corresponds to one dollar in $1,000,000).

ppb (parts per billion): One part per billion (corresponds to one dollar in $1,000,000,000).

SMCL (Secondary Maximum Contaminant Level): These standards are developed to protect the aesthetic qualities of drinking water and are not health-based.

TT (Treatment Technique): A required process intended to reduce the level of a contaminant in drinking water.

Turbidity: Has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms that include bacteria, viruses and parasites. These organisms can cause symptoms such as nausea, cramps, diarrhea and associated headaches.

Testing Results

GREATER LAKE STEVENS, ARLINGTON AND GRANITE FALLS WATER SYSTEM

The PUD's Integrated System is supplied water from the City of Everett and a PUD-owned well field. The system provides water to approximately 22,000 connections (estimated customer base of approximately 59,000 people) and includes 360 miles of pipe, 14.1 million gallons of storage, 12 pump stations, 9 City of Everett taps, and 25 pressure zones.

			EPA Regulations		Your Water Testing Results		
Substance	Major Source	Units	Maximum Goal (MCLG)	Maximum Allowable (MCL)	Min./Max. Range	Average or Highest Value	Comply?
Nitrate	Erosion of natural deposits, animal waste	ppm	10	10	N/D – 0.09	0.02	YES
Arsenic	Erosion of natural deposits	ppb	0	10	N/D – 2	1	YES
Barium	Erosion of natural deposits	ppm	2	2	0.0035 – 0.014	0.01	YES
Manganese	Erosion of natural deposits	ppm	N/A	0.05 (SMCL)	N/D – 0.3[1]	0.01	YES
Iron	Erosion of natural deposits	ppm	N/A	0.3	N/D – 0.09	0.02	YES

[1]Two Manganese measurements above the SMCL occurred in 2021 and treatment operation was corrected. Compliance with the SMCL is based on average concentration.

Total Coliform Bacteria	Naturally present in the environment	% positive	0	Not more than 5% positive per month	0%	0%	YES

Total coliform bacteria testing is used to monitor microbial quality in the water distribution system. The PUD collects 60 coliform samples per month from dedicated sites within the Lake Stevens Integrated Water System. No unsatisfactory results were detected in 2021.

Fluoride	Dental health additive	ppm	2	4	0.4* – 0.9	0.7	YES

Fluoride is added to your water in carefully controlled levels for dental health. In 2016, state regulations changed the standard to 0.7 ppm with an operating range of 0.5 to 0.9.
** The minimum value of 0.4 ppm was due to a short-term maintenance-related feed outage that lasted no more than a day in duration.*

Haloacetic Acids[2]	By-product of drinking water chlorination	ppb	N/A	60	20 – 40	34	YES
Total Trihalomethanes[2]	By-product of drinking water chlorination	ppb	N/A	80	14 – 56	44	YES
Free Chlorine Residual	Measure of disinfectant added to water	ppm	4 (MRDLG)	4 (MRDL)	0.15 – 1.31	0.69	YES

[2]Haloacetic acids and Trihalomethanes form as by-products of the chlorination process that is used to kill or inactivate disease-causing microbes. Although goals have not been set for these compounds as a group, MCLGs for related individual compounds can be seen in the Unregulated Substances table on the next page.

Turbidity	Soil erosion	NTU	N/A	TT	100%	0.09	YES

The EPA turbidity limit is 0.3 NTU. In 2021, no filtered water turbidity results at the Everett filtration plant exceeded 0.3 NTU so the lowest percentage that met the EPA limit was 100%. The treatment plant operators target production of filter water turbidities of 0.10 NTU or less. The value reported here is the highest four-hour combined filtered water turbidity measurement obtained during the year.

Required Polymer Statement: During water treatment, organic polymer coagulants are added to improve the coagulation and filtration processes that remove particulates from water. The particulates that are removed can include viruses, bacteria and other disease-causing organisms. The USEPA sets limits on the type and amount of polymer that a water system can add to the water. In addition to the EPA limits, the State of Washington requires that all polymers used be certified safe for potable water use by an independent testing organization (NSF International). During treatment, Everett adds only NSF-approved polymers and the levels used are far below the safe limits set by the USEPA.

			EPA Regulations		Your Water Testing Results		
Substance	Major Source	Units	Maximum Goal (MCLG)	Action Level (AL)	90th % Level	Homes Exceeding the AL	Comply?
Copper	Plumbing, erosion of natural deposits	ppm	1.3	1.3	0.275	None	YES
Lead	Plumbing, erosion of natural deposits	ppb	0	15	1	None	YES

US Environmental Protection Agency (USEPA) and state regulations require Snohomish PUD and the systems it supplies to monitor for the presence of lead and copper at household taps in their service area every three years. The next round of required sampling will be conducted in late summer of 2024. The 90th % Level is the highest result obtained in 90 percent of the samples collected when the results are ranked in order from lowest to highest. The results for water tested before it enters household plumbing were even lower. This indicates that there is virtually no lead or copper in the water you are provided, but your household plumbing may contribute to the presence of lead and copper at your tap.

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. Snohomish County PUD is responsible for providing high-quality drinking water but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to two minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods and steps you can take to minimize exposure is available from the Safe Drinking Water hotline or at the USEPA's website at www.epa.gov/safewater/lead.

(Testing results for this water system continued on next page)

GREATER LAKE STEVENS, ARLINGTON AND GRANITE FALLS WATER SYSTEM (CONT.)

UNREGULATED SUBSTANCES

Substance	Maximum Goal (MCLG)	*Your Water Testing Results* Min./Max. Range	Average Value
Bromodichloromethane[1] (ppb)	0	0.9 – 2.2	1.6
Chloroform (trichloromethane)[1] (ppb)	70	12.9 – 53.8	32.1
Dichloroacetic Acid[1] (ppb)	0	2.2 – 17.7	10.8
Trichloroacetic Acid[1] (ppb)	20	9.5 – 26.2	17.6
Monochloroacetic Acid[1] (ppb)	None	N/D – 3.5	1.7
Chlorodibromomethane Acid[1] (ppb)	60	N/D – 0.7	0.02

[1]Although these substances are not regulated individually, their results are added together to obtain the Total Trihalomethane and Haloacetic Acid results shown on the previous page.

VOLUNTARILY MONITORED SUBSTANCES

The information below is voluntary and describes additional characteristics of the drinking water in the PUD distribution system.

	Min./Max. Value	Average Value
Alkalinity (ppm)	5 – 37	22
Aluminum (ppm)	0.003 – 0.04	0.02
pH (standard unit)	6.3 – 9.9	7.2
Sodium (ppm)	5.8 – 8.5	7.4
Total Hardness (ppm)	10.3 – 141	82
Chloride (ppm)	2.3 – 5.8	4.2
Sulfate (ppm)	2.8 – 12	7.4

The Creswell and Storm Lake Systems are also supplied water from the City of Everett; however, the systems are not hydraulically linked, which makes them separate or isolated systems. Therefore, in addition to the testing results found on pages 5-6, the PUD collects supplementary compliance samples as shown in the following tables.

CRESWELL WATER SYSTEM

The Creswell system supplies water to 36 connections along Dubuque Road and Creswell Road. Water is purchased directly from the City of Everett with taps on Everett's No. 2 and No. 3 pipelines.

Substance	Major Source	Units	EPA Regulations Maximum Goal (MCLG)	EPA Regulations Maximum Allowable (MCL)	Your Water Testing Results Min./Max. Range	Your Water Testing Results Average Value	Your Water Testing Results Comply?
Total Coliform Bacteria	Naturally present in the environment	Samples positive	0	1 positive per month	0%	0%	YES

Total coliform bacteria testing is used to monitor microbial quality in the water distribution system. The PUD collects one coliform sample per month. No unsatisfactory results were detected in 2021.

Haloacetic Acids[2]	By-product of drinking water chlorination	(ppb)	N/A	60	34	34	YES
Total Trihalomethanes[2]	By-product of drinking water chlorination	(ppb)	N/A	80	47	47	YES
Free Chlorine Residual	Measure of disinfectant added to water	(ppm)	4 (MRDLG)	4 (MRDL)	0.46 – 0.96	0.66	YES

[2]Haloacetic acids and Trihalomethanes form as by-products of the chlorination process that is used to kill or inactivate disease-causing microbes. Although goals have not been set for these compounds as a group, MCLGs for related individual compounds can be seen in the Unregulated Substances table below.

Substance	Major Source	Units	EPA Regulations Maximum Goal (MCLG)	EPA Regulations Action Level (AL)	Your Water Testing Results 90th % Level*	Your Water Testing Results Homes Exceeding the AL	Your Water Testing Results Comply?
Copper	Plumbing, erosion of natural deposits	ppm	1.3	1.3	0.402	None	YES
Lead	Plumbing, erosion of natural deposits	ppb	0	15	7	None	YES

US Environmental Protection Agency (USEPA) regulations require monitoring for the presence of lead and copper at household taps in their service area every three years. The next round of required sampling will be conducted in 2024.

