Appendix E

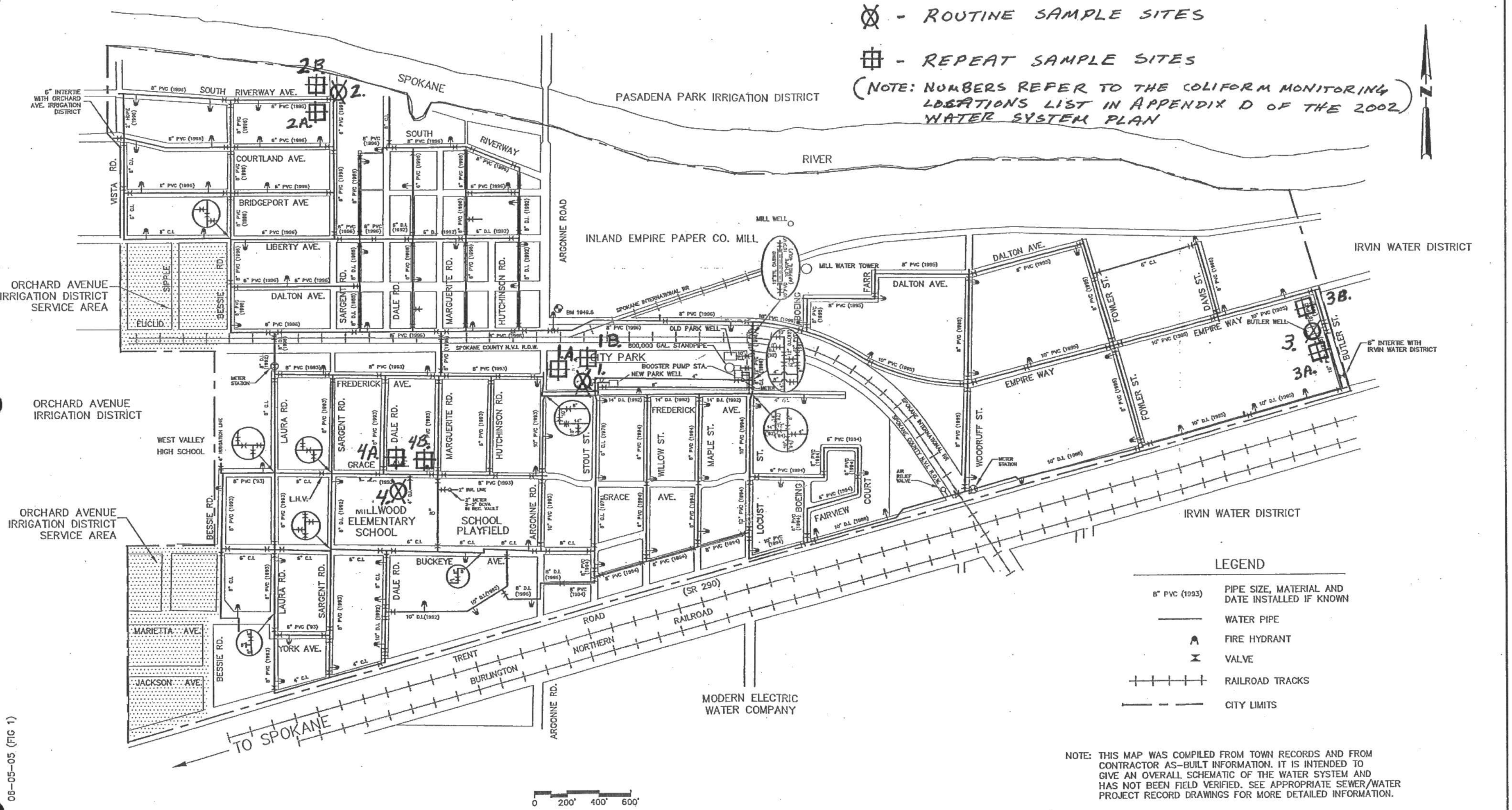
Coliform Monitoring Plan
Cross Connection Control Survey
Water Quality Testing Results
Abbreviated O&M Manual

