Jamestown S'Klallam Indian Tribe

Seven Cedars Casino Water System
PWSID# 105300108
Water Quality Monitoring Program
(WQMP)

PWSID #

Blyn.....105300083
Jamestown Beach.....105300109
Dungeness River Audubon Center....105300138

Previously Updated: February 2006
Draft update 6 July 2010

Jamestown S'Klallam Indian Tribe

Seven Cedars Casino Water System
PWSID# 105300108
Water Quality Monitoring Program

Draft Version Date 6 JULY 2010
Updated by IHS O&M Program
In Cooperation with EPA Drinking Water Program
Previously Published by Arismith Consulting Resources -
(ACR, Feb 2006)

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Seven Cedars Casino Community Water System

System Information

System Name	Seven Cedars Casino Water System.
System Classification	Seven Cedars Casino system is a Non-Transient Non-Community water system (NTNC).
ID #	EPA: 105300108, the last 6 digits are to be used on coliform slips
Source Type	The Seven Cedars Casino System is supplied by one groundwater well (AAB807). A well log has been identified.
Population Served	Seven Cedars Casino System serves between 500 and 700 customers per day. In addition there are 40 to 60 staff on duty at any given time.
Service Connection	The Seven Cedars Casino System presently serves only the Casino operation, which includes food and beverage service and restroom.
Daily Production	Typical production at Seven Cedars Casino ranges between 10,000 and 15,000 gallons per day.
Source	The Seven Cedars Casino water system is supplied by one groundwater well located in the parking lot of the Casino. The well is 57 feet deep and was drilled in 1987. The well is controlled by float switches in the reservoir connected by wire to the pump controller.
Treatment – Oxidation/Filtration	There is treatment for iron and manganese with ozone and greensand filters. There is no chlorination used for disinfection.
Storage: Reservoirs	A 240,000 gallon bolted steel reservoir, equipped with an aeration system, is located a short distance up the hill behind the Casino.
Fluoride	Fluoride equipment is not installed.
Flow through the system	This well pumps water to a Treatment/Control room in the Casino, where it is treated with ozone and filtered to remove precipitated metals. It is then pumped to a storage reservoir which supplies the Casino distribution and Fire system.
Piping System	Information about the construction materials, sizes, and locations of the distribution system piping is available on the system prints, and also in the O&M Manual.
Well Control	The operator should refer to the Seven Cedars Casino Water System O&M Manual for instructions on controlling the well.

Sample Sites

The following 12 SDWA sample sites have been established for Seven Cedars Casino CWS.

Site #	Site	Why Selected
CA-01	Raw water tap, Water Treatment Room (pump on)	Accessibility. Provides representation of source water
CA-02	Finish water tap, Water Treatment Room	Accessibility, Representative of treated water (after Ozone and filtration).
CA-03	Main Kitchen service sink	Accessibility. Provides representation of water used for dishwashing and cooking.
CA-04	Deli Kitchen (Bingo Hall) service sink	Accessibility. Provides representation of water in South end of building and Deli service area.
CA-05	Casino Bar service sink	Accessibility. Provides representation of water in North end of Building and Casino Lounge.
CA-06	Wash basin in the women's restroom (inactive)	Accessibility. Provides representation of water supplied to casino area.
CA-07	Wash basin in the men's restroom (inactive)	Accessibility. Repeat sample site for CA-06.
CA-08	Hose bib in the ozonator/pump room	Accessibility. Representative of water supplied to the casino area. Lead/copper site
CA-09	Sink in janitorial closet adjacent to the east end of casino men's rest room.	Accessibility. Lead/copper site
CA-10	Sink in janitorial closet on second floor	Accessibility. Lead/copper site
CA-11	Outside hose bib, southeast side of casino	Accessibility. Lead/copper site
CA-12	Outside hose bib, southwest side of casino.	Accessibility. Lead/copper site

Sample Schedule by Constituent

Free Chlorine Residual

NA

Coliform

Once each month two Coliform samples are to be collected from the designated sample site for that month and delivered to the lab. Sample collection shall be done following coordination with the laboratory. The operator should make every effort to complete Coliform sampling as early in the month as possible, as well as early in the week. This allows for receiving coliform results mid-month, when there is time for re-sampling, should that be necessary. Voluntary extra Coliform samples should be taken at designated repeat sample sites.

Rotating Sample Sites

The Seven Cedars Casino system has 2 Coliform sample sites: CA-03 and CA-05. Samples are to be collected from these sites as follows:

Site	Sampling Month
CA-03 & 05	January
CA-03 & 04	February
CA-04 & 05	March
CA-03 & 05	April
CA-03 & 04	May
CA-04 & 05	June
CA-03 & 05	July
CA-03 & 04	August
CA-04 & 05	September
CA-03 & 05	October
CA-03 & 04	November
CA-04 & 05	December

Repeat Sample sites

The following sites have been chosen for repeat Coliform sampling sites in the event of a positive sample:

CA-03:	Upstream:	CA-02
	Downstream:	CA-04
CA-04:	Upstream:	CA-03
	Downstream:	CA-05
CA-05:	Upstream:	CA-03
	Downstream:	CA-06

If a routine coliform sample tests positive, at least 3 follow-up (TCR) samples and one GWR sample must be taken within 24 hours of learning of the positive result. Therefore, for each sample site that has a positive result, re-sample the positive site, sample the upstream site, downstream site, and sample the

	untreated source water for e-coli (see section below). The month following a positive routine or repeat sample, a total of 5 routine samples must be taken (the 2 regularly scheduled monthly samples and 3 additional samples).
Coliform – GWR	Under the Ground Water Rule (GWR), an untreated source sample, called triggered monitoring, would be required any time that repeat samples are required under the Total Coliform Rule (TCR). Any GWR sample is to be analyzed for presence of a fecal indicator, such as e-coli. Triggered samples are required to be sampled within 24 hours of a positive Total Coliform Rule result – just like repeat samples. EPA may require source water assessment monitoring at some time.
Inorganic	Every 3 years at CA-02
Lead and Copper	Every 6 months, 20 samples from CA-02
Nitrate	Annually, one sample from each well at CA-02.
Organics (VOCs/SOCs)	Every 3 years at CA-02
Radionuclides/Gross Alpha/etc.	NA
Disinfection By-Products (Bromate)	Monthly at CA-02

Summary Sampling Plan: Seven Cedars Casino Water System

Constituent	Site #	Sample Type	Frequency	Next Sample
Chlorine Residual	TBD	O&M		
Coliform E-coli	CA-03, CA-05 & CA-06 (see schedule) CA-01	SDWA GWR	Monthly If Triggered by TCR sample	1st week Within 24-hrs of trigger event
TTHM/HAA5	CA-11	SDWA	Yearly	12/31/11
Lead & Copper	20 samples from CA-08 through CA-12	SDWA	6 months	12/31/11
IOC	CA-02	SDWA	3 years	12/31/10
Nitrate	CA-02	SDWA	Annual	12/31/10
VOCs/SOCs	CA-02	SDWA	3 years	12/31/13
Radionuclides –gross alpha & Radium 228	n/a			
Asbestos	CA-02	SDWA	3 years	12/31/13

Sampling Map

System Sampling Plan

Blyn Tribal Center Community Water System

System Information

System Name & Classification	The Blyn Tribal Center Water System is a Community (NTNC) Water System.
ID #	PWS# 105300083, or IH3826.
Source Type	The Blyn Tribal Center System is supplied by one groundwater well (AFT519). A well log has been identified for this well.
Population Served	Blyn Tribal Center System serves approximately 100 persons.
Service Connection	The Blyn Tribal Center System has 2 residential connections plus the Tribal Center Admin complex.
Daily Production	Typical production is about 18,700 GPD.
Introduction	Blyn Water System serves the Tribal Center Administrative complex on Old Blyn Highway and the Youth Center and two residences along Zaccardo Road where the line runs from the reservoir to the Tribal Center. This includes non-tribal member customers in this area.
Source	The Blyn Tribal Center water system is supplied by a single well. This well pumps water into an adjacent storage reservoir. The well was drilled in 2001 to a depth of 364 feet deep and has a 7.5 Hp submersible pump.
Well Problems	The well must operate through a wide range of operating levels, from quite low static level during dry summer months, to winter when the static levels are nearly at the surface. The deeper levels require a large (7.5 Hp) pump. A pressure reducer and flow control device are installed to prevent over pressurizing the system during high water levels. This is inefficient during high ground water season. Also, the system is dependent on a single source. An alternative might be to also install an additional well.
Treatment - Disinfection	There is no disinfection system; nor is there a fluoride system.
Storage: Reservoir	A 105,000–gallon, 27-foot diameter, 34-foot tall concrete storage tank is adjacent to the well. The well pump is controlled by float switches within the tank.
Fluoride	Fluoridation equipment is not installed.
Flow through the system	Ground water flows from the individual well directly to the main reservoir. There is no provision for treatment and metering at the well. Water flows by gravity to the distribution system ending at the Tribal Center.
Piping System	Information about the construction materials, sizes, and locations of the distribution system piping is available on the system prints.

Sample Sites

The following 11 SDWA sample sites have been established for Blyn Tribal Center CWS.

Site #	Site	Why Selected
TC-01	Well #1 Raw Water sample tap – Pump house	Accessibility. Provides good representation of source water.
TC-02	233 Zaccardo Road, Youth Center	Accessibility. Provides representation of upper end of system. Lead/copper site.
TC-03	263 Zaccardo Road, Rental Residence	Accessibility. Provides representation of distribution leg above Youth Center. Lead/copper site.
TC-04	238 Zaccardo Road, Neil Pound Business	Accessibility. Provides representation of mid-point of distribution system.
TC-05	193 Zaccardo Road Ron Allen Residence,	Accessibility. Provides representation of mid-point of distribution system. Lead/copper site.
~~TC-06~~	~~LaudnerResidence, 82 Zaccardo Road~~	~~Accessibility. Provides representation of lower end of Zaccardo Road line.~~ **Building has been removed.**
TC-07	991 Old Blyn Highway, Annex includes Health Clinic.	Accessibility. Provides representation of North end of Admin complex.
TC-08	1031 Old Blyn Highway, Community Center	Accessibility. Provides representation of mid point in Admin complex. Lead/copper site.
TC-09	Administrative Building, 1033 Old Blyn Highway.	Accessibility. Provides representation of end of system. Lead/copper site.
TC-10	1070 Old Blyn Highway, Relocated Community Center	Repeat sample site.
TC-11	72 Zaccardo Road Social Services Building	Accessibility. Provides good representation of system.