**The 90th percentile level is the highest result obtained in 90% of the samples collected when the results are ranked in order from lowest to highest. This value is used to compare to the AL.*

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. Snohomish County PUD is responsible for providing high-quality drinking water but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to two minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods and steps you can take to minimize exposure is available from the Safe Drinking Water hotline or at the USEPA's website at www.epa.gov/safewater/lead.

UNREGULATED SUBSTANCES

Substance	Maximum Goal (MCLG)	*Your Water Testing Results* Min./Max. Range	Average Value
Bromodichloromethane[3] (ppb)	0	2.0	2.0
Chloroform (trichloromethane)[3] (ppb)	70	45.0	45.0
Dichloroacetic Acid[3] (ppb)	0	13.8	13.8
Trichloroacetic Acid[3] (ppb)	20	17.7	17.7
Monochloracetic Acid[3] (ppb)	None	2.3	2.3

[3]Although these substances are not regulated individually, their results are added together to obtain the Total Trihalomethane and Haloacetic Acid results in the above table.

STORM LAKE RIDGE WATER SYSTEM

The Storm Lake Ridge system supplies water to approximately 270 connections in the Storm Lake Ridge community and surrounding area approximately three miles east of Machias and five miles north of Monroe. Water is purchased directly from the City of Everett's No. 5 pipeline and pumped to the distribution system and a concrete reservoir.

			EPA Regulations		Your Water Testing Results		
Substance	Major Source	Units	Maximum Goal (MCLG)	Maximum Allowable (MCL)	Min./Max. Range	Average Value	Comply?
Total Coliform Bacteria	Naturally present in the environment	Samples positive	0	1 positive per month	0%	0%	YES

Total coliform bacteria testing is used to monitor microbial quality in the water distribution system. The PUD collects one coliform sample per month. No unsatisfactory results were detected in 2021.

Haloacetic Acids[1]	By-product of drinking water chlorination	ppb	N/A	60	37	37	YES
Total Trihalomethanes[1]	By-product of drinking water chlorination	ppb	N/A	80	43	43	YES
Free Chlorine Residual	Measure of disinfectant added to water	ppm	4 (MRDLG)	4 (MRDL)	0.46 – 1.08	0.76	YES

[1]*Haloacetic acids and Trihalomethanes form as by-products of the chlorination process that is used to kill or inactivate disease-causing microbes. Although goals have not been set for these compounds as a group, MCLGs for related individual compounds can be seen in the Unregulated Substances table below.*

			EPA Regulations		Your Water Testing Results		
Substance	Major Source	Units	Maximum Goal (MCLG)	Action Level (AL)	90th % Level*	Homes Exceeding the AL	Comply?
Copper	Plumbing, erosion of natural deposits	ppm	1.3	1.3	0.270	None	YES
Lead	Plumbing, erosion of natural deposits	ppb	0	15	0	1 out of 11	YES

US Environmental Protection Agency (USEPA) regulations require monitoring for the presence of lead and copper at household taps in their service area every three years. The next round of required sampling will be conducted in 2024.

**The 90th percentile level is the highest result obtained in 90% of the samples collected when the results are ranked in order from lowest to highest. This value is used to compare to the AL.*

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. Snohomish County PUD is responsible for providing high-quality drinking water but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to two minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods and steps you can take to minimize exposure is available from the Safe Drinking Water hotline or at the USEPA's website at www.epa.gov/safewater/lead.

UNREGULATED SUBSTANCES

		Your Water Testing Results	
Substance	Maximum Goal (MCLG)	Min./Max. Range	Average Value
Bromodichloromethane[2] (ppb)	0	1.9	1.9
Chloroform (trichloromethane)[2] (ppb)	70	41.1	41.1
Dichloroacetic Acid[2] (ppb)	0	15.4	15.4
Trichloroacetic Acid[2] (ppb)	20	18.8	18.8
Monochloroacetic Acid[2] (ppb)	None	2.6	2.6

[2]*Although these substances are not regulated individually, their results are added together to obtain the Total Trihalomethane and Haloacetic Acid results in the above table.*

Water Utility
PO Box 1107
Everett, WA 98206-1107

Customer Views Welcome

There are several ways you can get involved in water quality issues. You can call us at 425-397-3000 or communicate with elected officials, participate in public hearings and attend Snohomish County PUD Commission meetings. Check the local newspaper for information on public meetings regarding water quality, water policies and other issues.

The Snohomish County PUD Board of Commissioners meets at 1:30 PM on the first and third Tuesday of each month at Snohomish County PUD, 2320 California Street in Everett. Board sessions are open to the public. Please call 425-783-8611 in advance to confirm meeting dates and times, or check the meeting agenda on our website.

You can also find information for water customers at our website: **www.snopud.com/water.**

Este informe contiene información muy importante sobre su agua potable. Tradúzcalo o hable con alguien que lo entienda bien.

Snohomish PUD participates in the AT&T language line service. If you need help with the English language or need an interpreter, please contact a PUD customer service representative at 425-783-1000 (Monday through Friday, 8 AM to 5:30 PM) and an interpreter will be called *(Se llamará a un intérprete)*.

Safe Drinking Water & Water System Security

The PUD is committed to a strong security program to protect water quality. The PUD's facilities are secured; however, we could use your assistance. If you see suspicious activity in or around PUD pump stations, reservoirs or hydrants, please contact us at 425-397-3000 (after regular working hours, holidays or on weekends, please contact us at 425-783-8000).

For More Information

- PUD website: **www.snopud.com/water**
- Safe Drinking Water Act (SDWA) hotline: **1-800-426-4791**
  E-mail: **hotline-sdwa@epamail.epa.gov**
- Washington State Department of Health Division of Drinking Water: **253-395-6750**
  Website: **www.doh.wa.gov/ehp/dw**

Contact Us

Water Utility: 425-397-3000

Monday through Friday, 7:30 AM - 4:00 PM

Toll-free in Western Washington and outside the Everett local calling area at 1-877-783-1000, extension 3000

Prepared June 2022

printed on recycled paper

Snohomish County PUD Satellite Water Systems

2021 Annual Water Quality Report

Inside

SNOHOMISH COUNTY PUD is pleased to report that your drinking water safely complies with federal and state drinking water quality standards. This report summarizes the key findings of the PUD's 2021 water quality testing program. It illustrates the utility's commitment to delivering the highest quality drinking water.

Each year, the PUD prepares a Water Quality Report for its customers. We want you to know where your water comes from, how it is treated and that it is safe to drink. The purpose of this report is to help people, especially those with special health needs, make informed decisions about their drinking water.

Special Health Information

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons – such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly and infants – can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water hotline (1-800-426-4791).

Where Your Water Comes From SATELLITE SYSTEMS

The PUD relies on groundwater from wells to supply its satellite water systems, including the Kayak, May Creek, 212 Market & Deli, Skylite Tracts, Sunday Lake, Otis and Warm Beach systems. These systems are anticipated to remain as detached satellite systems for the foreseeable future.

The **KAYAK SYSTEM** is located on Port Susan Bay, about 10 miles northwest of Marysville. The system is supplied by wells. The water is treated for removal of iron and manganese, chlorinated and sent to the distribution system and a concrete storage reservoir.

The **MAY CREEK SYSTEM,** located near Gold Bar, supplies water to the May Creek community and surrounding area. The water is supplied by wells and is chlorinated before being sent to two concrete storage reservoirs and the distribution system.

The **SKYLITE TRACTS SYSTEM** is supplied water from a well at the entrance to the development. The well water is chlorinated and sent to the adjacent concrete reservoir where it is aerated to reduce the levels of carbon dioxide in the groundwater as a corrosion control measure. Water is then pumped out of the reservoir to supply the distribution system.

The **SUNDAY LAKE** community is supplied water by a well located to the west of the lake. The water receives treatment for iron and manganese removal, is chlorinated and then sent to the distribution system and a concrete storage reservoir.

The **212 MARKET & DELI SYSTEM** supplies water to a gas station and convenience store located on Old Highway 99 North near Stanwood. The system is supplied by a well that pumps water to a concrete storage tank. The water is chlorinated as it is pumped to the tank, and then a service pump moves the treated water to three captive air tanks. The water is then delivered to the convenience store.

The **OTIS SYSTEM** supplies water to four homes (with a maximum of five), just north of 196th Street NE on Burn Road. The system is supplied by a well that provides water through four captive air/bladder tanks to the distribution system. For such a small system, there is no regulatory requirement for ongoing monitoring. However, the PUD voluntarily collects samples for the most common contaminants, and all results continue to be significantly below the allowable levels. No unsatisfactory coliform samples were detected in 2021.

WARM BEACH is located on Port Susan Bay, about seven miles south of Stanwood. The system is supplied by two wells: one is treated for iron and manganese and the other is untreated. The water from both wells is sent to a steel storage reservoir and the distribution system. In 2021, the PUD demolished two old unused storage tanks and replaced about 1.5 miles of aging water main in the Warm Beach system. Design and permitting was completed for roughly 1.7 additional miles of water main projects that are being constructed in 2022. Progress was also made in designing improvements to optimize the system's treatment processes.