COLIFORM MONITORING MAP

⊗ - ROUTINE SAMPLE SITES

⊞ - REPEAT SAMPLE SITES

(NOTE: NUMBERS REFER TO THE COLIFORM MONITORING LOCATIONS LIST IN APPENDIX D OF THE 2002 WATER SYSTEM PLAN)



NOTE: THIS MAP WAS COMPILED FROM TOWN RECORDS AND FROM CONTRACTOR AS-BUILT INFORMATION. IT IS INTENDED TO GIVE AN OVERALL SCHEMATIC OF THE WATER SYSTEM AND HAS NOT BEEN FIELD VERIFIED. SEE APPROPRIATE SEWER/WATER PROJECT RECORD DRAWINGS FOR MORE DETAILED INFORMATION.

06-05-05 (FIG 1)

NO.	DATE	BY	CKD.	APP.	REVISIONS
1	9/9/94	JSM			UPDATED FROM 1994 AREA 4 SWR/WTR PROJECT
2	10/21/96	JSM			UPDATED FROM 1995/1996 AREA 1,2,5 SWR/WTR PROJECTS
3	5/22/02	RDC			UPDATED FOR WATER SYSTEM PLAN

SCALE: AS-SHOWN
DESIGNED:
DRAWN: JSM/RDC
CHECKED:
APPROVAL:
PROJ. NO.: 06-05-05
DATE: 1/94

VARELA AND ASSOCIATES, INC.
ENGINEERING AND MANAGEMENT

TOWN OF MILLWOOD, WASHINGTON

EXISTING WATER SYSTEM

FIGURE 1

VARELA & ASSOC.
APR 2 2 2002
RECEIVED

Town of Millwood
Coliform Monitoring Plan

Millwood is required to collect 2 samples per month.
Sample locations are located throughout the system. Most sampling stations are located on Town property, i.e. lift stations, pump sites and Town buildings. Samples are collected from 4 geographical areas for better representation of the system, alternating sample sites monthly.
Attatched sheet lists the addresses of sample sites and repeat sampling addresses.
These samples are usually drawn the first Monday of the month, refridgerated, and then picked up the following day by Anatek Lab personel for testing . The results are available the following day and are reported to the Town and the Department of Health.

Coliform Monitoring Locations

Sample Site #	Address	Location
1	9103 E. Frederick (Town Hall)	Deep Sink
2	Sargent & S.Riverway (L.S.#3)	Yard Hydrant
3	3200 N. Butler (well site)	Yard Hydrant
4	8815 E. Grace (Millwood school)	Office Sink

Repeat Sampling Locations

1 A.	3106 N. Argonne (McVay Bros.)	1B.	9105 E. Frederick (Maint. Shop)
2 A.	3609 N. Sargent	2B.	8611 E. S.Riverway
3 A.	3123 N. Butler	3B.	10504 E. Empire
4 A.	8803 E. Grace	4B.	2903 N. Marguerite