Sample Schedule by Constituent

Free Chlorine Residual

Disinfection is not provided at this system.

Coliform

Once each month a Coliform sample is to be collected from the designated sample site for that month and delivered to the lab. This sample collection shall be done following coordination with the laboratory. The operator should make every effort to complete Coliform sampling as early in the month as possible, as well as early in the week. This allows for the possibility of re-sampling, should that be necessary. Voluntary extra Coliform samples should be taken at designated repeat sample sites.

Rotating Sample Sites

The Blyn Tribal Center system has one routine coliform sample site: TC-11. Samples are to be collected from these sites as follows:

Site	Sampling Month
TC-11	January
TC-11	February
TC-11	March
TC-11	April
TC-11	May
TC-11	June
TC-11	July
TC-11	August
TC-11	September
TC-11	October
TC-11	November
TC-11	December

Repeat Sample sites		The following homes have been chosen for repeat coliform sampling sites in the event of a positive sample:
	TC-11:	Upstream: TC-03
		Downstream: TC-10
		If a routine coliform sample tests positive, at least 4 follow-up (TCR) samples (which can include one GWR sample) must be taken within 24 hours of learning of the positive result. Therefore, for each sample site that has a positive result, re-sample the positive site, sample the upstream site, downstream site, and sample the untreated source water for E-coli (see section below). The month following a positive routine or repeat sample, a total of 5 routine samples must be taken (the one regularly scheduled monthly sample and 4 additional samples).
Coliform – GWR		Under the Ground Water Rule (GWR), an untreated source sample, called triggered monitoring, would be required any time that repeat samples are required under the Total Coliform Rule (TCR). Any GWR sample is to be analyzed for presence of a fecal indicator, such as e-coli. Triggered samples are required to be sampled within 24 hours of a positive Total Coliform Rule result – just like repeat samples. EPA may require source water assessment monitoring at some time.
Inorganic		Every 3 years at TC-01
Lead and Copper		Every 3 years, one sample from each of the following:
		TC-02, 03, 05, 08 and 09 (use bathroom tap)
Nitrate		Annually, one sample from each source: TC-01
Organics (VOCs/SOCs)		Every 3 years at TC-01
Radiologicals		Every 3 years at TC-01
TTHM & HAA5		NA

Summary Sampling Plan: Blyn Tribal Center System

Constituent	Site #	Sample Type	Frequency	Next Sample
Chlorine	NA			
Coliform E-coli (Untreated source water)	TC-11, 02 & 07 TC-01	TCR/SDWA GWR/SDWA	Monthly As Triggered	1st Week Within 24 hours of Trigger event
IOCs	TC-01	SDWA	3 years	12/31/10
Lead & Copper	TC-02, 03, 05, 08, and 09	SDWA	3 years	6/01/11 – 9/30/11
Radiologicals	TC-01	SDWA	3 years	12/31/10
Nitrate	TC-01	SDWA	Annual	12/31/10
VOCs SOCs	TC-01 TC-01	SDWA SDWA	3 years 3 years	12/31/10 12/31/10
TTHM & HAA5	NA			

Map

System Sampling Plan

Jamestown Beach Community Water System

System Information

System Name and Classification	Jamestown Beach Community Water System, (also known as Beach) is a Community Water System.
ID #	EPA: 15300109
Source Type	The Jamestown Beach System is supplied by 1 groundwater well called Well #2 (AAB818), referred to as the "new well". In addition, there is an old well located about 150 yards to the west, across Cemetery Road, called Well #1 (AAB817). While not in use, Well #1 is connected to the system and is identified as the stand-by well. A well log has been furnished for AAB818.
Population Served	The Jamestown Beach System serves approximately 40 persons.
Service Connections	The Jamestown Beach System presently has approximately 17 connections, all residences, some of which are not continuously occupied.
Daily Production	Typical production is about xx GPD.
System Description	Jamestown Beach Community Water System serves properties, many of which are Tribal Members, in the area traditionally occupied by Tribal members and was purchased and established by Tribal members as a community in 1875. The properties served are along a beach and County Road (Jamestown Road) near Dungeness Spit.
Current Source/System	The Jamestown Beach water system is currently supplied by 1 ground water well. This well pumps water into a hydro pneumatic pressure tank and distribution system that serves approximately 17 connections. An IHS well log was supplied for Well #2.
Treatment - Disinfection	Equipment for sodium hypochlorite solution disinfection is installed but is not currently in use.
Storage: Reservoirs	The only storage is the water portion (estimated at 1,000 gallons) of the hydro pneumatic pressure tank.
Fluoride	Fluoride equipment is not installed.

Flow through the system	Ground water flows from the well directly to the pumphouse-pressure tank and then to the distribution line along Jamestown Road. Treatment equipment and the pressure tank are installed in a small "well house" near the well. There is no provision for flow measurement or pump run time information.
Piping System	Information about the construction materials, sizes, and locations of the distribution system piping is available on the system prints.
Pressure Zones	This system functions as a single pressure zone.
Water Quality Problems	Source sampling up to this time has not indicated any water quality problems. However, the connected properties along the line, plus approximately an equal number interspersed with them are all on septic systems and a large number of residential properties adjacent to the system are also presumed to be on septic tanks.
Source Sampling Tap	The current well is equipped with a sampling tap. This tap may be used for all source sampling, and also for O&M chlorine monitoring.
SPECIAL NOTE: The other Well	If the old well is ever needed to be connected to the system, the well should be tested for total coliform and Nitrates at a minimum. The Jamestown S'Klallam Tribe should consult with USEPA regarding other source sampling requirements prior to start-up.

Sample Sites

The following SDWA sample sites have been established for Jamestown Beach CWS.

Site #	Site	Why Selected
JB-01	Raw Water tap - Pump house	Accessibility. Provides good representation of source water.
JB-02	1252 Jamestown Road Harriet Adams Residence	Accessibility. Provides representation of western end of the system. Lead/copper site and repeat sample site.
JB-03	1322 Jamestown Road Judson Residence	Accessibility. Provides representation of central part of area served. Lead/copper site.
JB-04	1382 Jamestown Road Milliman Residence	Accessibility. Provides representation of central part of area served. Lead/copper site and repeat sample site for JB-02
JB-05	1400 Jamestown Road Johnson Residence	Accessibility. Provides representation of central Zone of the system. Lead/copper site
JB-06	731 Serpentine Road Kerr Residence	Accessibility. Provides representation of eastern end of line. Lead/copper site
JB-07	711 Serpentine Road Prince Residence	Accessibility. Repeat sample site for JB-04
JB-08	5663 Woodcock Tribal Rental	Accessibility. Repeat sample site for JB-02
JB-09	Finished water tap - Pump house	Accessibility to finished water at the point just down stream of treatment.
JB-10	1214 Jamestown Road	Accessibility. Identified as disinfection monitoring point as it is early in the distribution system.

Sample Schedule by Constituent

Free Chlorine Residual *

Monitoring only required if the disinfection system is used. As of Oct 2005 the disinfection system was not operational. Once the system is operational then, daily at JB09 and JB-10 and one for JB-02 and JB-04 as noted below.

Site #	Location	Frequency
JB-09	Pump house finished water sample tap	Daily – total chlorine
JB-10	1214 Jamestown Road	Daily - free & total
JB-02	1252 Jamestown Road, Harriet Adams Residence	Sunday, Tuesday, Thursday, and Saturday
JB-04	1382 Jamestown Road, Milliman Residence	Monday, Wednesday, Friday, and Sunday

**** NOTE (2)**

Chlorine residual monitoring only needs to be completed if disinfection is put on-line.

Coliform

Once each month a Coliform sample is to be collected from the designated sample site for that month and provided to the lab. This sample collection shall be done following coordination with the laboratory. The operator should make every effort to complete Coliform sampling as early in the month as possible, as well as early in the week. This allows for the possibility of re-sampling, should that be necessary. Voluntary extra Coliform samples should be taken at designated repeat sample sites.

Rotating Sample Sites

The Jamestown Beach system has 2 coliform sample sites: JB-02 and JB-04. Samples are to be collected from these sites as follows:

Site	Sampling Month
JB-02	January
JB-04	February
JB-02	March
JB-04	April
JB-02	May
JB-04	June
JB-02	July
JB-04	August
JB-02	September
JB-04	October
JB-02	November
JB-04	December

Repeat Sample sites		The following homes have been chosen for repeat coliform sampling sites in the event of a positive sample:	
	JB-02:	Upstream:	JB-09
		Downstream:	JB-04
	JB-04:	Upstream:	JB-02
		Downstream:	JB-07
		If a routine coliform sample tests positive, at least 4 follow-up (TCR) samples (which can include one GWR sample) must be taken within 24 hours of learning of the positive result. Therefore, for each sample site that has a positive result, re-sample the positive site, sample the upstream site, downstream site, and sample the untreated source water for E-coli (see section below). The month following a positive routine or repeat sample, a total of 5 routine samples must be taken (the one regularly scheduled monthly sample and 4 additional samples).	
Coliform – GWR		Under the Ground Water Rule (GWR), an untreated source sample, called triggered monitoring, would be required any time that repeat samples are required under the Total Coliform Rule (TCR). Any GWR sample is to be analyzed for presence of a fecal indicator, such as e-coli. Triggered samples are required to be sampled within 24 hours of a positive Total Coliform Rule result – just like repeat samples. EPA may require source water assessment monitoring at some time.	
Inorganics		Every 3 years at JB-09	
Lead and Copper		Every 3 years, one sample from each of the following:	
		JB- 02, 03, 04, 05, 06 (use bathroom tap)	
Nitrate		Annually, one sample from JB-01	
Organics (VOCs/SOCs)		Every 3 years at JB-09	
Radiologicals		Every 3 years at JB-09	
TTHM & HAA5		Every year in August at JB-04 - **Monitoring only required if the disinfection system is used. As of Oct 2005 the disinfection system was not operational.**	