General Information About Drinking Water

Substances Expected to be in Drinking Water

To ensure that tap water is safe to drink, the Washington State Department of Health (DOH) and the U.S. Environmental Protection Agency (EPA) set regulations limiting the amount of certain contaminants in the water provided by public water systems. The U.S. Food & Drug Administration (FDA) and the Washington State Department of Agriculture regulations establish limits for contaminants in bottled water that must provide the same protection for public health. Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline at 1-800-426-4791.

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals – in some cases, radioactive material – and substances resulting from the presence of animals or from human activity. The following substances may be present in source water (drinking water quality is determined by testing for these contaminants).

Microbial contaminants *such as viruses and bacteria*	*May come from wildlife, agricultural livestock or septic systems.*
Inorganic contaminants *such as salts and metals*	*Can occur naturally or may result from urban storm-water runoff, industrial or domestic wastewater discharges, mining or farming.*
Pesticides & herbicides	*May come from a variety of sources such as farming, urban stormwater runoff, and homes or businesses.*
Organic contaminants *including synthetic & organic chemicals*	*Are by-products of industrial processes and petroleum production and may also come from gas stations, urban stormwater runoff and septic systems.*
Radioactive contaminants	*Can be naturally occurring or may be the result of oil and gas production and mining activities.*

Water Conservation Requirements

The Water Use Efficiency Rule sets planning requirements, leakage standards and water conservation goal setting and reporting requirements. The PUD's 2021 demand-side and supply-side conservation goal results:

	Goal	2021 Results	How Goal was Met
Demand-Side	Participate in Everett's program to help reduce regional water demand by about 1.4 MGD between 2020 and 2029 (about a 2% reduction compared to projected 2029 demand, or 0.2% savings annually).	The total regional savings were estimated to be 0.63 MGD.	Public outreach and education, including school presentations, plus distribution of indoor/outdoor conservation kits.
Supply-Side	Maintain the PUD's distribution system leakage below the state standard of 10% and strive to progressively achieve lower percentages of non-revenue water, where possible.	5.34% PUD Distribution System Leakage (combined result for all PUD water systems)	Continued emphasis on accurate water usage reporting with PUD crews and local fire departments and with repair of discovered leaks.

Definition of Terms Used in This Report

How Do I Read This Report?

The **Maximum Allowable** column provides you with the maximum level established by the EPA or the DOH. These are standards that all drinking water suppliers serving over 15 customers must meet.

The **Minimum/Maximum Range** and **Average Value** show you the contaminant level detected in the water analysis test.

The **last column tells you whether or not the test complies** with regulations. A "YES" indicates that the range detected is within EPA regulations.

Snohomish County PUD also regularly performs tests for unregulated compounds for which state and federal agencies have not set standards at this time.

AL (Action Level): The concentration of a contaminant, which, if exceeded, triggers treatment or other requirements that a water system must follow.

MCL (Maximum Contaminant Level): The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible, using the best available treatment technology.

MCLG (Maximum Contaminant Level Goal): The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

MRDL (Maximum Residual Disinfectant Level): The highest level of disinfectant allowed in drinking water. There is convincing evidence that the addition of a disinfectant (e.g., chlorine, chloramines, chlorine dioxide) is necessary for control of microbial contaminants.

MRDLG (Maximum Residual Disinfectant Level Goal): The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

N/A: The EPA has not set MCLGs for these substances.

N/D: Not detected.

NTU (Nephelometric Turbidity Units): Measurement of the clarity, or turbidity, of water.

ppm (parts per million): One part per million (corresponds to one dollar in $1,000,000).

ppb (parts per billion): One part per billion (corresponds to one dollar in $1,000,000,000).

SMCL (Secondary Maximum Contaminant Level): These standards are developed to protect the aesthetic qualities of drinking water and are not health-based.

TT (Treatment Technique): A required process intended to reduce the level of a contaminant in drinking water.

KAYAK WATER SYSTEM (STANWOOD)

Substance	Major Source	Units	EPA Regulations: Maximum Goal (MCLG)	EPA Regulations: Maximum Allowable (MCL)	Your Water Testing Results: Min./Max. Range	Your Water Testing Results: Average Value	Your Water Testing Results: Comply?
Arsenic	Erosion of natural deposits	ppb	N/A	10	2 – 3	3	YES
Barium	Erosion of natural deposits/discharge of drilling waste	ppm	2	2	0.02	0.02	YES
Fluoride	Erosion of natural deposits	ppm	2	4	0.12 – 0.15	0.14	YES
Manganese	Erosion of natural deposits	ppm	N/A	0.05 (SMCL)	ND – 0.04	0.02	YES
Iron	Erosion of natural deposits	ppm	N/A	0.30	0.01 – 0.06	0.03	YES
Total Coliform Bacteria[1]	Naturally present in the environment	Samples positive	0	1 positive per month	0	0	YES

[1] Coliform bacteria are naturally present in the environment and are used as an indicator that other, potentially harmful bacteria may be present. Total coliform bacteria testing is used to monitor microbial quality in the water distribution system. The PUD collects one routine coliform sample every month. No unsatisfactory results were detected in 2021.

Haloacetic Acids[2]	By-product of drinking water chlorination	ppb	N/A	60	1.1	1.1	YES
Total Trihalomethanes[2]	By-product of drinking water chlorination	ppb	N/A	80	10.1	10.1	YES
Free Chlorine Residual	Measure of disinfectant added to water	ppm	4 (MRDLG)	4 (MRDL)	0.2 – 1.2	0.6	YES

[2] Haloacetic acids and Trihalomethanes form as by-products of the chlorination process that is used to kill or inactivate disease-causing microbes. Although goals have not been set for these compounds as a group, MCLGs for related individual compounds can be seen in the Unregulated Substances table below.

Substance	Major Source	Units	EPA Regulations: Maximum Goal (MCLG)	EPA Regulations: Action Level (AL)	Your Water Testing Results: 90th % Level*	Your Water Testing Results: Homes Exceeding the AL	Your Water Testing Results: Comply?
Copper	Plumbing; erosion of natural deposits	ppm	1.3	1.3	0.055	None	YES
Lead	Plumbing; erosion of natural deposits	ppb	0	15	1	None	YES

US Environmental Protection Agency (USEPA) regulations require monitoring for the presence of lead and copper at household taps every three years. The next round of required sampling will be conducted in 2024.

**The 90th percentile level is the highest result obtained in 90% of the samples collected when the results are ranked in order from lowest to highest. This value is used to compare to the AL.*

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. Snohomish County PUD is responsible for providing high-quality drinking water but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to two minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods and steps you can take to minimize exposure is available from the Safe Drinking Water hotline or at the US Environmental Protection Agency's website at www.epa.gov/safewater/lead.

UNREGULATED SUBSTANCES

Substance	Maximum Goal (MCLG)	*Your Water Testing Results*: Min./Max. Range	*Your Water Testing Results*: Average Value
Chloroform (trichloromethane)[3] (ppb)	70	3.0	3.0
Bromodichloromethane[3] (ppb)	0	3.4	3.4
Chlorodibromomethane[3] (ppb)	0	3.2	3.2
Bromoform[3] (ppb)	0	0.5	0.5
Dichloroacetic Acid[3] (ppb)	0	1.1	1.1

[3] Although these substances are not regulated individually, their results are added together to obtain the Total Trihalomethane and Haloacetic Acid results in the above table.

VOLUNTARILY MONITORED SUBSTANCES

The information below is voluntary and describes additional characteristics of the Kayak Water System drinking water.

	Min./Max. Range or Highest Value	Average Value
Alkalinity (ppm)	12 – 35	22
Total Hardness (ppm)	78 – 189	105
pH (standard unit)	7.5 – 8.0	7.9
Sodium (ppm)	8.8 – 8.9	8.9
Sulphate (ppm)	5.5 – 6.3	5.9
Chloride (ppm)	6.7	6.7

Source Water Assessment and Protection Program (SWAP)

The SWAP program is designed to provide the community with information about the sources of their drinking water. An interactive map identifies protection areas and links to water quality sampling information. The Washington State Department of Health SWAP website, including interactive maps, can be found at **https://fortress.wa.gov/doh/swap/**.

MAY CREEK WATER SYSTEM (NEAR GOLD BAR)

Substance	Major Source	Units	EPA Regulations: Maximum Goal (MCLG)	EPA Regulations: Maximum Allowable (MCL)	Your Water Testing Results: Min./Max. Range	Your Water Testing Results: Average Value	Your Water Testing Results: Comply?
Barium	Erosion of natural deposits/discharge of drilling waste	ppm	2	2	ND – 0.001	0.001	YES
Nitrate	Erosion of natural deposits, animal waste	ppm	10	10	0.18	0.18	YES
Total Coliform Bacteria[1]	Naturally present in the environment	Samples positive	0	1 positive per month	0	0	YES

[1]Total coliform bacteria testing is used to monitor microbial quality in the water distribution system. The PUD collects two coliform samples per month. No unsatisfactory results were detected.