			Type of Sample Collected				Fail	Fail	Pass			
Date	Address of Collection Site	Specific Location of Sample	Routine	Repeat	Raw	Constr.	Total	E-coli	Absent	Remarks		
1/8/01	9103 E. Frederick	Deep Sink	X						X			
1/8/01	N.3219 Argonne	Deep Sink Kitchen	X						X			
2/6/01	N.3219 Argonne	Deep Sink Kitchen	X						X			
2/6/01	9103 E. Frederick	Deep Sink	X						X			
3/5/01	N.3219 Argonne	Deep Sink Kitchen	X						X			
3/5/01	9103 E. Frederick	Deep Sink	X						X			
4/2/01	9103 E. Frederick	Deep Sink	X						X			
4/2/01	N.3219 Argonne	Deep Sink Kitchen	X						X			
5/1/01	9103 E. Frederick	Deep Sink	X						X			
5/1/01	N.3219 Argonne	Deep Sink Kitchen	X						X			
6/4/01	9103 E. Frederick	Deep Sink	X						X			
6/4/01	3106 N. Argonne	Deep Sink	X				X			Bad Sample		
6/7/01	3106 N. Argonne	Deep Sink		X					X	Same location		
6/7/01	9105 E. Frederick	Deep Sink - Shop		X					X	Down Stream		
6/7/01	9103 E. Frederick	Deep Sink		X			X	X		Up Stream	E-coli detected searching for source of contamination.	
6/8/01	Frederick & Locust	Old Park Well			X				X	Sample #1		
6/8/01	Frederick & Locust	Old Park Well			X				X	Sample #2		
6/8/01	Frederick & Locust	Reservoir - Stand Pipe	Other				X	X		Sample # 1 - Source of Contamination Located		
6/8/01	Frederick & Locust	Reservoir - Stand Pipe	Other				X			Sample # 2 - Source of Contamination Located		
6/8/01	9103 E. Frederick	Deep Sink		X					X			
6/11/01	E. 10314 Empire	Hose bib	Other						X	Random Sampleing		
6/11/01	N. 3125 Butler	Well Tap			X				X			
6/11/01	N.3219 Argonne	Deep Sink Kitchen		X					X			
6/11/01	Frederick & Locust	Old Park Well			X				X			
6/11/01	E. 8818 Grace	Elem. School - office Tap		X					X			
6/11/01	E.8409 Liberty	Kitchen Tap		X					X			
6/11/01	E. 9417 Trent	Deep Sink		X					X			
6/12/01	E. 9417 Trent	Deep Sink		X					X			
6/12/01	E. 8818 Grace	Elem. School - office Tap		X					X			
6/12/01	N.3219 Argonne	Deep Sink Kitchen		X					X			
6/12/01	N. 2814 Bessie	Kitchen Tap		X					X			
6/12/01	N. 3305 Sargent	Kitchen Tap		X					X			
6/21/01	Frederick & Locust	Water Tower		X					X	Checking results before putting back in service.		
6/21/01	Frederick & Locust	Water Tower		X					X	Tower was disinfected on 6/13/01 after E-coli detected on 6/8/01.		
7/10/01	9105 E. Frederick	Deep Sink - Shop	X						X	5 Samples required this month.		
7/10/01	N.3219 Argonne	Deep Sink Kitchen	X						X			
7/16/01	N. 3125 Butler	Yard Hydrant - Butler well	X						X			
7/16/01	Sargent & S. Riverway	Yard Hydrant - L.S.# 3	X						X			
7/16/01	E.8900 S. Riverway	Yard Hydrant - L.S.# 1	X						X			
8/9/01	Sargent & S. Riverway	Yard Hydrant - L.S.# 3	X						X			
8/9/01	N. 3125 Butler	Yard Hydrant - Butler well	X						X			
9/4/01	9103 E. Frederick	Deep Sink	X						X	Back to 2 samples.		
9/4/01	N.3219 Argonne	Deep Sink Kitchen	X						X			

9/14/01	E.8707 Grace	Kitchen Tap	Other						X	P.R.- Customer concerned about quality and clarity. Red tint.Possible iron in water.			
10/2/01	9105 E. Frederick	Deep Sink - Shop	X						X				
10/15/01	N.3219 Argonne	Deep Sink Kitchen	X				X			No E-coli present probable cause bad sample technique.			
10/17/01	3301 N: Argonne	Kitchen Tap		X		-			X				
10/17/01	N. 3209 Argonne	Bath Tap		X					X				
10/17/01	N.3219 Argonne	Deep Sink Kitchen		X					X				
10/17/01	9105 E. Frederick	Deep Sink - Shop	X				X			No E-coli present probable cause bad sample technique.			
10/22/01	9105 E. Frederick	Deep Sink - Shop	Other						X	Investigative sample.			
10/22/01	Sargent & S. Riverway	Yard Hydrant - L.S.# 3	Other						X	Investigative sample.			
11/15/01	9103 E. Frederick	Deep Sink	X						X	5 Samples required this month.			
11/15/01	Sargent & S. Riverway	Yard Hydrant - L.S.# 3	X						X				
11/15/01	E. 10419 Trent	Lunch room tap	X						X				
11/15/01	E. 9417 Trent	Deep Sink	X						X				
11/15/01	E.8900 S. Riverway	Yard Hydrant - L.S.# 1	X						X				
12/6/01	Sargent & S. Riverway	Yard Hydrant - L.S.# 3	X						X	Back to 2 samples.			
12/6/01	9103 E. Frederick	Deep Sink	X						X				