Summary Sampling Plan: Jamestown Beach

Constituent	Site #	Sample Type	Frequency	Next Sample
*Chlorine - Total *Chlorine – Total & Free *Chlorine - Free	JB-09 JB-10 JB-02 & JB-04 (see schedule)	O&M SDWA SDWA	Daily Daily Daily	
Coliform E-coli – Fecal Coliform	JB-02 and JB-04 (see schedule) JB-01	TCR/SDWA GWR/SDWA	Monthly As Triggered	1st Week Within 24 hours of trigger event
IOCs	JB-09	SDWA	3 years	12/31/10
Lead & Copper	JB- 02, 03, 04, 05, 06	SDWA	3 years	6/01/10 – 9/30/10
Radiolonuclides	JB-09	SDWA	3 years	12/31/10
Nitrate	JB-01	SDWA	Annual	12/31/10
VOCs/SOCs	JB-09	SDWA	3 years	12/31/10
*TTHM & HAA5	JB-04	SDWA	n/a	

***Note:** This monitoring will need to be done once disinfection is initiated.

Map

System Sampling Plan

Dungeness River Audubon Center Water System

System Information

System Name and Classification	Dungeness River Audubon Center (also known as Jamestown River Center) is classified as a Transient Non-Community Water System (TNCWS).
ID #	EPA: 15300130
Source Type	The Dungeness River Audubon Center is supplied by 1 groundwater well called Well #1. This well was drilled to a depth of 250 in 1995. A well tag has not been installed. A well log was located.
Population Served	The Dungeness River Audubon Center typically serves an average of 40 people in the winter and up to 75 per day in the summer.
Service Connections	The Dungeness River Audubon water system has four service connecting, the river center, public restrooms, a caretaker residence, and a picnic area.
Daily Production	Typical production cannot be determined because there is no method of measuring water use or well production.
System Description	The Dungeness River Audubon Center serves the visitors of the river center, a picnic area and a single family caretaker residence.
Current Source/System	The Dungeness River Audubon Center source is a single well drilled in 1995 to ad depth of 241 feet and finished to a depth of 215 feet. The well is cased with 200 feet of six inch steel casing and fitted with Cook "V" slot screen from 200 to 215 feet.
Treatment - Disinfection	Disinfection is provided by a dilute solution of sodium hypochlorite.
Storage: Reservoirs	Storage is provided by a 12,000 gallon concrete storage tank.
Fluoride	Fluoride equipment is not installed.
Water Quality Concerns	Occasional positive Coliform test results are an indication that disinfection should be added to this system.

Flow through the system	Ground water flows from the well directly to the storage tank. A booster pump is used to pump water from the tank into the distribution system. In addition, a fire service pump is provided from the same storage tank.
Piping System	Information about the construction materials, sizes, and locations of the distribution system piping is available on the system prints.
Pressure Zones	This system functions as a single pressure zone, with pressure supplied by the booster pump at the well house.
Well Field	The well is located about 150 yards from the Dungeness River in the railroad bridge park.
Well Control	Water level in the storage tank is controlled by a pressure transducer which operates the well pump.

Sample Sites

The following 3 SDWA sample sites have been established for Dungeness River Audubon Center TNC Water System.

Site #	Site	Why Selected
DR-01	Well #1 raw water sample tap- located outside of pump house.	Accessibility. Provides good representation of source water.
DR-02	Well #1 finished water sample tap - Pump house	Accessibility to finished water at the point just down stream of treatment.
DR-03	River Center – washroom sink	Accessibility. Provides representation of all water served in this facility...
DR-04	Caretaker residence – bathroom sink	Accessibility. Repeat sample site.

Sample Schedule by Constituent

Free Chlorine Residual

Daily at DR-02 for total and daily at DR-03 for total and free chlorine.

Coliform

Once each month a Coliform sample is to be collected from the designated sample site for that month and delivered to the lab. This sample collection shall be done following coordination with the laboratory. The operator should make every effort to complete Coliform sampling as early in the month as possible, as well as early in the week. This allows for the possibility of re-sampling, should that be necessary. Voluntary extra Coliform samples should be taken at designated repeat sample sites.

Chlorine Residual must be measured and reported on the lab slip that is submitted to the EPA.

Rotating Sample Sites

The Jamestown Beach system has 1 coliform sample sites: DR-03 Samples are to be collected from these sites as follows:

Site	Sampling Month
DR-03	January
DR-03	February
DR-03	March
DR-03	April
DR-03	May
DR-03	June
DR-03	July
DR-03	August
DR-03	September
DR-03	October
DR-03	November
DR-03	December

Repeat Sample sites

The following homes have been chosen for repeat coliform sampling sites in the event of a positive sample:

DR-03:	Upstream:	DR-02
	Downstream:	DR-04

If a routine coliform sample tests positive, at least 4 follow-up (TCR) samples (which can include one GWR sample) must be taken within 24 hours of learning of the positive result. Therefore, for each sample site that has a positive result, re-sample the positive site, sample the upstream site, downstream site, and sample the untreated source water for E-coli (see section below). The month following a positive routine or repeat sample, a total of 5 routine samples must be taken (the one

	regularly scheduled monthly sample and 4 additional samples).
Coliform – GWR	Under the Ground Water Rule (GWR), an untreated source sample, called triggered monitoring, would be required any time that repeat samples are required under the Total Coliform Rule (TCR). Any GWR sample is to be analyzed for presence of a fecal indicator, such as e-coli. Triggered samples are required to be sampled within 24 hours of a positive Total Coliform Rule result – just like repeat samples. EPA may require source water assessment monitoring at some time.
Inorganics	NA
Lead and Copper	NA
Nitrate	Annually, one sample from DR-01
Organics (VOCs/SOCs)	NA
Radiologicals	NA
TTHM & HAA5	DR-04

Summary Sampling Plan: Dungeness River Center

Constituent	Site #	Sample Type	Frequency	Next Sample
Chlorine - Total Chlorine – Total & Free Chlorine - Free	DR-02 DR-03	O & M SDWA	Daily Daily	
Coliform E-coli/Fecal Coliform	DR-03 DR-01	TCR/SDWA GWR/SDWA	Monthly As Triggered	1st Week Within 24 hours of trigger event
IOCs	NA			
Lead & Copper	NA			
Radiologicals	NA			
Nitrate	DR-01	SDWA	Annual	12/31/10
VOCs/SOCs	NA			
TTHM & HAA5	DR-04			

Map

To be added by Operator.

Appendix A - WQMP Contacts

IHS Seattle District Office	Steve Anderson, District Utility Consultant Indian Health Service, Seattle District Office 2201 6th Ave, Room 925 - Seattle, WA 98121 (360) 615-2790 Email: Steven.Anderson@ihs.gov
IHS Tribal Utility Consultant	Tom Moeller, Tribal Utility Consultant Indian Health Service, Olympic District Office 4060 Wheaton Way, Suite E - Bremerton, WA 98310 Phone: 360-792-1235 ext. 102 Email: Tom.Moeller@ihs.gov
EPA - Seattle	Lisa Jacobsen (Tribal Coordinator) EPA Region 10 (OWW-136) 1200 6th Ave, Suite 900, Seattle, WA 98101 Phone: 206 553-6917 Email: Jacobsen.lisa@epa.gov
Jamestown S'Klallam Tribe	Annette Nesse, Chief Operating Officer 1033 Old Blyn Hwy, Sequim, WA 98382 Phone: 360-681-4620, Fax: 360-681-3405 Email: anesse@jamestowntribe.org
Operator	Jeff Becker, Utility Operator Natural Resources Department 1033 Old Blyn Hwy, Sequim, WA 98382 Phone: 360-681-4602, Fax: 360-681-3405 Email: jbecker@jamestowntribe.org
Seven Cedars Casino	Jerry Allen, General Manager Ph: 360-681-6707, FAX# 360-681-6701
Laboratory	Twiss Analytical 26276 Twelve Trees Lane, Suite C, Poulsbo, WA 98370 Phone: 360-779-5141 Fax: 360-779-5150
Nitrates, Coliform	Clallam County, Dept of Community Development, Environmental Health Div 233 E. 4th Street P.O. Box 863, Port Angeles WA 98362 Phone: 360-417-2258 Lab Cor of Seattle, WA (for asbestos analysis) Ph 206-781-0155

Appendix B: WQMP Description and Administration

WQMP Description

WQMP Purpose

To protect the health of the public, the customers, and staff, to assure future compliance with the SDWA, and to assist the Utility in pursuing the most economically effective program. This plan will describe how to:

- Collect the proper number of the correct types of samples
- Test for the correct constituents and contaminants
- Report the results in accordance with the SDWA requirements
- Maintain records of water quality sampling and test results.

WQMP Development

The program was developed under the authorization of the IHS/EPA SDWA Training Program to protect the health of all of the people utilizing the community water systems operated and monitored by the Jamestown S'Klallam Indian Tribe.

Monitored Systems

The Jamestown S'Klallam Indian Tribe operates the following public water system (s)

- Jamestown water system (EPA # 105300108), IH318F

SDWA and O&M

This plan includes Sampling, Testing, and Notification required by the SDWA as well as sampling and testing suggested for proper O&M of the system.

WQMP Administration

General

This WQMP is to protect the health of the public and to assure compliance with the SDWA. Jamestown S'Klallam Indian Tribe will maintain a sampling plan that:

(1) Meets the requirements of the SDWA, and

[2) Provides adequate information to allow for proper operation of the systems.

Program Update

It is the policy of Jamestown S'Klallam Indian Tribe that the Water/Waste water Manager and operator shall review this program as required by EPA. IHS shall provide assistance in making updates as necessary to meet or exceed SDWA requirements.

Policy Making Body

The policy making body overseeing the operation of these Tribal water systems is the Jamestown S'Klallam Indian Tribe. It is the duty of this council to assure that this program, including specific procedures, are followed in order to protect pubic health and meet the requirements of the Safe Drinking Water Act.

Water/Wastewater Manager

It is the responsibility of the Water/Wastewater Program Manager to assure that this program, including its procedures, are followed in order to protect pubic health and meet the requirements of the Safe Drinking Water Act.