Substance	Major Source	Units	EPA Regulations: Maximum Goal (MCLG)	EPA Regulations: Maximum Allowable (MCL)	Your Water Testing Results: Min./Max. Range	Your Water Testing Results: Average Value	Your Water Testing Results: Comply?
Haloacetic Acids[2]	By-product of drinking water chlorination	ppb	N/A	60	1.0	1.0	YES
Total Trihalomethanes[2]	By-product of drinking water chlorination	ppb	N/A	80	2.4	2.4	YES
Free Chlorine Residual	Measure of disinfectant added to water	ppm	4 (MRDLG)	4 (MRDL)	0.1 – 1.6	0.9	YES

[2]Haloacetic acids and Trihalomethanes form as by-products of the chlorination process that is used to kill or inactivate disease-causing microbes. Although goals have not been set for these compounds as a group, MCLGs for related individual compounds can be seen in the Unregulated Substances table below.

Substance	Major Source	Units	EPA Regulations: Maximum Goal (MCLG)	EPA Regulations: Action Level (AL)	Your Water Testing Results: 90th % Level*	Your Water Testing Results: Homes Exceeding the AL	Your Water Testing Results: Comply?
Copper	Plumbing; erosion of natural deposits	ppm	1.3	1.3	0.5	None	YES
Lead	Plumbing; erosion of natural deposits	ppb	0	15	ND	None	YES

US Environmental Protection Agency (USEPA) regulations require monitoring for the presence of lead and copper at household taps every three years. The next round of required sampling will be conducted in 2023.

**The 90th percentile level is the highest result obtained in 90% of the samples collected when the results are ranked in order from lowest to highest. This value is used to compare to the AL.*

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. Snohomish County PUD is responsible for providing high-quality drinking water but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to two minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods and steps you can take to minimize exposure is available from the Safe Drinking Water hotline or at the US Environmental Protection Agency's website at www.epa.gov/safewater/lead.

UNREGULATED SUBSTANCES

Substance	Maximum Goal (MCLG)	*Your Water Testing Results*: Min./Max. Range	*Your Water Testing Results*: Average Value
Chloroform (trichloromethane)[3] (ppb)	70	2.4	2.4
Dichloroacetic Acid[3] (ppb)	0	1.0	1.0

[3]Although these substances are not regulated individually, their results are added together to obtain the Total Trihalomethane and Haloacetic Acid results in the above table.

VOLUNTARILY MONITORED SUBSTANCES

The information below is voluntary and describes additional characteristics of May Creek Water System drinking water.

	Min./Max. Range or Highest Value	Average Value
Alkalinity (ppm)	8 – 16	12
Conductivity (ppm)	9 – 46	28
pH (standard unit)	6.5 – 7.7	7.3
Total Hardness (ppm)	22 – 99	47
Sodium (ppm)	2.4	2.4
Chloride (ppm)	1.4 – 1.5	1.45
Sulfate (ppm)	1.2 – 1.5	1.4

Cross Connections

Drinking water is, of course, used for much more than just drinking. Some uses of water – such as for irrigation systems, hydraulic boat lifts, boilers and portable hose connections like fertilizer sprayers – could **contaminate the drinking water.**

These potential sources of contamination are called *cross connections*. Pressure changes in the water system could cause these contaminants to be drawn back or to "backflow" into the drinking water.

Fortunately, backflow from a cross connection can be prevented. The PUD's Cross Connection Control Program protects the water system from contaminants by ensuring that customers have properly installed and maintained backflow-prevention devices. Call the Water Utility at 425-397-3000 for more information.

SKYLITE TRACTS WATER SYSTEM (SOUTH OF SULTAN)

Substance	Major Source	Units	EPA Regulations: Maximum Goal (MCLG)	EPA Regulations: Maximum Allowable (MCL)	Your Water Testing Results: Min./Max. Range	Your Water Testing Results: Average Value	Your Water Testing Results: Comply?
Barium	Erosion of natural deposits/discharge of drilling waste	ppm	2	2	0.002	0.002	YES
Nitrate	Erosion of natural deposits, animal waste	ppm	10	10	0.97	0.97	YES
Total Coliform Bacteria[1]	Naturally present in the environment	Samples positive	0	1 positive per month	0	0	YES
Free Chlorine Residual	Measure of a disinfectant added to water	ppm	4 (MRDLG)	4 (MRDL)	0.1 – 1.5	1.0	YES

[1]Total coliform bacteria testing is used to monitor microbial quality in the water distribution system. The PUD collects one coliform sample per month. No unsatisfactory results were detected.

Substance	Major Source	Units	EPA Regulations: Maximum Goal (MCLG)	EPA Regulations: Action Level (AL)	Your Water Testing Results: 90th % Level*	Your Water Testing Results: Homes Exceeding the AL	Your Water Testing Results: Comply?
Copper	Plumbing; erosion of natural deposits	ppm	1.3	1.3	0.05	None	YES
Lead	Plumbing; erosion of natural deposits	ppb	0	15	1	None	YES

US Environmental Protection Agency (USEPA) regulations require monitoring for the presence of lead and copper at household taps every three years. The next round of required sampling will be conducted in 2023.

**The 90th percentile level is the highest result obtained in 90% of the samples collected when the results are ranked in order from lowest to highest. This value is used to compare to the AL*

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. Snohomish County PUD is responsible for providing high-quality drinking water but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to two minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods and steps you can take to minimize exposure is available from the Safe Drinking Water hotline or at the US Environmental Protection Agency's website at www.epa.gov/safewater/lead.

212 MARKET & DELI WATER SYSTEM (NEAR STANWOOD)

Substance	Major Source	Units	EPA Regulations: Maximum Goal (MCLG)	EPA Regulations: Maximum Allowable (MCL)	Your Water Testing Results: Min./Max. Range	Your Water Testing Results: Average Value	Your Water Testing Results: Comply?
Arsenic	Erosion of natural deposits	ppb	N/A	10	3	3	YES
Total Coliform Bacteria[1]	Naturally present in the environment	Samples positive	0	1 positive per month	0	0	YES
Barium	Erosion of natural deposits/ discharge of drilling waste	ppm	2	2	0.006	0.006	YES
Fluoride	Erosion of natural deposits	ppm	2	4	0.11	0.11	YES

[1]Total coliform bacteria testing is used to monitor microbial quality in the water distribution system. The PUD collects one coliform sample per month. No unsatisfactory results were detected.

Free Chlorine Residual	Measure of disinfectant added to water	ppm	4 (MRDLG)	4 (MRDL)	0.1 – 1.0	0.8	YES

SKYLITE TRACTS VOLUNTARILY MONITORED SUBSTANCES

The information below is voluntary and describes additional characteristics of Skylite Tracts Water System drinking water.

	Min./Max. Range or Highest Value	Average Value
Alkalinity (ppm)	7 – 21	13
Conductivity (ppm)	15 – 19	18
pH (standard unit)	6.8 – 7.5	7.1
Total Hardness (ppm)	34 – 135	56
Sodium (ppm)	3.4	3.4
Chloride (ppm)	2.2	2.2
Sulfate (ppm)	2.6	2.6
Zinc (ppm)	0.014	0.014

212 MARKET & DELI VOLUNTARILY MONITORED SUBSTANCES

The information below is voluntary and describes additional characteristics of 212 Market & Deli Water System drinking water.

	Min./Max. Range or Highest Value	Average Value
Alkalinity (ppm)	12 – 46	29
Conductivity (ppm)	37 – 47	44
pH (standard unit)	7.7 – 8.7	8.4
Sodium (ppm)	14	14
Total Hardness (ppm)	66 – 140	80
Iron (ppm)	0.05	0.05
Manganese (ppm)	0.02	0.02
Chloride (ppm)	4.8	4.8
Sulfate (ppm)	7.1	7.1
Zinc (ppm)	0.03	0.03

SUNDAY LAKE WATER SYSTEM (SOUTHEAST OF STANWOOD)

Substance	Major Source	Units	EPA Regulations: Maximum Goal (MCLG)	EPA Regulations: Maximum Allowable (MCL)	Your Water Testing Results: Min./Max. Range	Your Water Testing Results: Average Value	Your Water Testing Results: Comply?
Arsenic[1]	Erosion of natural deposits	ppb	N/A	10	6	6	YES
Iron	Erosion of natural deposits	ppm	N/A	0.3 (SMCL)	0.01 – 0.06	0.03	YES
Manganese	Erosion of natural deposits	ppm	N/A	0.05 (SMCL)	ND – 0.04	0.02	YES
Barium	Erosion of natural deposits/discharge of drilling waste	ppm	2	2	0.04	0.04	YES
Fluoride	Erosion of natural deposits	ppm	2	4	0.18	0.18	YES
Total Coliform Bacteria[2]	Naturally present in the environment	Samples positive	0	1 positive per month	0	0	YES

[1]While your drinking water meets Environmental Protection Agency's (EPA) standard for arsenic, it does contain low levels of arsenic. EPA's standard balances the current understanding of arsenic's possible health effects against the cost of removing arsenic from drinking water. EPA continues to research the health effects of low levels of arsenic, which is a mineral known to cause cancer in humans at high concentrations and is linked to other health effects, such as skin damage and circulatory problems.