TOWN OF MILLWOOD

BACK FLOW DEVICES
12/2001

ADDRESS	MAKE & MODEL	PROTECTION	TESTED
	BOOK # 1		
9011 E.South riverway	1" toro pvb	sprinkler system	n/a
3307 N. Hutchinson	pvb	sprinkler system	n/a
Pres. church	1 1/2" avb champion	sprinkler system	n/a
	3/4" rpa	boiler	n/a
8804 E. Dalton	pvb febco 7651	sprinkler system	n/a
8921 E.Bridgeport	avb	sprinkler system	n/a
8513 E.Euclid	pvb	sprinkler system	n/a
8520 E. Bridgeport	pvb	sprinkler system	n/a
8510 E. Courtland	pvb	sprinkler system	n/a
8505 E. Courtland	pvb	sprinkler system	n/a
8406 E. S. Riverway	dcva	sprinkler system	n/a
8421 E. Courtland	avb	sprinkler system	n/a
8320 E. Courtland	dcva 3/4" ser.# 9133	sprinkler system	n/a
8425 E. Bridgeport	dcva	sprinkler system	n/a
8311 E. Liberty	avb	sprinkler system	n/a
	BOOK # 2		
3018 N. Laura	avb	sprinkler system	n/a
3014 N. Laura	avb	sprinkler system	n/a
3004 N. Laura	avb	sprinkler system	n/a
2918 N. Laura	dcva	sprinkler system	n/a
W.V. Kindergarten			
8818 E. Grace	rpa 3/4" watts 909	boiler	~~4-30-93~~ 2001
W.V. ball field	dcva febco 805y 2"	sprinkler system	~~5-19-93~~ 2001
same vault	dcva febco 805y 2"	sprinkler system	~~5-19-93~~ 2001
Albertsons			

8851 E. Trent	ddcva 6" watts 709	fire line	5-17-93
same	dcva watts 007 mi 3/4"	fire line by-pass	5-17-93
same	dcva watts Qt 2"	sprinkler Irrigation	5-17-93

BOOK # 3

9623 E. Fairview Ct.	dcva	sprinkler system	n/a
9317 E. Grace	pvb	sprinkler system	n/a
2904 N. Maple	dcva	sprinkler system	n/a
2921 N. Willow	dcva febco 805y 1"	sprinkler system	n/a
9125 E. Trent	rpa hersey frp 2 3/4"	car wash	~~11-2-92~~ 2001
~~Sea First Bank~~ Bank of America			
2716 N. Argonne	pvb 2"	sprinkler system	93
	rpa 3/4"	boiler	93
Millwood Park			
9103 E. Frederick	dcva febco 805y	irrigation	n/a
same	dcva febco 805y vault	irrigation	n/a

BOOK # 4

WHY BE CONCERNED:

Most water systems in the United States, Canada, and Europe have good sources of water or sophisticated filter facilities to convert unpure water to meet their needs. Many millions of dollars are spent to make the water potable before it enters the distribution systems so most water purveyors think that their supply is not in jeopardy from this point on. Studies have proven this to be wrong. Some water systems become contaminated in the distribution system through unprotected cross connections.

Cross connections are installed each day in the United States, mostly by plumbers or professional water people who are unaware of the problem they can create. Death, illness, contaminated food products, industrial and chemical products rendered useless are some of the hazards of such connections. As a result, many hours and dollars are lost due to ignorance of a common problem called cross connections.