Water System Operators

The Water System Operators shall be responsible for:

- Following the intent of this program
- Assisting the manager to update this program as required.
- Sampling as required by this program (40 CFR §141.21-24)
- Performing those tests described in this program
- Reporting the test results as prescribed by the EPA regulations (40 CFR §141.31)
- Maintaining a filing system that allows for easy access of the data associated with this program (40 CFR §141.33)
- Implementing the public notification procedure when necessary (40 CFR §141.32)

Laboratory

The laboratory will, upon notification, provide the water system operator with proper and adequate sampling containers and appropriate directions for proper sample collection.

Sampling and Water Quality Parameters

Principals of Sampling

The Safe Drinking Water Act requires sampling for a number of different contaminants and constituents. This water quality monitoring program is based on key principals of sampling. They are:

- Samples must be representative of the flow from which they are collected.
- An adequate number and volume of samples must be collected in order for the results to be representative of the flow sampled and acceptable to the laboratory.
- All sample containers must be maintained in a clean condition and kept at a temperature of 4 degrees Centigrade (on ice) until delivered to the lab.
- All records must be complete and accurate

Constituents and Contaminants

The following is a list and short description of the constituents and contaminants for which the Tribal Water and Wastewater Program monitors.

Chlorine

Chlorine is added to the water to control microorganisms. Because it is very important that the correct amount of chlorine be maintained, **free chlorine residual should be checked at least daily** at key representative points in the distribution system.

Coliform Bacteria

Coliform bacteria are a large family of bacteria that are used as **indicator organisms.** If total coliform are present and e-coli are absent, then the water is not contaminated and poses no acute health risk. If E-coli or fecal coliform are present in drinking water they indicate that the water is contaminated, and/or that the disinfection process is inadequate.

Inorganic Chemicals

Inorganic chemicals (IOCs) are a group of naturally occurring minerals, most of which are toxic to humans.

Nitrate	Nitrate contamination results from many sources, including fertilizer, failing septic tanks, and natural biological activity. High levels of nitrates can cause health problems for small children.
Organic Compounds	Organic compounds, also known as volatile organic chemicals (VOCs) and synthetic organic chemicals (SOCs), are manmade chemical contaminants that come from many sources. Small concentrations can pose a health risk to humans.
Lead and Copper	Lead and copper in drinking water result from the degradation of household plumbing. High levels of lead can cause significant health problems for humans.
Fluoride	Fluoride may be naturally occurring, or may be artificially added to the water.
Radiological	Radioactive contaminants are naturally occurring radioactive substances that can cause negative health effects in humans.
Dioxin and Asbestos	Dioxin is a contaminant found in certain pesticides and from the combination of chlorine with certain organic compounds. Asbestos is a naturally occurring substance found in some water sources. Asbestos can also be present in a water system that uses AC pipe.
TTHM and HAA5	Total Trihalomethanes and Haloacetic Acids are by-products formed when chemical disinfectants, such as chlorine, react with organic compounds found in the water. These contaminants are a health concern because they cause cancer, as well as liver, kidney, and central nervous system problems.

Suggested Record Keeping Structure

Filing structure

It is suggested that an organized filing system be established to maintain the sampling and testing records for compliance with the SDWA and to assist in the development of the annual CCR.

For Each Water System

Make one hanging file for each water system operated by the Tribe. This file should be titled SDWA. This file becomes a divider. Following this file should be one hanging file titled SDWA-Year, for example the 2008 file would be SDWA-2008.

Within each hanging file there should be the following file folders.

- CCR - report and certification
- Coliform - Test results
- Inorganics including arsenic (IOCs) - Test results
- Volatile Organic Compounds (VOCs) - Test results
- Synthetic Organic Chemicals (SOCs) – Test results
- Lead and copper - Test results
- Nitrate/nitrite - Test results

- Radionuclides - Test results
- TTHM & HAA5
- Detects (copy of lab reports that have detects for CCR preparation)
- Press releases
- Newsletters (that contain information about the water system)
- Quarterly report from EPA
- Violations (copy of lab reports that show a violation and any public notice information)
- Waivers (copy of all correspondence on this topic and a copy of the official waiver)

Other Related Files

It is recommended additional hanging file folders be prepared for the following information.

- Sanitary surveys
- Water source information and assessments

File Retention

Coliform Results	Coliform test results received from the laboratory must be retained for 5 years.
Chemical Results	Chemical test results, VOCs, SOCs, inorganic, and radiological must be maintained for 10 years.
CCR	Copies of the CCR must be maintained for 10 years.
Waivers & Exception	Copies of all correspondence associated with waivers and exceptions shall be filed by type of exception and/or waiver. These records will be maintained for 5 years.
Violations	Copies of all correspondence, associated with violations, shall be filed chronologically. These records will be maintained for 5 years, except that public notifications must be retained for 3 years.
Sanitary Survey	Sanitary survey reports are to be retained for 10 years.

Appendix C: Support Documents

Notification of Violation

MCL	Should there be a violation of a SDWA requirement; the Utility will follow this EPA approved procedure to notify its customers.

All Violations

Hand-bill	A copy of the written notification explaining the MCL violation will be posted at the front door of the Tribal Center, the front door of the local Tribal services building, and the front door of the Housing Authority. This posting will be completed within 24 hours of the determination of the violation for violations with microorganisms, or within 30 days for other MCL violations, or within one year for treatment technique or reporting violations.
Mandatory Language	The following EPA required language must appear in any handbill that describes a violation associated with any of these contaminants.

Specific Application

Coliform Violation	Examples of the public notification for Coliform violation are found in this plan.
EPA Information	Mandatory language for various MCL violations is found in this plan.
Additional Information	Additional examples and procedures associated with the public notification process can be found in the EPA references.

Instructions for Fecal Coliform or *E. coli* Notice – Template 1-4

Template on Reverse

Since exceeding the fecal coliform or *E. coli* maximum contaminant level is a Tier 1 violation, you must provide public notice to persons served as soon as practical but within 24 hours after you learn of the violation (141.202(b)). During this time, you must also contact your primacy agency. You should also coordinate with your local health department. You may also have to modify the template if you also have high nitrate levels or other coliform MCL violations. You must use one or more of the following methods to deliver the notice to consumers (141.202(c)):

- Radio
- Television
- Hand or direct delivery
- Posting in conspicuous locations

You may need to use additional methods (e.g., newspaper, delivery of multiple copies to hospitals, clinics, or apartment buildings), since notice must be provided in a manner reasonably calculated to reach all persons served.

The notice on the reverse is appropriate for hand delivery or a newspaper notice. However, you may wish to modify it before using it for a radio or TV notice. If you do, you must still include all required elements and leave the health effects language in italics unchanged. This language is mandatory (141.205(d)). If you post or hand deliver, print your notice on letterhead, if you have it.

Population Served

Make sure it is clear who is served by your water system--you may need to list the areas you serve.

Corrective Action

In your notice, describe corrective actions you are taking. Listed below are some steps commonly taken by water systems with fecal coliform or *E. coli* violations. You can use one or more of the following actions, if appropriate, or develop your own:

- We are chlorinating and flushing the water system.
- We are switching to an alternate drinking water source.
- We are increasing sampling for coliform bacteria to determine the source of the contamination.
- We are repairing the wellhead seal.
- We are repairing the storage tank.
- We are restricting water intake from the river/lake/reservoir to prevent additional bacteria from entering the water system and restricting water use to emergencies.

After Issuing the Notice

Send a copy of each type of notice and a certification that you have met all the public notice requirements to your primacy agency within ten days from the time you issue the notice (141.31(d)). It is a good idea to issue a "problem corrected" notice when the violation is resolved. See Template 1-8.

It is recommended that you notify health professionals in the area of the violation. People may call their doctors with questions about how the violation may affect their health, and the doctors should have the information they need to respond appropriately. In addition, health professionals, including dentists, use tap water during their procedures and need to know of contamination so they can use bottled water.

DRINKING WATER WARNING

[Click Here to Enter System Name] water is contaminated with [Click Here to enter Type of Bacteria: "Fecal Coliform" or "E. coli"]

BOIL YOUR WATER BEFORE USING

["Fecal coliform or "E. coli"] bacteria were found in the water supply on [Date Detected]. These bacteria can make you sick, and are a particular concern for people with weakened immune systems.

Bacterial contamination can occur when increased run-off enters the drinking water source (for example, following heavy rains). It can also happen due to a break in the distribution system (pipes) or a failure in the water treatment process.

What should I do? What does this mean?

DO NOT DRINK THE WATER WITHOUT BOILING IT FIRST. Bring all water to a boil, let it boil for one minute, and let it cool before using, or use bottled water. Boiled or 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 diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, 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 providers.

What is being done?

[Describe Corrective Action] We will inform you when tests show no bacteria and you no longer need to boil your water. We anticipate resolving the problem within [Estimate time until the problem is fixed].

For more information, please contact [Name of Contact] at [Phone Number] or [Address/location/email]. General guidelines on ways to lessen the risk of infection by microbes are available from the EPA Safe Drinking Water Hotline at 1-800-426-4791.

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, 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 being sent to you by [Name of System]. Public Water System ID#: [Enter 9 digit public water system ID].
Date distributed: [Enter date distributed].

Instructions for Resolved Total Coliform Notice – Template 2-2

Template on Reverse

Since exceeding the total coliform bacteria maximum contaminant level is a Tier 2 violation, you must provide public notice to persons served as soon as practical but within 30 days after you learn of the violation (141.203(b)). Some states have more stringent requirements for coliform violations. Check with your primacy agency to make sure you meet all its requirements. Community systems must use one of the following methods (141.203(c)):

- Hand or direct delivery
- Mail, as a separate notice or included with the bill

Non-community systems must use one of the following methods (141.203(c)):

- Posting in conspicuous locations
- Hand delivery
- Mail

In addition, both community and non-community systems must use another method reasonably calculated to reach others if they would not be reached by the first method (141.203(c)). Such methods could include newspapers, e-mail, or delivery to community organizations. If you mail, post, or hand deliver, print your notice on letterhead, if available.

The notice on the reverse is appropriate for hand delivery or mail. However, you may wish to modify it before using it for posting. If you do, you must still include all the required elements and leave the health effects language in italics unchanged. This language is mandatory (141.205(d)).