[2]Total coliform bacteria testing is used to monitor microbial quality in the water distribution system. The PUD collects one coliform sample per month. No unsatisfactory results were detected.

Haloacetic Acids[3]	By-product of drinking water chlorination	ppb	N/A	60	15.7	15.7	YES
Total Trihalomethanes[3]	By-product of drinking water chlorination	ppb	N/A	80	35.8	35.8	YES
Free Chlorine Residual	Measure of disinfectant added to water	ppm	4 (MRDLG)	4 (MRDL)	0.07 – 1.5	0.6	YES

[3]Haloacetic acids and Trihalomethanes form as by-products of the chlorination process that is used to kill or inactivate disease-causing microbes. Although goals have not been set for these compounds as a group, MCLGs for related individual compounds can be seen in the Unregulated Substances table below.

Substance	Major Source	Units	EPA Regulations: Maximum Goal (MCLG)	EPA Regulations: Action Level (AL)	Your Water Testing Results: 90th % Level*	Your Water Testing Results: Homes Exceeding the AL	Your Water Testing Results: Comply?
Copper	Plumbing; erosion of natural deposits	ppm	1.3	1.3	0.05	None	YES
Lead	Plumbing; erosion of natural deposits	ppb	0	15	ND	None	YES

US Environmental Protection Agency (USEPA) regulations require monitoring for the presence of lead and copper at household taps every three years. The next round of required sampling will be conducted in 2023.

**The 90th percentile level is the highest result obtained in 90% of the samples collected when the results are ranked in order from lowest to highest. This value is used to compare to the AL*

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. Snohomish County PUD is responsible for providing high-quality drinking water but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to two minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods and steps you can take to minimize exposure is available from the Safe Drinking Water hotline or at the US Environmental Protection Agency's website at www.epa.gov/safewater/lead.

UNREGULATED SUBSTANCES

Substance	Maximum Goal (MCLG)	*Your Water Testing Results*: Min./Max. Range	*Your Water Testing Results*: Average Value
Bromodichloromethane[4] (ppb)	0	5.1	5.1
Chloroform (trichloromethane)[4] (ppb)	70	30.1	30.1
Chlorodibromomethane[4] (ppb)	0	0.6	0.6
Dichloroacetic Acid[4] (ppb)	0	7.8	7.8
Trichloroacetic Acid[4] (ppb)	20	7.9	7.9
Bromochloroacetic Acid[4] (ppb)	0	1.0	1.0

[4]Although these substances are not regulated individually, their results are added together to obtain the Total Trihalomethane and Haloacetic Acid results in the above table.

VOLUNTARILY MONITORED SUBSTANCES

The information below is voluntary and describes additional characteristics of Sunday Lake Water System drinking water.

	Min./Max. Range or Highest Value	Average Value
Alkalinity (ppm)	12 – 48	29
pH (standard unit)	7.0 – 8.5	8.0
Sodium (ppm)	22	22
Total Hardness (ppm)	75 – 114	89
Sulfate (ppm)	0.3	0.3
Chloride (ppm)	6.3	6.3

WARM BEACH WATER SYSTEM (SOUTH OF STANWOOD)

Substance	Major Source	Units	EPA Regulations: Maximum Goal (MCLG)	EPA Regulations: Maximum Allowable (MCL)	Your Water Testing Results: Min./Max. Range	Your Water Testing Results: Average Value	Your Water Testing Results: Comply?
Nitrate	Erosion of natural deposits, animal waste	ppm	10	10	ND – 1.3	0.6	YES
Iron	Erosion of natural deposits	ppm	N/A	0.3 (SMCL)	0.01 – 0.06	0.04	YES
Manganese[1]	Erosion of natural deposits	ppm	N/A	0.05 (SMCL)	0.01 – 0.11	0.05	YES
Barium	Erosion of natural deposits/discharge of drilling waste	ppm	2	2	0.002 – 0.006	0.004	YES
Fluoride	Erosion of natural deposits	ppm	2	4	ND – 0.27	0.2	YES
Total Coliform Bacteria[2]	Naturally present in the environment	Samples positive	0	1 positive per month	0	0	YES

[1]In 2021, manganese was detected at levels over the aesthetic Secondary Maximum Contaminate Level (SMCL) of 0.05 ppm after the treatment process during routine sampling. PUD is working on improvements to treatment operations to resolve this issue. Drinking water may naturally have manganese, and, when concentrations are greater than 0.05 ppm, the water may be discolored and taste bad. Over a lifetime, the EPA recommends that people drink water with manganese levels less than 0.3 ppm, and, over the short-term, EPA recommends that people limit their consumption of water with levels over 1.0 ppm, primarily due to concerns about possible neurological effects. Children up to 1 year of age should not be given water with manganese concentrations over 0.3 ppm, nor should formula for infants be made with that water for longer than 10 days.

[2]Total coliform bacteria testing is used to monitor microbial quality in the water distribution system. The PUD collects one coliform sample per month. No unsatisfactory results were detected.

Haloacetic Acids[4]	By-product of drinking water chlorination	ppb	N/A	60	2.8	2.8	YES
Total Trihalomethanes[4]	By-product of drinking water chlorination	ppb	N/A	80	1.0	1.0	YES
Free Chlorine Residual	Measure of disinfectant added to water	ppm	4 (MRDLG)	4 (MRDL)	ND – 0.8	0.2	YES

[4]Haloacetic acids and Trihalomethanes form as by-products of the chlorination process that is used to kill or inactivate disease-causing microbes. Although goals have not been set for these compounds as a group, MCLGs for related individual compounds can be seen in the Unregulated Substances table below.

Substance	Major Source	Units	EPA Regulations: Maximum Goal (MCLG)	EPA Regulations: Action Level (AL)	Your Water Testing Results: 90th % Level*	Your Water Testing Results: Homes Exceeding the AL	Your Water Testing Results: Comply?
Copper	Plumbing; erosion of natural deposits	ppm	1.3	1.3	1.1	None	YES
Lead	Plumbing; erosion of natural deposits	ppb	0	15	3	None	YES

US Environmental Protection Agency (USEPA) regulations require monitoring for the presence of lead and copper at household taps every three years. The next round of required sampling will be conducted in 2023.

**The 90th percentile level is the highest result obtained in 90% of the samples collected when the results are ranked in order from lowest to highest. This value is used to compare to the AL*

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. Snohomish County PUD is responsible for providing high-quality drinking water but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to two minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods and steps you can take to minimize exposure is available from the Safe Drinking Water hotline or at the US Environmental Protection Agency's website at www.epa.gov/safewater/lead.

UNREGULATED SUBSTANCES

Substance	Maximum Goal (MCLG)	*Your Water Testing Results*: Min./Max. Range	*Your Water Testing Results*: Average Value
Chloroform (trichloromethane)[5] (ppb)	70	1.0	1.0
Dichloroacetic Acid[5] (ppb)	0	2.8	2.8

[5]Although these substances are not regulated individually, their results are added together to obtain the Total Trihalomethane and Haloacetic Acid results in the above table.

VOLUNTARILY MONITORED SUBSTANCES

The information below is voluntary and describes additional characteristics of Warm Beach Water System drinking water.

	Min./Max. Range or Highest Value	Average Value
Alkalinity (ppm)	10 – 66	36
pH (standard unit)	7.3 – 8.3	7.6
Sodium (ppm)	8 – 12	10
Total Hardness (ppm)	90 – 198	141
Sulfate (ppm)	ND – 13	10
Chloride (ppm)	10	10
Zinc (ppm)	0.005 – 0.02	0.01

SNOHOMISH COUNTY PUD
PUBLIC UTILITY DISTRICT NO. 1

Water Utility
PO Box 1107
Everett, WA 98206-1107

Customer Views Welcome

There are several ways you can get involved in water quality issues. You can call us at 425-397-3000 or communicate with elected officials, participate in public hearings and attend Snohomish County PUD Commission meetings. Check the local newspaper for information on public meetings regarding water quality, water policies and other issues.

The Snohomish County PUD Board of Commissioners meets at 1:30 PM on the first and third Tuesday of each month at Snohomish County PUD, 2320 California Street in Everett. Board sessions are open to the public. Please call 425-783-8611 in advance to confirm meeting dates and times, or check the meeting agenda on our website.

You can also find information for water customers at our website: **www.snopud.com/water**.

Este informe contiene información muy importante sobre su agua potable. Tradúzcalo o hable con alguien que lo entienda bien.

Snohomish PUD participates in the AT&T language line service. If you need help with the English language or need an interpreter, please contact a PUD customer service representative at 425-783-1000 (Monday through Friday, 8 AM to 5:30 PM) and an interpreter will be called *(Se llamará a un intérprete)*.