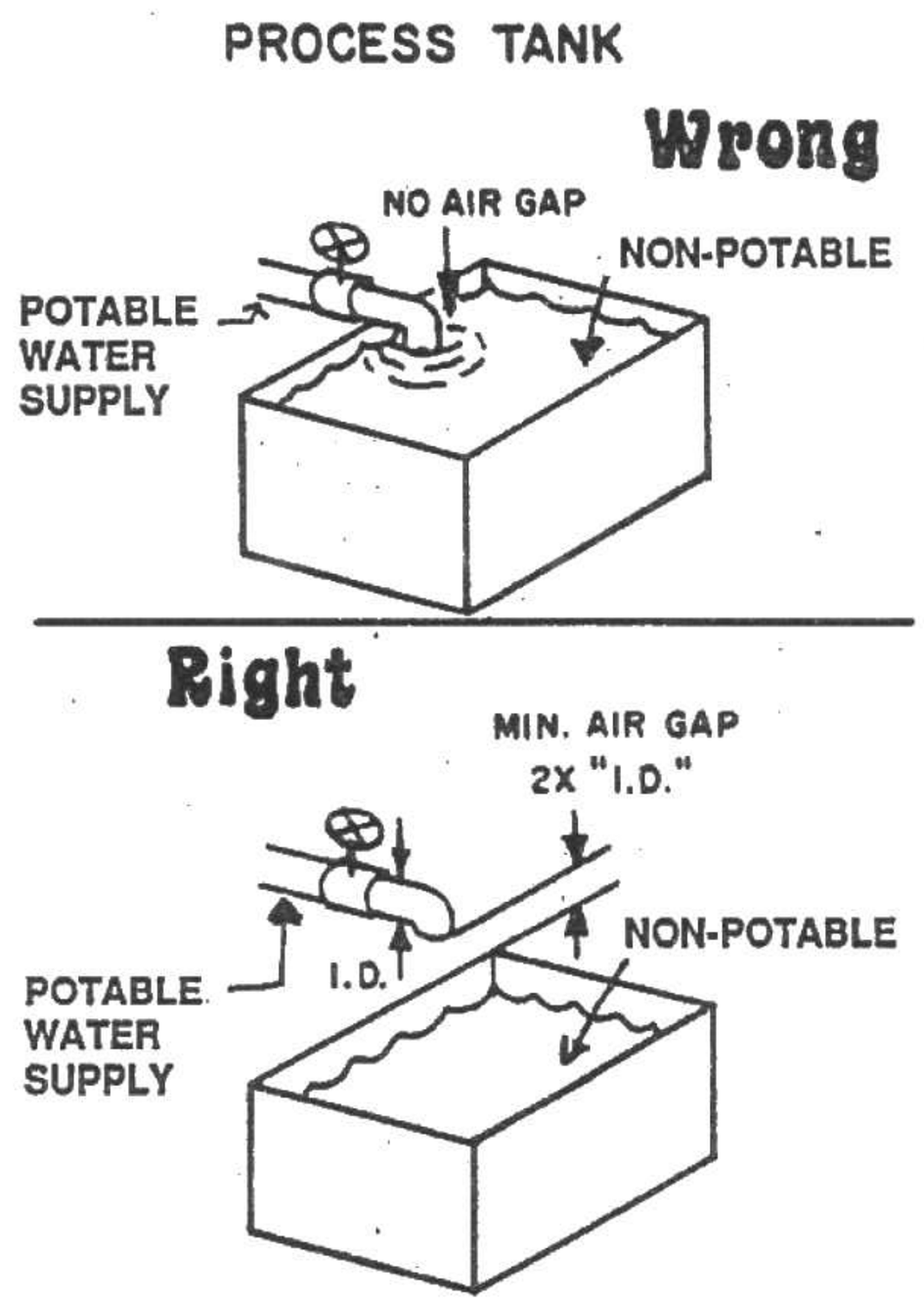
WHAT IS A CROSS CONNECTION?