Description of the Violation

Make sure that the notice is clear about the fact that the coliform problem has been resolved, and there is no current cause for concern. The description of the violation and the MCL vary depending on the number of samples you take. The following table should help you complete the second paragraph of the template.

If You Take Less Than 40 Samples a Month

State the number of samples testing positive for coliform. The standard is that no more than one sample per month may be positive.

Corrective Action

In your notice, describe corrective actions you have taken. Listed below are some steps commonly taken by water systems with total coliform violations. Use one or more of the following actions, if appropriate, or develop your own:

- We have increased sampling for coliform bacteria to catch the problem early if it happens again.
- The well and/or distribution system has been disinfected and additional samples do not show the presence of coliform bacteria.

After Issuing the Notice

Make sure to send a copy of each type of notice along with a certification that you have met all the public notice requirements to your primacy agency within ten days after issuing the notice (141.31(d)).

Resolved Total Coliform Notice

IMPORTANT INFORMATION ABOUT YOUR DRINKING WATER

Tests Showed Coliform Bacteria in [System] Water

Our water system recently violated a drinking water standard. Although this incident was not an emergency, as our customers, you have a right to know what happened and what we did to correct this situation.

We routinely monitor for drinking water contaminants. We took [number] samples to test for the presence of coliform bacteria during [month]. [Number/percentage] of our samples showed the presence of total coliform bacteria. The standard is that no more than [1 sample per month/5 percent of samples] may do so.

What should I do?

• You do not need to boil your water or take other corrective actions. However, if you have specific health concerns, consult your doctor.

• People with severely compromised immune systems, infants, and some elderly may be at increased risk. These people should seek advice about drinking water from their health care providers. General guidelines on ways to lessen the risk of infection by microbes are available from EPA's Safe Drinking Water Hotline at 1-800-426-4791.

What does this mean?

This is not an emergency. If it had been, you would have been notified immediately. Coliform bacteria are generally not harmful themselves. 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.

Usually, coliforms are a sign that there could be a problem with the system's treatment or distribution system (pipes). Whenever we detect coliform bacteria in any sample, we do follow-up testing to see if other bacteria of greater concern, such as fecal coliform or E. coli, are present.We did not find any of these bacteria in our subsequent testing.

What is being done?

[Describe corrective action.] Further testing shows that this problem has been resolved. For more information, please contact [name of contact] at [phone number] or [mailing address]. Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, 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 being sent to you by [system]. State Water System ID#: _____. Date distributed: _____.

Approximate Lab Costs for SDWA Sampling

Note: The following costs are based on the combined sampling requirements of the Jamestown water system, including 4 wells in 4 systems.

Based on year 2009 pricing, the following estimates are provided for planning and budget preparation purposes.

Test	Cost	Total
24 –Coliforms	$20 per	$480 per year
2 - Nitrate	$28 per	$224 per year
1-IOCs	$340 per	$340 per round
1-Organics	$810 per	$810 per round
10-Lead/Copper	$33 per	$165 per round
1 – TTHM & HAA5	$350 per	$350 per round

Estimated Total: $2,369.00

Note: This estimate does not include shipping, mailing, or operator labor cost.

Estimate of Monitoring Lab Expense through FY 2012

	FY 2010	FY 2011	FY 2012	FY 2013
Coliform	$480	$480	$480	$480
Nitrate	$224	$224	$224	$224
IOCs	$340	$340	$340	$340
Lead & Copper	$165	0	0	$165
VOCs/SOCs	$810	$810	$810	$810
TTHM & HAA5	$350	$350	$350	$350
Total	$2,369	$2,204	$2,204	$2,369

Labor Requirements

Note:	The following estimates are based on the combined sampling requirements of Jamestown Water System.
Note	The time required to carry out this sampling plan will vary from year to year, operator to operator. Great variation may occur when dealing with other agencies, companies, personnel, etc. The values listed below should be used as a general guide when planning work schedules and budgets.
Daily Sampling Requirements	Based on taking three chlorine residual samples at each system once each day, 7-days a week the time requirements are estimated at 15 min per site the daily labor estimate is: Jamestown – 3 sites X 15 min = 45 min A total of 1.5 hours per day X 365 days = 548 hours per year. (NOTE: This estimate does not include any travel time between systems)
Monthly Sampling Requirements	2.0 hours per month per system (includes getting sample to the post office/lab courier) = 12 hours per year
Annual Sampling Requirements	Nitrates – 2 hours per well pumphouse. 2 wells X 4 times per year = 8 hours per year
Lead and Copper Requirements	(5 samples X 2 hours per sample) ÷ 3 = an average of 3 hours per year
Source Sampling Requirements	(1 site and 4 hours per site) ÷3 - An average of = 1 hours per year
Total Sampling Requirements	= 572.75 hrs per year

Definitions

Aesthetics	Concerning water it means pleasant in appearance, odor and taste.
Alkalinity	The buffering capacity of water to retard the change in pH by an acid. Alkalinity is composed of bicarbonates, carbonate and hydroxide.
Calcium Carbonate	The principle compound of hardness. The term used as an equivalent for hardness and alkalinity. Symbolically $CaCO_3$.
Coliform Bacteria	The coliform group of bacteria is a bacterial indicator of contamination. This group is found the intestinal tract of human beings. Coliforms also may be found in the intestinal tract of warm-blooded animals, and in plants, soil, air and the aquatic environment.
Constituent	All of the components of water other than H_2O.
Contaminant	Toxic material, bacteria, or other deleterious agents that make the water unfit for its intended use.
MCL - Maximum Contaminant Level	The maximum permissible level of a contaminant in water delivered to a user of a public water system.
mg/L- milligrams per Liter	A unit of the concentration of a constituent in water. It is 0.001g of the constituent in 1,000 mL of water. mg/L has replaced the PPM (parts per million) in reporting results in water.
NTUs	The units of measure of turbidity, Nephelometric Turbidity Units, the measurement as made with a nephelometric turbidimeter.
pH	An expression of the intensity of the basic or acidic strength of a water. Mathematically, pH is the logarithm (base 10) of the reciprocal of the hydrogen ion concentration. pH may range from 0 to 14, where 0 is the most acid, 14 most alkaline, and 7 neutral. Natural waters usually have a pH between 6.5 and 8.5.
THMs	Trihalomethanes, also referred to as TTHM's or Total Trihalomethanes (1) Regulations - The sum of the concentrations of bromodichloromethane, dibromochloromethane, tribromomethane, and trichloromethane. (2) Compounds formed when natural organic substances from decaying vegetation and soil (such as humic and fulvic acids) react with chlorine.
Turbidity	A condition in water caused by the presence of suspended matter, resulting in the scattering and absorption of light rays.
Viruses	A submicroscopic organism which passes through filters capable of removing bacteria.
VOC - Volatile organic chemical	A carbon-based compound with the property of escaping easily from water into the air.

Inorganic Chemical Contaminants (IOCs) 40 CFR 141.23

Contaminant	MCLG[1] (mg/L)[2]	MCL or TT[1] (mg/L)[2]	Potential Health Effects from Ingestion of Water	Sources of Contaminant in Drinking Water
Antimony	0.006	0.006	Increase in blood cholesterol; decrease in blood sugar	Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder
Arsenic	0[7]	0.010 as of 01/23/06	Skin damage or problems with circulatory systems, and may have increased risk of getting cancer	Erosion of natural deposits; runoff from orchards, runoff from glass & electronics production wastes
Asbestos (fiber >10 micrometers)	7 million fibers per liter	7 MFL	Increased risk of developing benign intestinal polyps	Decay of asbestos cement in water mains; erosion of natural deposits
Barium	2	2	Increase in blood pressure	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits
Beryllium	0.004	0.004	Intestinal lesions	Discharge from metal refineries and coal-burning factories; discharge from electrical, aerospace, and defense industries
Cadmium	0.005	0.005	Kidney damage	Corrosion of galvanized pipes; erosion of natural deposits; discharge from metal refineries; runoff from waste batteries and paints
Chromium (total)	0.1	0.1	Allergic dermatitis	Discharge from steel and pulp mills; erosion of natural deposits
Copper	1.3	TT[8]; Action Level=1.3	Short term exposure: Gastrointestinal distress Long term exposure: Liver or kidney damage People with Wilson's Disease should consult their personal doctor if the amount of copper in their water exceeds the action level	Corrosion of household plumbing systems; erosion of natural deposits

Cyanide (as free cyanide)	0.2	0.2	Nerve damage or thyroid problems	Discharge from steel/metal factories; discharge from plastic and fertilizer factories
Fluoride	4.0	4.0	Bone disease (pain and tenderness of the bones); Children may get mottled teeth	Water additive which promotes strong teeth; erosion of natural deposits; discharge from fertilizer and aluminum factories
Lead	zero	TT[8]; Action Level=0.015	Infants and children: Delays in physical or mental development; children could show slight deficits in attention span and learning abilities Adults: Kidney problems; high blood pressure	Corrosion of household plumbing systems; erosion of natural deposits
Mercury (inorganic)	0.002	0.002	Kidney damage	Erosion of natural deposits; discharge from refineries and factories; runoff from landfills and croplands
Nitrate (measured as Nitrogen)	10	10	Infants below the age of six months who drink water containing nitrate in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue-baby syndrome.	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
Nitrite (measured as Nitrogen)	1	1	Infants below the age of six months who drink water containing nitrite in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue-baby syndrome.	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
Selenium	0.05	0.05	Hair or fingernail loss; numbness in fingers or toes; circulatory problems	Discharge from petroleum refineries; erosion of natural deposits; discharge from mines
Thallium	0.0005	0.002	Hair loss; changes in blood; kidney, intestine, or liver problems	Leaching from ore-processing sites; discharge from electronics, glass, and drug factories

Lead/Copper Rule 40 CFR 141.80

Contaminant	AL[1] - mg/L	Health Effects	Source
Copper	1.3	Short term exposure; Gastrointestinal distress; Long term exposure: Liver or kidney damage; People with Wilson's Disease should consult their personal doctor if the amount of copper in their water exceeds the action level	Corrosion of household plumbing systems; erosion of natural deposits
Lead	0.015	Infants and children: Delays in physical or mental development; children could show slight deficits in attention span and learning abilities; Adults: Kidney problems; high blood pressure	Corrosion of household plumbing systems; erosion of natural deposits