Safe Drinking Water & Water System Security

The PUD is committed to a strong security program to protect water quality. The PUD's facilities are secured; however, we could use your assistance. If you see suspicious activity in or around PUD pump stations, reservoirs or hydrants, please contact us at 425-397-3000 (after regular working hours, holidays or on weekends, please contact us at 425-783-8000).

For More Information

- PUD website: **www.snopud.com/water**
- Safe Drinking Water Act (SDWA) hotline: **1-800-426-4791**
  E-mail: **hotline-sdwa@epamail.epa.gov**
- Washington State Department of Health Division of Drinking Water: **253-395-6750**
  Website: **www.doh.wa.gov/ehp/dw**

Contact Us

Water Utility: 425-397-3000

Monday through Friday, 7:30 AM - 4:00 PM

Toll-free in Western Washington and outside the Everett local calling area at 1-877-783-1000, extension 3000

Prepared June 2022

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Appendix 10-5

Water Utility Cross-Connection Control SOP

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APPENDIX N

CROSS-CONNECTION CONTROL PROGRAM

PUD NO. 1 OF SNOHOMISH COUNTY – WATER UTILITY
2020

Minimum Program Elements for PUD No. 1 of Snohomish County ("District" or "PUD") Cross-Connection Control Program

Note: **Bold** text references WAC 246-290-490. PUD program elements are *italicized*.

PURPOSE

To establish minimum program elements for the implementation of a program of cross-connection control in the District's water service area to protect the health of water consumers and the potability of the public water system.

POLICY

It is the policy of the District to meet the intent of the Washington Administrative Code (WAC) sections covering cross-connection control.

The District shall first protect premises from the water distribution system that are on Table 9 of WAC 246-290-490. The District shall also control each potential cross-connection as close to its source as practical. However, the District is dependent on the local administrative authority for enforcement of the plumbing code. As such, the District must air on the side of caution to protect the District's customers and thus protecting the public water supply. Where possible the District will strive to work with the local administrative authorities to protect consumers on private property. The District, when possible, will conduct on-property/in-building cross-connection inspections. The District shall ensure the protection of the public water supply and will require premise isolation for all commercial services. The District has a limited amount of resources and reserves the right to require premise isolation <u>with no</u> on-property/in building inspection.

PROGRAM DESCRIPTION

The PUD has based its authority, policy, and corrective actions on the ordinances relating to cross-connection control as outlined in Element 1 below. At least one full time District personnel is certified as a Cross-Connection Specialist (CCS). Other clerical staff aid in record keeping. Details are found in Element 4.

Evaluations are made of new service connections by reviewing water service applications, plans and by on site surveys, when possible, of all service connections larger than ¾". Onsite inspections of ¾" service connections are not normally conducted unless cross-connections are found as set forth in Elements 2 and 3 below or are identified during plan review. Existing service connections are site surveyed according to priority with the highest degree of hazard set to the highest priority. Periodic evaluations, when possible, are conducted at facilities with the highest degree of hazard and/or at those facilities where plumbing changes have been made or have a high potential for changes. Coordination and cooperation between the District and the local administrative authority is used when possible to determine appropriate backflow to protect the District's water distribution system. However, the District reserves the right to require premise isolation for any water service to protect PUD's distribution system and customers.

Whenever cross-connections cannot be eliminated, the District representative informs the customer verbally and in writing about the PUD's backflow prevention requirements according to the degree of hazard as found in Elements 2, 3, and 10.

Inspections are made as to ensure proper installation of the appropriate backflow prevention assembly(s) (BFAs) or air gap(s) (A/Gs). All backflow Assemblies within the District's jurisdiction are customer owned. These assemblies are the responsibility of the customer and must be tested by a private BAT. Such tests and maintenance are to be performed as outlined in Element 5 below. Assurance of proper testing is detailed in Element 6 below.

Master records are kept of service connections and vehicles, requiring backflow prevention. Information pertaining to the backflow prevention methods used at any given site must be documented and stored in the master record file. Backflow device testing and inspection histories for backflow devices must be maintained in the master record file. Annual summary reports shall be submitted to the Washington State Department of Health (DOH). Details are found in Element 9 below.

All backflow incidents shall be reported to the Assistant General Manager of Water Utility, the Washington State Department of Health (DOH) and Snohomish Health District (SHD). Incident reports are recorded with copies sent to DOH. Details are found in Elements 7 and 9.

The District conducts public education about backflow prevention by producing and distributing pamphlets that address this issue. These pamphlets are periodically distributed via the Utility bill. Further details are found in Element 8 below.

Element 1: Establishing Legal Authority

The purveyor shall adopt a local ordinance, resolution, code, bylaw, or other written legal instrument that:

(i) Establishes the purveyor's legal authority to implement a cross-connection Control program.

(ii) Describes the operating policies and technical provisions of the purveyor's cross-connection control program; and

(iii) Describes the corrective actions used to ensure that consumers comply with the purveyor's cross-connection control requirements.

Snohomish County PUD's Cross-connection Control Regulations are based on the initial Resolution No. 2535 adopted by the District's Board of Commissioners on November 3, 1981 and found in the District's "Policies and Procedures Manual for Administration of Water Services". It is the District's intention to update its Cross-Connection control requirements by placing a resolution on the Board of Commissioners consent agenda for the purposes of adopting this Cross-Connection Control Program appendix of the PUD's 2021 Water System Plan.

Element 2: Hazard Assessments or Surveys

The purveyor shall develop and implement procedures and schedules for evaluating new and existing service connections to assess the degree of hazard posed by the consumer's premises to the purveyor's distribution system and notifying the consumer within a reasonable timeframe of the hazard evaluation results. At a minimum, the program shall meet the following:

(i) For new connections made on or after the effective date of these regulations, procedures shall ensure that an initial evaluation is conducted before service is provided;

The District representative will review all permit pre-application documents, new construction plans submitted to the District, all water service applications, requests for water estimates and any other documents which may indicate that a requirement for cross connection control exists. Consultations prior to service installation will be conducted to help the customer meet State Regulations and the District's Cross-Connection Control Program in order to minimize retrofits and revisions.

NOTE: Water service will not be provided to new construction until the cross-connection control requirements are addressed satisfactorily.

(ii) For existing connections made prior to the effective date of these regulations, procedures shall ensure that an initial evaluation is conducted in accordance with a schedule acceptable to the District; and

The District representative will survey the premise to determine whether the requirement for cross-connection control exists. These surveys will take place as staff time permits and in accordance with degree of hazard with sites presenting the highest hazard surveyed first. To reiterate, the District reserves the right to require premise isolation without a site survey when staff determines that the degree of hazard of the site merits such a backflow assembly installation.

Facilities not found in Table 9 (WAC 246-290-490) will be evaluated for appropriate premise or in-premise protection based upon potential or actual cross-connection(s) found. The District representative will if practical coordinate with the local administrative authority regarding in-premise protection. However, the District has limited resources and the District reserves the right to protect its water system with premise isolation for any facility.

(iii) For all service connections, once an initial evaluation has been conducted, procedures shall ensure that periodic re-evaluation are conducted in accordance with a schedule acceptable to the District and whenever there is a change in the use of the premises.

The minimum criteria required for backflow prevention as stated below is used during the above-mentioned evaluations.

Facilities found in Table 9 (WAC 246-290-490) must have an Air Gap (A/G) or a Reduced Pressure Backflow Assembly (RPBA).

Facilities with fire-services must have a Double Check Detector Assembly (DCDA), Irrigation services must have a Double Check Valve Assembly (DCVA) and complex piping must comply with the principles found in (WAC 246-290-490). Facilities not identified above are evaluated according to the guidelines set forth in the following manuals.

The current edition of the manual, Accepted Procedure and Practice in Cross Connection Control, prepared by the Cross-Connection Control Committee of the Pacific Northwest Section, American Water Works Association, shall be used as a guideline.

Element 3: Procedures and Schedule for Eliminating Cross-connections

The purveyor shall develop and implement procedures and schedules for ensuring that:

(i) Cross-connections are eliminated whenever possible.

(ii) When cross-connections cannot be eliminated, they are controlled by installation of approved backflow preventers commensurate with the degree of hazard.

Selection of the type of backflow assembly for a cross-connection is found in Table 8 of the (WAC 246-290-490
The criteria detailed in Element 2 above are used to determine appropriate backflow prevention.
The District has Watchdog construction fill stations that have a RPBA installed in it and is tested each time it is moved.

(iii) Approved backflow preventers will be selected and installed in accordance with the following requirements.

- *WAC 246-290-490 is used as the basis for approved backflow preventers and installation procedures.*

The University of Southern California Approved Backflow devices

Element 4: Certification and Employee Training

The purveyor shall ensure that personnel, including at least one person certified as a CCS, are provided to develop and implement the cross-connection control program.

The District has dedicated one-fourth full time equivalent position to implement the District's Cross-connection Control Program. This employee is required to possess a current Washington State Department of Health Certificate of Competency as a Cross-Connection Specialist (CCS). In addition, the District has clerical support personnel and inspectors to aid in the implementation and ongoing duties of a cross connection program.