A cross connection is a point in a plumbing system where the potable water supply is connected directly or can be connected directly to a non-potable source. Wherever an unprotected cross connection exists, backflow may occur due to either "backsiphonage" or "backpressure." Backsiphonage is caused by a negative or reduced pressure in the supply line to a facility or plumbing fixture. The principal causes of backsiphonage are:

1. High velocities in pipe lines.
2. Line repair or break which is lower than a service point.
3. Lowered main pressure due to high water withdrawal rate sucah as firefighting or water main flushing.
4. Reduced supply main pressure on suction side of a booster pump.

Backpressure may cause backflow to occur whenever a potable water system is connected to another system operating at a higher pressure. The principal causes of backpressure are:

1. Booster pumps designed without backflow prevention devices.
2. Potable water connections to boilers & other pressure systems.
3. Interconnection with another system operated at a higher pressure.
4. Water piping extending 30' above finished grade.



WHERE ARE CROSS CONNECTIONS FOUND?

Whenever a plumbing fixture is connected to the potable water supply, a potential cross connection exists. Fortunately many of the plumbing fixtures have built-in backflow protection. Listed below are cross connections found in water systems

1. Wash basins & service sinks.
2. Hose bibbs.
3. Irrigation sprinkler systems.
4. Auxiliary water supplies.
5. Laboratory & aspirator equipment.
6. Processing tanks.
7. Boilers.
8. Water recirculating systems.
9. Swimming pools.
10. Solar heat systems.
11. Fire sprinkler systems.

As you can see, every water system has cross connections. The water purveyor should inquire as to State Regulations requiring the water system to have an active cross connnection program. These programs may include the elimination or protection of all cross connections by approved methods or approved backflow preventers. The different types of backflow preventers used are the air gap, double check valve assembly, reduced pressure backflow preventer and atmospheric and pressure type vacuum breakers. The type of backflow preventer will be dependent upon the degree of hazard of the cross connection involved. Some states have identified and require mandatory backflow protection on certain facilities where health-hazard-type cross connections are normally found. The following is a list of some of those facilities:

1. Hospitals, mortuaries, clinics.
2. Laboratories.
3. Food & beverage processing.
4. Metal plating & chemical plants.
5. Car washes.
6. Petroleum processing & storage plants.
7. Radioactive material processing plants & nuclear reactors.
8. Piers & docks.
9. Sewage treatment plants.

WHAT TO DO?

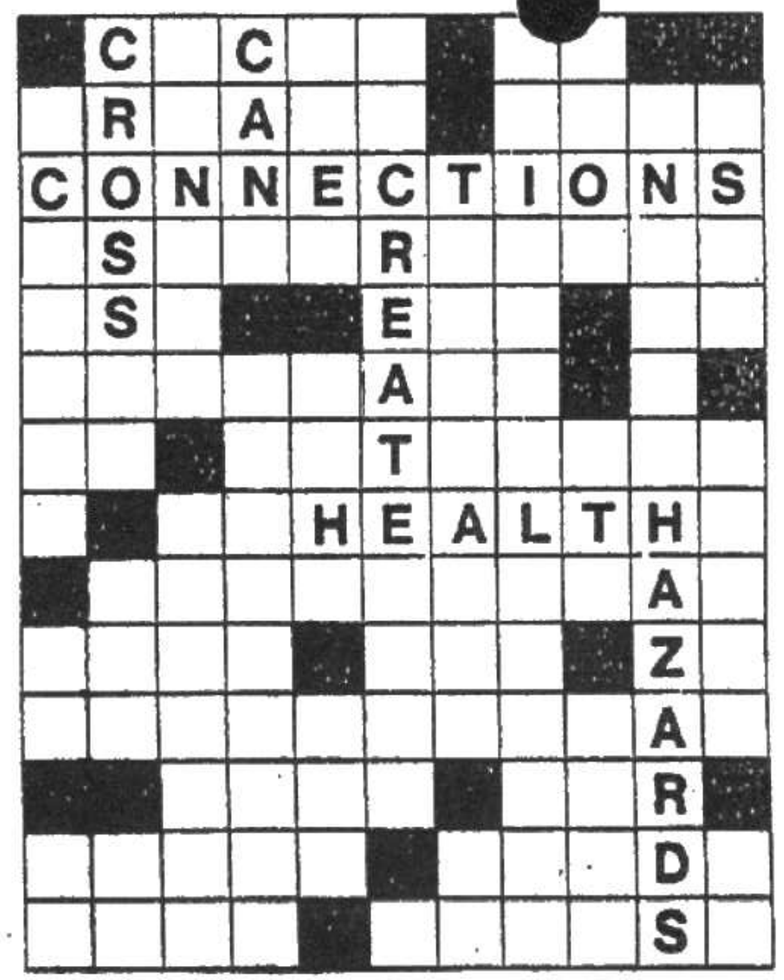
It is impossible for us to cover all of the information pertaining to cross connections in this pamphlet, but we hope the preceding information will inspire you to further educate yourself and fellow employees as to the hazards of unprotected cross connections. Cross Connection Control Certification Schools are periodically offered throughout the Northwest. Information on these schools and further information on cross connection control can be obtained from the PNWS AWWA Cross Connection Control Committee:

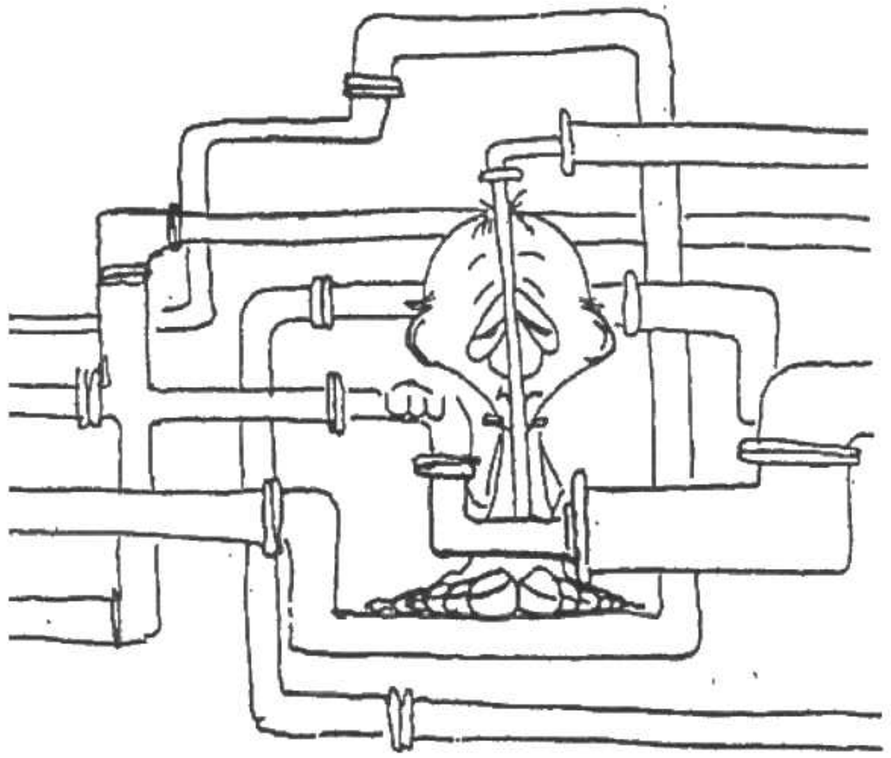
WESTERN WASHINGTON—
RAY PETTIE
TACOMA WATER DEPARTMENT
P.O. Box 11007
Tacoma, WA 98411
(206) 593-8215

EASTERN WASHINGTON & IDAHO—
DENNY LOPP
MODERN ELECTRIC WATER CO.
P.O. Box 14008
Spokane, WA 99214
(509) 928-4540

OREGON—
JOHN HUFFMAN
OREGON DIVISION OF HEALTH
1400 SW Fifth Avenue
Portland, OR 97201
(503) 229-6309

BRITISH COLUMBIA—
GEORGE BRATTON, P.E.
P.O. Box 54
Coupeville, WA 98239
(604) 873-7350