[1]AL - Action Level

Disinfection Byproducts 40 CFR 141.132

Contaminant	MCLG[1] (mg/L)[2]	MCL or TT[1] (mg/L)[2]	Potential Health Effects from Ingestion of Water	Sources of Contaminant in Drinking Water
Bromate	Zero	0.010	Increased risk of cancer	Byproduct of drinking water disinfection
Chlorite	0.8	1.0	Anemia; infants & young children: nervous system effects	Byproduct of drinking water disinfection
Haloacetic acids (HAA5)	n/a[6]	0.060	Increased risk of cancer	Byproduct of drinking water disinfection
Total Trihalomethanes (TTHMs)	none[7] -------- - n/a[6]	0.10 -------- - 0.080	Liver, kidney or central nervous system problems; increased risk of cancer	Byproduct of drinking water disinfection

Disinfectants 40 CFR 141.132

Contaminant	MRDLG[1] (mg/L)[2]	MRDL (mg/L)[2]	Potential Health Effects from Ingestion of Water	Sources of Contaminant in Drinking Water
Chloramines (as Cl_2)	MRDLG=4[1]	MRDL=4.0[1]	Eye/nose irritation; stomach discomfort, anemia	Water additive used to control microbes
Chlorine (as Cl_2)	MRDLG=4[1]	MRDL=4.0[1]	Eye/nose irritation; stomach discomfort	Water additive used to control microbes
Chlorine dioxide (as ClO_2)	MRDLG=0.8[1]	MRDL=0.8[1]	Anemia; infants & young children: nervous system effects	Water additive used to control microbes

Organic Chemicals (SOCs & VOCs) 40 CFR 141.24

Contaminant	MCLG[1] (mg/L)[2]	MCL or TT[1] (mg/L)[2]	Potential Health Effects from Ingestion of Water	Sources of Contaminant in Drinking Water
Acrylamide	zero	TT[9]	Nervous system or blood problems; increased risk of cancer	Added to water during sewage/wastewater treatment
Alachlor	zero	0.002	Eye, liver, kidney or spleen problems; anemia; increased risk of cancer	Runoff from herbicide used on row crops
Atrazine	0.003	0.003	Cardiovascular system or reproductive problems	Runoff from herbicide used on row crops
Benzene	zero	0.005	Anemia; decrease in blood platelets; increased risk of cancer	Discharge from factories; leaching from gas storage tanks and landfills
Benzo(a)pyrene (PAHs)	zero	0.0002	Reproductive difficulties; increased risk of cancer	Leaching from linings of water storage tanks and distribution mains
Carbofuran	0.04	0.04	Problems with blood, nervous system, or reproductive system	Leaching of soil fumigant used on rice and alfalfa
Carbon Tetrachloride	zero	0.005	Liver problems; increased risk of cancer	Discharge from chemical plants and other industrial activities
Chlordane	zero	0.002	Liver or nervous system problems; increased risk of cancer	Residue of banned termiticide
Chlorobenzene	0.1	0.1	Liver or kidney problems	Discharge from chemical and agricultural chemical factories
2,4-D	0.07	0.07	Kidney, liver, or adrenal gland problems	Runoff from herbicide used on row crops
Dalapon	0.2	0.2	Minor kidney changes	Runoff from herbicide used on rights of way
1,2-Dibromo-3-chloropropane (DBCP)	Zero	0.0002	Reproductive difficulties; increased risk of cancer	Runoff/leaching from soil fumigant used on soybeans, cotton, pineapples, and orchards
o-Dichlorobenzene	0.6	0.6	Liver, kidney, or circulatory system problems	Discharge from industrial chemical factories
p-Dichlorobenzene	0.075	0.075	Anemia; liver, kidney or spleen damage; changes in blood	Discharge from industrial chemical factories

1,2-Dichloroethane	zero	0.005	Increased risk of cancer	Discharge from industrial chemical factories
1,1-Dichloroethylene	0.007	0.007	Liver problems	Discharge from industrial chemical factories
cis-1,2-Dichloroethylene	0.07	0.07	Liver problems	Discharge from industrial chemical factories
trans-1,2-Dichloroethylene	0.1	0.1	Liver problems	Discharge from industrial chemical factories
Dichloromethane	zero	0.005	Liver problems; increased risk of cancer	Discharge from drug and chemical factories
1,2-Dichloropropane	zero	0.005	Increased risk of cancer	Discharge from industrial chemical factories
Di(2-ethylhexyl) adipate	0.4	0.4	Weight loss, liver problems, or possible reproductive difficulties	Discharge from chemical factories
Di(2-ethylhexyl) phthalate	zero	0.006	Reproductive difficulties; liver problems; increased risk of cancer	Discharge from rubber and chemical factories
Dinoseb	0.007	0.007	Reproductive difficulties	Runoff from herbicide used on soybeans and vegetables
Dioxin (2,3,7,8-TCDD)	zero	0.00000003	Reproductive difficulties; increased risk of cancer	Emissions from waste incineration and other combustion; discharge from chemical factories
Diquat	0.02	0.02	Cataracts	Runoff from herbicide use
Endothall	0.1	0.1	Stomach and intestinal problems	Runoff from herbicide use
Endrin	0.002	0.002	Liver problems	Residue of banned insecticide
Epichlorohydrin	zero	TT[9]	Increased cancer risk, and over a long period of time, stomach problems	Discharge from industrial chemical factories; an impurity of some water treatment chemicals
Ethylbenzene	0.7	0.7	Liver or kidneys problems	Discharge from petroleum refineries
Ethylene dibromide	zero	0.00005	Problems with liver, stomach, reproductive system, or kidneys; increased risk of cancer	Discharge from petroleum refineries
Glyphosate	0.7	0.7	Kidney problems; reproductive difficulties	Runoff from herbicide use

Heptachlor	zero	0.0004	Liver damage; increased risk of cancer	Residue of banned termiticide
Heptachlor epoxide	zero	0.0002	Liver damage; increased risk of cancer	Breakdown of heptachlor
Hexachlorobenzene	zero	0.001	Liver or kidney problems; reproductive difficulties; increased risk of cancer	Discharge from metal refineries and agricultural chemical factories
Hexachlorocyclopent adiene	0.05	0.05	Kidney or stomach problems	Discharge from chemical factories
Lindane	0.0002	0.0002	Liver or kidney problems	Runoff/leaching from insecticide used on cattle, lumber, gardens
Methoxychlor	0.04	0.04	Reproductive difficulties	Runoff/leaching from insecticide used on fruits, vegetables, alfalfa, livestock
Oxamyl (Vydate)	0.2	0.2	Slight nervous system effects	Runoff/leaching from insecticide used on apples, potatoes, and tomatoes
Polychlorinated biphenyls (PCBs)	zero	0.0005	Skin changes; thymus gland problems; immune deficiencies; reproductive or nervous system difficulties; increased risk of cancer	Runoff from landfills; discharge of waste chemicals
Pentachlorophenol	zero	0.001	Liver or kidney problems; increased cancer risk	Discharge from wood preserving factories
Picloram	0.5	0.5	Liver problems	Herbicide runoff
Simazine	0.004	0.004	Problems with blood	Herbicide runoff
Styrene	0.1	0.1	Liver, kidney, or circulatory system problems	Discharge from rubber and plastic factories; leaching from landfills
Tetrachloroethylene	zero	0.005	Liver problems; increased risk of cancer	Discharge from factories and dry cleaners
Toluene	1	1	Nervous system, kidney, or liver problems	Discharge from petroleum factories
Toxaphene	zero	0.003	Kidney, liver, or thyroid problems; increased risk of cancer	Runoff/leaching from insecticide used on cotton and cattle
2,4,5-TP (Silvex)	0.05	0.05	Liver problems	Residue of banned herbicide
1,2,4-Trichlorobenzene	0.07	0.07	Changes in adrenal glands	Discharge from textile finishing factories
1,1,1-Trichloroethane	0.20	0.2	Liver, nervous system, or circulatory problems	Discharge from metal degreasing sites and other factories
1,1,2-Trichloroethane	0.003	0.005	Liver, kidney, or immune system problems	Discharge from industrial chemical factories
Trichloroethylene	zero	0.005	Liver problems; increased risk of cancer	Discharge from metal degreasing sites and

				other factories
Vinyl chloride	zero	0.002	Increased risk of cancer	Leaching from PVC pipes; discharge from plastic factories
Xylenes (total)	10	10	Nervous system damage	Discharge from petroleum factories; discharge from chemical factories

Radionuclides 40 CFR 141.26

Contaminant	MCLG[1] (mg/L)[2]	MCL or TT[1] (mg/L)[2]	Potential Health Effects from Ingestion of Water	Sources of Contaminant in Drinking Water
Alpha particles	none7 --------- zero	15 picocuries per Liter (pCi/L)	Increased risk of cancer	Erosion of natural deposits of certain minerals that are radioactive and may emit a form of radiation known as alpha radiation
Beta particles and photon emitters	none7 --------- zero	4 millirems per year	Increased risk of cancer	Decay of natural and man-made deposits of certain minerals that are radioactive and may emit forms of radiation known as photons and beta radiation
Radium 226 and Radium 228 (combined)	none7 --------- zero	5 pCi/L	Increased risk of cancer	Erosion of natural deposits
Uranium	zero	30 ug/L as of 12/08/03	Increased risk of cancer, kidney toxicity	Erosion of natural deposits

Microorganisms 40 CFR 141.21

Contaminant	MCLG[1] (mg/L)[2]	MCL or TT[1] (mg/L)[2]	Potential Health Effects from Ingestion of Water	Sources of Contaminant in Drinking Water
Cryptosporidium	zero	TT[3]	Gastrointestinal illness (e.g., diarrhea, vomiting, cramps)	Human and fecal animal waste
Giardia lamblia	zero	TT[3]	Gastrointestinal illness (e.g., diarrhea, vomiting, cramps)	Human and animal fecal waste
Heterotrophic plate count	n/a	TT[3]	HPC has no health effects; it is an analytic method used to measure the variety of bacteria that are common in water. The lower the concentration of bacteria in drinking water, the better maintained the water system is.	HPC measures a range of bacteria that are naturally present in the environment
Legionella	zero	TT[3]	Legionnaire's Disease, a type of pneumonia	Found naturally in water; multiplies in heating systems
Total Coliforms (including fecal	zero	5.0%[4]	Not a health threat in itself; it is used to indicate whether other	Coliforms are naturally present in the

coliform and *E. Coli*)			potentially harmful bacteria may be present5	environment; as well as feces; fecal coliforms and *E. coli* only come from human and animal fecal waste.
Turbidity	n/a	TT[3]	Turbidity is a measure of the cloudiness of water. It is used to indicate water quality and filtration effectiveness (e.g., whether disease-causing organisms are present). Higher turbidity levels are often associated with higher levels of disease-causing microorganisms such as viruses, parasites and some bacteria. These organisms can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.	Soil runoff
Viruses (enteric)	zero	TT[3]	Gastrointestinal illness (e.g., diarrhea, vomiting, cramps)	Human and animal fecal waste

National Secondary Drinking Water Regulations

National Secondary Drinking Water Regulations (NSDWRs or secondary standards) are non-enforceable guidelines regulating contaminants that may cause cosmetic effects (such as skin or tooth discoloration) or aesthetic effects (such as taste, odor, or color) in drinking water. EPA recommends secondary standards to water systems but does not require systems to comply. However, states may choose to adopt them as enforceable standards.