Element 5: Backflow Assembly Testing Program

The purveyor shall develop and implement procedures to ensure that approved backflow preventers are inspected and/or tested (as applicable) in accordance with subsection (7) of this section.

WAC 246-290-490 is used for the basis of ensuring that all A/Gs and BFAs are inspected or tested accordingly.

The District's water customers are responsible for testing of their own BFAs and must hire a private BAT. The District cross connection specialist mails test notices after initial installation of the backflow prevention device and annually thereafter to remind customers of their responsibility to test and maintain their own BFAs. The District is currently in the process of cataloging as many of the devices in its system as possible.

The District cross connection specialist shall be responsible for ensuring that testing and maintenance of District owned Watchdog construction fill stations BFAs is completed.

Element 6: Testing Quality Assurance Program

The purveyor shall develop and implement a backflow prevention assembly testing quality assurance program including, but not limited to, documentation of tester certification and test kit calibration, test report contents, and timeframes for submitting completed test reports.

WAC 246-290-490 is used for the basis of ensuring performance of all tests done.

The District cross connection specialist conducts an annual query of backflow assembly testers (BAT) for copies of their certification cards before they are placed on District's local list. The District cross connection specialist ensures that all test reports contain the required information, such as test kit calibration dates, line pressure readings and the presence of a pressure-regulating valve upstream (if it exists) of the backflow preventer.

Element 7: Backflow Incident Response Plan

The purveyor shall develop and implement (when appropriate) procedures for responding to backflow incidents.

Upon discovery of a backflow incident the following procedures are followed:

1) *The cross-connection specialist shall organize an on-site inspection to determine the extent and degree of the incident. Water service may be discontinued pending resolution of the problem.*
2) *The Snohomish Health District and Washington State Department of Health shall be notified of the situation as soon as the inspection is complete.*
3) *Water service shall not be restored until the cross connection has been eliminated or protected.*
4) *Water service shall not be restored until the system has been thoroughly flushed and a sample shall be tested to confirm a negative presence for coliform bacteria.*
5) *If it is determined that public notification is or may be required, the District's Assistant General Manager shall be informed, the District's administrative staff and other resources shall be pressed into action.*

The following references are used as guidelines:

Cross Connection Control Program Administration Seventh Edition, February 2012, Chapter 3. Cross Connection Control Committee-Pacific Northwest Section-American Waterworks Association

Backflow Incident Investigation Procedures First Edition, December 1996, Cross Connection Control Committee-Pacific Northwest Section-American Waterworks Association

Element 8: Public Education

The purveyor shall include information on cross-connection control in the purveyor's existing program for educating consumers about water system operation. Such a program may include periodic bill inserts, public service announcements, pamphlet distribution, and notification of new consumers and consumer confidence reports.

The District has a program that distributes consumer confidence reports and public service announcements.

The following references is used as a guideline:

Cross Connection Control Program Administration Seventh Edition, February 2012, Chapter 3. Cross Connection Control Committee-Pacific Northwest Section-American Waterworks Association

Element 9: Record Keeping

The purveyor shall develop and maintain cross-connection control records including, but not limited to, the following:

(i) A master list of service connections and/or consumer's premises where the purveyor relies upon approved backflow preventers to protect the public water system from contamination, the assessed hazard level of each, and the required backflow preventer(s).

Physical files contain all documentation pertaining to each facility having a single service address. Electronic files contain each backflow prevention method or facility address using the BPMS software (Access database).

Such records are kept as long as the premises pose a cross-connection hazard to the purveyor's distribution system. Facilities that are on Table 9 of (WAC 246-290-490) but have no cross-connections at present would be kept in the master list files documenting why backflow prevention is waived at present. At present, the District is striving toward a more complete accounting of assemblies found within its jurisdiction.

(ii) Inventory information on:

(A) Approved air gaps installed in lieu of approved assemblies including exact air gap location, assessed degree of hazard, installation date, history of inspections, inspection results, and person conducting inspections;

(B) Approved backflow assemblies including exact assembly location, assembly description (type, manufacturer, model, size, and serial number), assessed degree of hazard, installation date, history of inspections, tests and repairs, test results, and person performing tests; and

(C) Approved AVBs used for irrigation system applications including location, description (manufacturer, model, and size), installation date, history of inspection(s), and person performing inspection(s). *The District at this time has no AVB's listed in its database.*

The District maintains cross-connection control records in original form and transfers data to electronic database format. The District maintains records or data in electronic format. The District shall in the future complete the cross-connection control program summary report annually on report forms available from the DOH. The District will make all records and reports required in WAC 246-290-490 Subsection (8) pp. 109 of this section available to the DOH or its representative upon request.

(iii) Cross-connection program summary reports and backflow incident reports required under subsection (8) of this section.

PUD backflow prevention staff will notify DOH, local administrative authority, and local health jurisdiction as soon as possible, but no later than the end of the next business day, when a backflow incident is known to have contaminated the public water system.

PUD staff shall document all backflow incidents on a form acceptable to the DOH, such as the backflow incident report form included in the most recent edition of the PNWS-AWWA Manual, and include all backflow incident report(s) in the annual cross-connection program summary report referenced in WAC 246-290-490, unless otherwise requested by the DOH.

Element 10: Reclaimed Water Requirements

Cities who distribute and/or have facilities that receive reclaimed water within their water service area shall meet any additional cross-connection control requirements imposed by the department under a permit issued in accordance with chapter 90.46 RCW.

Any facility that uses reclaimed water and which is also supplied by District water, shall have an A/G or RPBA protecting the District water distribution from that premise. As of this writing there are no facilities in the PUD's service territory using reclaimed water.

Organizations Affected:

PUD No. 1 of Snohomish Cunty (The District)

Snohomish County Plumbing Department (SCPD)

Snohomish Health District (SHD)

All permanent or temporary (e.g., hydrant users) direct service water customers of the District which require backflow protection.

REFERENCES

PUD Cross-connection Control Resolution No. 2535 dated November 3, 1981.

1997 Uniform Plumbing

WAC 246-290-490, Cross-connection Control, WAC 296-24-12005, Backflow Protection for Boilers and Unfired Pressure Vessels Law and WAC 296-24-12005, Water Supply.

Accepted Procedure and Practice in Cross Connection Control Manual, Sixth Edition. Prepared by the Cross-Connection Control Committee of the Pacific Northwest Section, American Water Works Association.

Cross Connection Control Program Administration Seventh Edition, February 2012, Chapter 3. Cross Connection Control Committee-Pacific Northwest Section-American Waterworks Association

Backflow Incident Investigation Procedures First Edition, December 1996, Cross Connection Control Committee-Pacific Northwest Section-American Waterworks Association

The current edition of the Water Utility Standards and Specifications for Design and Construction, drawings 601-607.

United States Department of Labor-OSHA standard 1910.141 (B)

Code of Federal Regulations-Volume 40, Chapter 1, Part 141, Subpart B--Maximum Contaminant Levels, Subpart F--Maximum Contaminant Level Goals, Subpart G--National Revised Primary Drinking Water Regulations

DEFINITIONS

Approved Backflow Prevention Assemblies: Specifically, Reduced Pressure Backflow Assemblies (RPBA), Double Check Valve Assemblies (DCVA), Pressure Vacuum Breaker Assemblies (PVBA), Reduced Pressure Detector Backflow Assemblies (RPDBA) and Double Check Detector Backflow Assemblies (DCDBA). This applies to assemblies that, at time of original installation, were approved by the State, appeared on their published approval list current at that time, and were approved for use in the District's direct service area. (See the definitions and descriptions provided in the Manual of Accepted Procedure and Practice in Cross Connection Control - PNWS, AWWA.)

Backflow: The flow of any foreign liquids, gases or other substances from any source, back into the potable water supply within a facility and/or public water supply. Backflow may occur due to either backsiphonage or backpressure.

Backpressure: Backflow caused by positive pressure (above the supply pressure) in the piping system downstream of the supply piping connection to its service source.

. *Backsiphonage: Backflow caused by a negative pressure (vacuum) or reduced pressure in the supply piping.*

Contamination: Any impairment of the quality of the water from any substance that may adversely affect the health of the consumer.

Controlled Cross-Connection: A connection between the District's water system and any non-potable water system with an approved air gap separation or an approved backflow prevention assembly properly installed and maintained so that it will continuously afford the protection commensurate with the degree of hazard.

Cross-Connection: Any physical arrangement whereby a public water supply is connected, or has the potential for being connected, directly or indirectly, with anything that does not exclusively contain or convey potable water from a Washington State Department of Health-approved source.

Cross-Connection Screen Inspection: An inspection of a direct service customer's premises, performed by the District, expressly for purposes of evaluating and locating cross connection potential inherent in supplying that customer's water system.

Cross Connection Compliance Inspection: A follow-up inspection of a direct service customer's premises, performed by the District to monitor the customer's activities toward achieving compliance subsequent to the cross-connection screen inspection and any orders or recommendation concerning compliance.