- For more information, read Secondary Drinking Water Regulations: Guidance for Nuisance Chemicals.

Contaminant	Secondary Standard
Aluminum	0.05 to 0.2 mg/L
Chloride	250 mg/L
Color	15 (color units)
Copper	1.0 mg/L
Corrosivity	noncorrosive
Fluoride	2.0 mg/L
Foaming Agents	0.5 mg/L
Iron	0.3 mg/L
Manganese	0.05 mg/L
Odor	3 threshold odor number
pH	6.5-8.5
Silver	0.10 mg/L
Sulfate	250 mg/L
Total Dissolved Solids	500 mg/L
Zinc	5 mg/L

Notes

[1] Definitions:

Maximum Contaminant Level (MCL) - The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to MCLGs as feasible using the best available treatment technology and taking cost into consideration. MCLs are enforceable standards.

Maximum Contaminant Level Goal (MCLG) - 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 and are non-enforceable public health goals.

Maximum Residual Disinfectant Level (MRDL) - The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

Maximum Residual Disinfectant Level Goal (MRDLG) - 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.

Treatment Technique - A required process intended to reduce the level of a contaminant in drinking water.

[2] Units are in milligrams per liter (mg/L) unless otherwise noted. Milligrams per liter are equivalent to parts per million.

[3] EPA's surface water treatment rules require systems using surface water or ground water under the direct influence of surface water to (1) disinfect their water, and (2) filter their water or meet criteria for avoiding filtration so that the following contaminants are controlled at the following levels:

- Cryptosporidium (as of1/1/02 for systems serving >10,000 and 1/14/05 for systems serving <10,000) 99% removal.
- *Giardia lamblia:* 99.9% removal/inactivation
- Viruses: 99.99% removal/inactivation
- *Legionella:* No limit, but EPA believes that if *Giardia* and viruses are removed/inactivated, *Legionella* will also be controlled.
- Turbidity: At no time can turbidity (cloudiness of water) go above 5 nephelolometric turbidity units (NTU); systems that filter must ensure that the turbidity go no higher than 1 NTU (0.5 NTU for

conventional or direct filtration) in at least 95% of the daily samples in any month. As of January 1, 2002, turbidity may never exceed 1 NTU, and must not exceed 0.3 NTU in 95% of daily samples in any month.

- HPC: No more than 500 bacterial colonies per milliliter.
- Long Term 1 Enhanced Surface Water Treatment (Effective Date: January 14, 2005); Surface water systems or (GWUDI) systems serving fewer than 10,000 people must comply with the applicable Long Term 1 Enhanced Surface Water Treatment Rule provisions (e.g. turbidity standards, individual filter monitoring, Cryptosporidium removal requirements, updated watershed control requirements for unfiltered systems).
- Filter Backwash Recycling; The Filter Backwash Recycling Rule requires systems that recycle to return specific recycle flows through all processes of the system's existing conventional or direct filtration system or at an alternate location approved by the state.

[4] more than 5.0% samples total coliform-positive in a month. (For water systems that collect fewer than 40 routine samples per month, no more than one sample can be total coliform-positive per month.) Every sample that has total coliform must be analyzed for either fecal coliforms or *E. coli* if two consecutive TC-positive samples, and one is also positive for *E.coli* fecal coliforms, system has an acute MCL violation.

[5] Fecal coliform and *E. coli* are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Disease-causing microbes (pathogens) in these wastes can cause diarrhea, cramps, nausea, headaches, or other symptoms. These pathogens may pose a special health risk for infants, young children, and people with severely compromised immune systems.

[6] Although there is no collective MCLG for this contaminant group, there are individual MCLGs for some of the individual contaminants:

- Trihalomethanes: bromodichloromethane (zero); bromoform (zero); dibromochloromethane (0.06 mg/L). Chloroform is regulated with this group but has no MCLG.
- Haloacetic acids: dichloroacetic acid (zero); trichloroacetic acid (0.3 mg/L). Monochloroacetic acid, bromoacetic acid, and dibromoacetic acid are regulated with this group but have no MCLGs.

[7] MCLGs were not established before the 1986 Amendments to the Safe Drinking Water Act. Therefore, there is no MCLG for this contaminant.

[8] Lead and copper are regulated by a Treatment Technique that requires systems to control the corrosiveness of their water. If more than 10% of tap water samples exceed the action level, water systems must take additional steps. For copper, the action level is 1.3 mg/L, and for lead is 0.015 mg/L.

[9] Each water system must certify, in writing, to the state (using third-party or manufacturer's certification) that when acrylamide and epichlorohydrin are used in drinking water systems, the combination (or product) of dose and monomer level does not exceed the levels specified, as follows:

- Acrylamide = 0.05% dosed at 1 mg/L (or equivalent)
- Epichlorohydrin = 0.01% dosed at 20 mg/L (or equivalent)

References

The following references can be used to clarify specific SDWA sampling issues.

- EPA - Public Notification for Public Water System; Operator Manual
- EPA - 570/9-89-002 - General Public Notification for Public Water Systems
- Lead and Copper Rule Guidance Manual

  Volume I: Monitoring

  Volume II: Corrosion Control Treatment

Coliform Sampling

Introduction

Description

Sampling of water distribution systems for bacterial contamination is an essential procedure for determination of water quality. It is, therefore, essential that the proper techniques be used to eliminate the possibility of contamination of the sample while it is being collected.

Equipment

When to Sample

It is best to sample at the first of the month. This allows a chance for a second sample, should the first one be lost or damaged in shipping.

Mailing

When mailing samples the following sterilized containers are acceptable:

- Heat resistant polypropylene bottle with plastic screw-on top with 120 mL capacity.
- Borosilicate glass bottle with plastic screw-on top with 120 mL capacity.
- Polypropylene plastic "whirl pack" with 125 mL capacity.
- A bacteriological sample that is mailed must get to the laboratory within 30 hours after collection or the laboratory will not test the sample

Insulation

Samples mailed or shipped by plane must be in insulated and protected from damage.

Special Instructions

Elimination of Chlorine Residual

Sample bottles and "whirl packs" prepared in state or commercial laboratories will have sodium thiosulfate in the bottle to eliminate chlorine in the sample. The sodium thiosulfate will appear as a white powder or crystal, a small white pill, or clear liquid. This material should not be rinsed from the container.

Do Not Reuse Containers

If, for some reason, the sample could not be shipped, dump the sample but do not reuse the bottle.

Procedure

1. Select a sample site

Sample sites should be representative of the system. There are two types of sample locations:

- Those that are identified on the official sample plan.
- "Repeat" sample sites. Note: Typically, following a positive coliform sample, the operator would collect four repeat samples: one "upstream", one "down stream", one at the original positive site, and one at some other point in the system. **In the event of a positive coliform sample, the operator should collect four repeat samples from the system, making a best effort to follow the philosophy of obtaining samples that are representative of the water being delivered to the people in the area adjacent to the positive sample site.**

2. Select sample point

Routine sample points have been identified as part of the development of this sampling plan. If further sampling points are

required, the operator should choose sample points that are approximately 30 inches above the ground, or inside faucets that have none of the characteristics listed below.

Sample points to be avoided are:

- Drinking fountains
- Lawn faucets
- Hoses
- Kitchen/swivel faucets
- Leaky faucets

Aerators

If a faucet with an aerator must be used, the aerator should be removed.

Chlorine Residual

Most laboratory sample sheets ask you to record the level of free chlorine residual. It also makes good sense to check residual before you collect bac-T samples.

3. Sanitized faucet

Spray the inside and outside of the faucet with a mild chlorine solution. Do not flame the faucet.

4. Allow water to run 5 minutes

Or wait for a sufficient time to allow water from the distribution system to enter the sampling point.

5. Adjust the flow so that there will be no splashing

Splashing could cause some of the sodium thiosulfate to be displaced and could cause contamination to drip into the container.

6. Open container

Unthread the lid or open the whirl pack. Keep the lid or stopper pointed down. Do not touch the inside of the container. Do not blow into the pack while open.

7. Fill the container

Fill to the "fill line". Some head space (air) should be left in sample bottles (2 inches in the Whirl pack). This improves mixing of the sample at the laboratory. A minimum of 100 mL is necessary for each sample. Since the container holds 120 mL, leaving an air space will still provide sufficient actual sample volume.

8. Seal container

Replace lid on bottles, or pull the wires of Whirl pack to flatten the top of the bag and whirl the bag over three times. Fold the wires over the bag.

9. Turn water Off

Replace aerator.

10. Pack for shipping

The container should be insulated to maintain the temperature of the sample. If shipping is delayed, refrigerate the sample. If the sample cannot be shipped on the same day it was collected, discard and re-sample after coordinating with lab.

11. Repeat sample procedure

In the event of a positive Coliform sample, the operator will need to collect 4 repeat samples. One at the original site, plus three others chosen from the SDWA sample site list.

Record Sample Data

Standard Sampling

The containers used by commercial and state laboratories are supplied with a standard sample data form. Completely fill out all portions of the form.

Essential Data

When a form is not available, as in an O&M sample, record the following information:

- Public water system number
- Sources of water, ground, surface and name of stream or lake, if surface.
- Time collected
- Date sample collected
- Sample location
- Name of person collecting sample
- Was the water chlorinated?
- If the sample is mailed, time and date of mailing. If shipped by plane, date and flight number.
- Include system ID number and name.

Copy of Data

When shipping a sample to a state or commercial laboratory, keep and file a copy of the data form that was sent with the sample.

Positive Coliform Response

When

When a positive Coliform bacteriological sample is received, Repeat Samples must be collected and tested in order to determine if contamination is actually present.

Procedure

Quantity

Four (4) Repeat Samples must be collected.

When

These Repeat Samples must be collected within 24 hours of the time the notification of the positive sample was received by the utility.

Where to Sample

- One sample must be collected from the same tap used for the positive sample
- One sample within five (5) customer connections upstream of the original sample location
- One sample within five (5) customer connections downstream of the original sample location
- One sample from another location in the system

Same Day Collection

All Repeat Samples must be collected on the same day.

When There is Only One Sample Point

If only one sampling point exists in the system then you may:

- Collect one Repeat Sample a day for four (4) consecutive days, or
- Collect one 400 mL sample on one day from the tap

Following Month

During the month following a positive Coliform sample five (5) routine samples must be collected from the system.

Removal From The Record

There are two ways of invalidating a Coliform positive sample from a routine sample.

A Coliform positive sample may be removed from the utility records,(called invalidated) if all repeat samples are Coliform negative and the water system can adequately explain why the positive result on the routine sample is not representative of the system's water.

A routine Coliform positive sample and a repeat positive sample may be removed from the utility records if all other repeat samples are Coliform negative. In order to utilize either procedure you must work closely with the EPA drinking water program representative.

Evaluating Coliform Testing Results

Violation

The water system is in violation of the drinking water regulations if any one of the following occurs:

Monitoring Requirements

If the system fails to submit the required number of samples on any one month or if required repeat samples are not collected.

Total Coliform

A violation exists if the system receives two (2) Coliform positive samples.

Acute Health Risk

Fecal Coliform

A test that indicates the presence of contamination by a warm blooded animal including human contamination is the test for a specific Coliform bacteria called Fecal Coliform or E. coli.

If a routine or repeat sample is total Coliform positive, the laboratory will analyze the total Coliform positive culture medium to determine if fecal Coliform or E. coli are present.

When a system receives two positive Coliform samples with one being E. coli positive the system is said to present an acute risk to human health.

Public Notification

Non-Acute Violation

When a system is in violation of a Coliform rule the public must be notified. This notification must take place within 14 days of the notification from the state or laboratory. This would occur if a routine sample was positive and the repeat samples were also positive.

Acute Violation

When an acute violation is received, public notification must take place within 72 hours of the receipt of the notification of violation by the state or laboratory.

Contingency Disinfection Plan

Condition

When the disinfection system fails, but inadequately disinfected water can be prevented from entering the distribution system, follow the Level 1 Response. However, if inadequately disinfected water cannot be prevented from entering the distribution system, follow the Level 2 Response.

Level 1 Response

Should any water system operated by the utility receive a total-Coliform positive sample result, the operator will follow the following procedure.

- Shutdown failing disinfection equipment.
- Substitute backup chlorinator.
- If backup not available or operable, manually disinfect clear wells and reservoirs.
- Utilize alternate safe water sources, if available.
- Implement water conservation measures.
- Increase monitoring of bacteriological quality of water sources as well as within distribution system.
- Increase monitoring of chlorine residuals.

Level 2 Response

- Immediately notify EPA.
- Follow all Level 1 Response steps.
- Flush distribution system at known point(s) of entry of inadequately disinfected water.
- Invoke Emergency Notification Plan, if necessary.
- Implement the Association's Emergency Response Plan

Lead & Copper Sampling Procedure

Background

Action Levels

EPA has set action levels for lead and copper in drinking water. They are 0.015 mg/L for lead and 1.3 mg/L for copper. More than 10% of the samples exceed these levels then action must be taken.

Sampling

Frequency

Every three years, following EPA notification, the Operator shall collect lead and copper samples from previously selected sites at each system(see sample plan site list).

Sample Containers

One month prior to the sampling, the operator will notify the laboratory that the water system wishes to receive the proper sampling containers for the lead and copper sampling.

Lab Response

The laboratory will mail sample containers and sampling directions to the utility.

Sample Locations

The lead and copper sample locations are listed in the sample plan.

Planning

48 hours prior to the sample collection date, the Utility Manager will meet with the operators to plan the lead and copper sampling. A copy of the written procedure is found in the appendix of this plan.

Container Collection

The containers will be promptly mailed to the lab.

Reporting the Results

EPA Forms

Report the results of the lead and copper testing using EPA form 141-A. A copy of this form is provided as a pdf file in this plan. A listing of the sample location, sample results, and a copy of the written directions form will be sent along with form 141-A.

141-A

SAMPLE SITE IDENTIFICATION AND CERTIFICATION

System's Name: _____

Type: ☐ CWS ☐ NTNCWS

Address: _____

Size:
☐ >100,000
☐ 10,001 to 100,000
☐ 3,3001 to 10,000
☐ 501 to 3,300
☐ 101 to 500
☐ ≤ 100

Telephone number: _____
System ID#: _____
Contact Person: _____

CERTIFICATION OF SAMPLING SITES

LEAD SOLDER SITES

# of single-family structures with copper pipes with lead solder installed after 1982 or lead pipes and/or lead service lines (Tier 1) _____

# of multi-family structures with copper pipes with lead solder installed after 1982 or lead pipes and/or lead service lines (Tier1) _____

# of buildings containing copper pipes with lead solder installed after 1982 or lead pipes and/or lead service lines (Tier2) _____

# of sites that contain copper pipes with lead solder installed after 1982 or lead pipes and/or lead service lines (Tier 3) _____

TOTAL _____

The following sources have been explored to determine the number of structures which have interior lead pipe or copper pipe with lead solder

_____ Plumbing and/or building codes
_____ Plumbing and/or building permits
_____ Contracts within the building department, municipal clerk's office, or state regulatory agency for historical documentation of service are development
_____ Water Quality Data

Other Resources Which PWS May Utilize

_____ Interviews with building inspectors
_____ Survey of service area plumbers about when and where lead solder was used from 1982 to present
_____ Survey residents in sections of the service area where lead pipe and/or copper pipe with lead solder is suspected to exist
_____ Interviews with local contractors and developers

Explanation of Tier 2 and Tier 3 sites (attach additional pages if necessary

_____

_____

SAMPLE SITE IDENTIFICATION AND CERTIFICATION

CERTIFICATION OF SAMPLING SITES

LEAD SERVICE LINE SITES

# of samples required to be drawn from lead service line sites _____

# of samples actually drawn from lead service line sites _____

Difference (explain difference if other than zero) _____

The following sources have been explored to determine the number of lead service lines in the distribution system.

_____ Distribution system maps and record drawings

_____ Information collected from the presence of lead and copper as required under §141.42 of the Code of Federal Regulations

_____ Capital improvement plans and/or master plans for distribution system development

_____ Current and historical standard operating procedures and/or operation and maintenance (O&M) manuals for the type of materials used for service connections

_____ Utility records including meter installation records, customer complaint investigations and all historical documentation which indicate and/or confirm the location of lead service connections

_____ Existing water quality data indications of 'troubled areas'

Other Sources Which PWS Utilized

_____ Interviews with senior personnel

_____ Conduct service line sampling where lead service lines are suspected to exist but their presence is not confirmed

_____ Review of permit files

_____ Community survey

_____ Review of USGA maps and records

_____ Interviews with pipe suppliers, contractors, and/or developers

Explanation of fewer than 50% LSL sites identified (attach additional pages if necessary)

_____

CERTIFICATION OF COLLECTION METHODS

I certify that:

Each first drawn tap sample for lead and copper is one liter in volume and has stood motionless in the plumbing system of each sampling site for at least six hours.

Each first drawn tap sample collected from a single-family residence has been collected from the cold water kitchen tap or bathroom sink tap.

Each first drawn tap sample collected from a non-residential building has been collected at an interior tap from which water is typically drawn for consumption.

Each first drawn tap sample collected during an annual or triennial monitoring period has been collected in the months of June, July, August or September.

Each resident who volunteered to collect tap water samples from his or her home has been properly instructed by (insert water system's name)_____ in the proper methods for collecting lead and copper samples. I do not challenge the accuracy of those sampling results. Enclosed is a copy of the material distributed to residents explaining the proper collection methods, and a list of the residents who performed the sampling.

SAMPLE SITE IDENTIFICATION AND CERTIFICATION

CERTIFICATION OF SAMPLING SITES

THE RESULTS OF LEAD AND COPPER TAP WATER SAMPLE MUST BE ATTACHED TO THIS DOCUMENT

# of samples required _____ # of samples submitted _____ 90th Percentile Pb _____

90th Percentile Cu _____

THE RESULTS OF WATER QUALITY PARAMETER (WQP) SAMPLES MUST BE ATTACHED TO THIS DOCUMENT

# of samples required _____ # of tap samples submitted _____

# of entry-point samples required _____ # of entry-point samples submitted _____

CHANGE OF SAMPLING SITE

Original site address:

_____

_____

New site address:

_____

_____

Distance between sites (approximately):

_____

Targeting Criteria: NEW: OLD:

Reason for the change (attach additional pages if necessary)

_____

_____

SIGNATURE

_____

_____

NAME TITLE DATE

Worksheet #1

MATERIALS SURVEY INVESTIGATION RESULTS

PWS ID NUMBER

POPULATION SERVED BY PWS

Type of Structure	Location	Contact Person		LSL	Home Plumbing Material	Verified	Volun-teered	Selected		Received Training Material
		Name	Phone					Routine	Optional	