Cross Connection Update Inspection: An inspection of a direct service customer's premises performed by the District for the continued evaluation and locating cross connection potential.

Degree of Hazard: the degree of hazard is derived from an evaluation of the potential risk to public health and the adverse effect of the hazard upon the potable water system. Hazards may include:

- *Health Hazard: Any condition, device, or practice in the water supply system and its operation which could create, or in the judgment of the District, may create, a danger to the health and well-being of the water customer.*

- *System Hazard: An actual or potential threat to the physical properties of, or to the potability of water in the District's water system or the customer's potable water system, which would constitute a nuisance or be aesthetically objectionable or could cause damage to the system or its appurtenances, but would not be dangerous to health.*

District: The PUD No. 1 of Snohomish County Water Utility the Assistant General Manager of the Water Resources Division, his designee or his authorized agents.

Direct Service Water Customer (or Water Customer): Those customers receiving water through a connection installed by the District for end uses directly from the Everett water distribution system and classed as direct service or retail for billing purposes.

Maximum Contaminant Level (MCL). The maximum amount of a contaminant allowed in a sample of water according to federal and state regulations. The importance of this to cross connection control is that the presence of a higher level than at the source may signify the occurrence of a cross connection incident.

Pollution: Any impairment of the quality of the water that may adversely affect the aesthetic characteristics of the water.

Potable Water Supply: Any water supply system intended or used for human consumption or other domestic uses and which must meet Washington State Department of Health Public Water System Rules and Regulations.

State: Washington State Department of Health, Water Supply Section

Temporary Usage connections: Any vehicle to which a tank or container is affixed for containing water and/or chemicals or materials, or any temporary use of water for construction, cooling, testing, or other non-domestic purposes, which are capable of imparting contamination or pollution to the public water supply through a cross-connection between such points of usage and the water supply via a fire hydrant or other temporary connection.

Water Service Connection: The terminal end of a service connection from the District water system: The District union, i.e. where the District loses jurisdiction and sanitary control over the water at its point of delivery to the customer's water system. Service connection shall also include water service connections from a fire hydrant and all other temporary or emergency water service connections from the public potable water system.

Water System: For the purpose of this policy and procedure, the water system is considered to be made up of two parts: the District's system and the customer's system. The District's system shall consist of the source facilities and the distribution system; and shall include all those facilities of the water system under the complete control of the District up to the point where the customer's system begins. The customer's system shall include those parts of the facilities beyond the termination of the District's distribution system which are utilized in conveying District delivered water to points of use.

Appendix 10-6

Public Notification Forms

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EXAMPLE LETTER

IMPORTANT NOTICE ABOUT YOUR WATER SYSTEM
Coliform Maximum Contaminant Level (MCL) Exceeded: Non-Acute MCL Violation

The Snohomish County PUD No. 1 **XXXXXX Water System**, **ID# XXXXXX** in Snohomish County routinely monitors for the presence of total coliform bacteria and in 5% (3) recent samples this type of bacteria was detected. Although this incident was not an emergency, as our customer, you have a right to know what happened and what we did or are doing to correct the situation.

Coliforms are bacteria which are naturally present in the environment and are used as an indicator that other; potentially-harmful, bacteria may be present. Coliforms were found in more samples than allowed and this was a warning of potential problems. The samples that showed the presence of coliform were further tested to see if other bacteria of greater concern, such as fecal coliform or E.coli were present. **None of these bacteria were found.**

You do not need to boil your water. People with severely compromised immune systems, infants, and some elderly may at be an increased risk and may want to contact their health care provider for additional guidance.

What happened? What is the suspected or known source of contamination?

At this time:
☐ The problem is resolved. Additional samples collected were found to be free of coliform bacteria.
☐ We anticipate resolving the problem by ____ / ____ / ____.
☐ Other _____.

For more information regarding this issue please contact; Brett Gehrke, Superintendent of Operations and Maintenance, Water Resources Division, Snohomish County PUD No. 1. You may contact Brett at telephone number (425) 783-8914 or Email address; bagehrke@snopud.com

Please share this notice with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

This notice is sent to you on (date), by; Brant E. Wood, P.E., Senior Manager, Water Resources Operations, Maintenance and Engineering, Snohomish County PUD No. 1. You may contact Brant at telephone number (425) 783-8609 or Email address; bewood@snopud.com

Washington State Department of Health
Division of Environmental Health
Office of Drinking Water

Coliform Non-Acute Public Notice Certification Form

The purpose of this form (below) is to provide documentation to the department that public notice was distributed.
Please check the appropriate box and fill in the date that the notice was distributed:

- ☐ Notice was mailed to all water customers on ____ / ____/____.
- ☐ Notice was hand delivered to all water customers on ___ / ___ /___.
- ☐ Notice was posted (*with department approval*) at:

  _____ on ___ / ___ /____.

_____ _____

_____

Signature of owner or operator:_____ _____(Date)

Brant E. Wood, P.E.
Senior Manager
Water Resources Operations, Maintenance and Engineering
Snohomish County PUD No. 1
(425) 783-8609, Office
(425) 267-6202, Fax
bewood@snopud.com

The Department of Health is an equal opportunity agency. For persons with disabilities, this form is available on request in other formats. To submit a request, please call 1-800-525-0127 (TTY 1-800-833-6388).

Send copy of completed notification and certification to:

- ☐ ***Eastern Drinking Water Operations, 1500 West Fourth Ave., Suite 305, Spokane WA 99204 or fax to (509) 456-2997***
- ☐ ***Northwest Drinking Water Operation, 20435 72nd Ave South, Suite 200, Kent WA 98032 or fax to (253) 395-6760***
- ☐ ***Southwest Drinking Water Operation, PO Box 47823, Olympia WA 98504 or fax to (360) 664-8058***

EXAMPLE LETTER

DRINKING WATER WARNING

The Snohomish County Public Utility Water System **XXXXXX**, **ID# XXXXXX** located in Snohomish County is contaminated with fecal coliform/ *E. coli* bacteria.

Fecal coliform/ *E. coli* bacteria were detected/confirmed in the water supply on (date). These bacteria can make you sick and are a particular concern for people with weakened immune systems.

DO NOT DRINK THE WATER WITHOUT BOILING IT FIRST. Bring all water to a boil, let it boil 3 – 5 minutes, and let it cool before using. Boiled or purchased bottled water should be used for drinking, making ice, brushing teeth, washing dishes, and food preparation until *further notice*. Boiling kills bacteria and other organisms in the water.

Fecal coliforms and E. coli are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, some of the elderly, and people with severely compromised immune systems.

The symptoms above are not caused only by organisms in drinking water. If you experience any of these symptoms and they persist, you may want to seek medical advice. People at increased risk should seek advice about drinking water from their health care provider.

What happened? What is the suspected or known source of contamination?

The following is being done to correct the problem:

We will consult with the State Department of Health about this incident. We will notify you when you no longer need to boil the water. We anticipate resolving the problem by (date).

For more information regarding this issue please contact; Brett Gehrke, Superintendent of Operations and Maintenance, Water Resources Division, Snohomish County PUD No. 1. You may contact Paul at telephone number (425) 397-3005 or Email address; bagehrke@snopud.com

Please share this notice with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distribution copies by hand or mail.

This notice is sent to you on (date), by; Brant E. Wood, P.E., Senior Manager, Water Resources Operations, Maintenance and Engineering, Snohomish County PUD No. 1. You may contact Brant at telephone number (425) 397-3003 or Email address; bewood@snopud.com

DRINKING WATER WARNING

The Snohomish County Public Utility No. 1 Water System **XXXXXX**, ID# **XXXXXX**, located in Snohomish County is contaminated with *E. coli* bacteria.

E. coli bacteria were confirmed in the water supply on (date).
These bacteria can make you sick and are a particular concern for people with weakened immune systems. Boiled or purchased bottled water should be used for drinking, making ice, brushing teeth, washing dishes, and food preparation until further notice. Boiling kills bacteria and other organisms in the water.

What should you do? Until further notice, only use water from the water sources that are marked "yes" in the table below and follow the directions listed for each.

YES	SOURCE OF WATER
	If using water from this water system **DO NOT DRINK THE WATER WITHOUT BOILING IT FIRST**. Bring all water to a boil, let it boil 3-5 minutes, and let it cool before using.
	Bottled water that you purchase from a grocery or retail store.

Fecal coliforms and E. coli are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, some of the elderly, and people with severely compromised immune systems. The symptoms above are not caused only by organisms in drinking water. If you experience any of these symptoms and they persist, you may want to seek medical advice. People at increased risk should seek advice about drinking water from their health care provider.

What happened? What is the suspected or known source of contamination?

The following is being done to correct the problem:

We will consult with the State Department of Health about this incident. We will notify you when you no longer need to boil the water. We anticipate resolving the problem by (date).

For more information regarding this issue please contact; Brett Gehrke, Superintendent of Operations and Maintenance, Water Resources Division, Snohomish County PUD No. 1. You may contact Paul at telephone number (425) 397-3005 or Email address; Bagehrke@snopud.com

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