American Water Works Association
PACIFIC NORTHWEST SECTION
Oregon • Washington • Idaho

2011

Date	Address of Collection Site	Specific Location of Sample	Type of Sample Collected Routine	Repeat	Raw	Constr.	Other	Fail Total	Fail E-coli	Pass Absent	Remarks	
1/13/2011	9103 E. Frederick	Deep Sink	X							X	Chlorinating System at O.P. Well site	
1/13/2011	Butler Well Site	Hose bib inside building	X							X	Chlorinating System at O.P. Well site	
1/24/2011	9103 E. Frederick	Deep Sink	X							X	Chlorinating System at O.P. Well site	
1/24/2011	Butler Well Site	Hose bib inside building	X							X	Chlorinating System at O.P. Well site	
1/24/2011	S. Riverway L.S. #3	Hose bib	X							X	Chlorinating System at O.P. Well site	
2/9/2011	9103 E. Frederick	Deep Sink	X							X	Chlorinating System at O.P. Well site	
2/22/2011	S. Riverway L.S. #3	hose bib	X							X	Chlorinating System at O.P. Well site	
2/22/2011	8915 S. Riverway	Kitch Tap					X			X	Chlorinating System at O.P. Well site	Sample requested by resident
3/10/2011	Butler Well Site						X			X	Tested prior to start up	
3/23/2011	S. Riverway L.S. #3	hose bib	X							X		
3/23/2011	9103 E. Frederick	Deep Sink	X							X		
4/11/2011	9103 E. Frederick	Deep Sink	X							X		
4/11/2011	Park	Restroom hosebib					X			X	Test prior to opening	
4/18/2011	S. Riverway L.S. #3	hose bib	X							X		
5/11/2011	OP Well						X			X	Tested prior to start up	
5/11/2011	9103 E. Frederick	Deep Sink	X							X		
5/26/2011	S. Riverway L.S. #3	hose bib	X							X		
6/8/2011	9103 E. Frederick	Deep Sink	X							X		
6/20/2011	S. Riverway L.S. #3	hose bib	X							X		
7/7/2011	9103 E. Frederick	Deep Sink	X							X		
7/7/2011	New Park Well	Tap			X		X			X	Test prior to start up	
7/19/2011	S. Riverway L.S. #3	hose bib	X							X		
8/11/2011	9103 E. Frederick	Deep Sink	X							X		
8/22/2011	S. Riverway L.S. #3	hose bib	X							X		
9/7/2011	9103 E. Frederick	Deep Sink	X							X		
9/22/2011	S. Riverway L.S. #3	hose bib	X							X		
9/22/2011	OP Well				X		X			X	Tested prior to start up	
10/10/2011	9103 E. Frederick	Deep Sink	X							X		
10/18/2011	S. Riverway L.S. #3	hose bib	X							X		
11/18/2011	S. Riverway L.S. #3	hose bib	X							X		
11/18/2011	9103 E. Frederick	Deep Sink	X					X			Coliform present no E-coli	
11/21/2011	8818 E Grace	Office sink		X				X			Coliform present no E-coli	
11/21/2011	8910 E Dalton	Office sink		X				X			Coliform present no E-coli	
11/21/2011	9417 E Trent	Bath Sink		X						X		
11/21/2011	9103 E Frederick	Deep Sink		X						X		
11/22/2011	Butler Well Site	Hose bib inside building	X	X						X	Source tested OK	
12/6/2011	S. Riverway L.S. #3	hose bib	X							X		
12/6/2011	9103 E. Frederick	Deep Sink	X							X		

Nitrates
Sept - 2011

Anatek Labs, Inc.

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Inorganic Chemicals (IOC's) Analysis Report For Nitrates

System ID#:	54850Q	System Name:	CITY OF MILLWOOD	
Lab/Sample Number:	112 63145	Collect Date:	9/26/2011	DOH Source #: S01
Multiple Source Nos:		Sample Type:	B	Sample Purpose: C
Date Received:	9/26/2011	Date Reported:	9/29/2011	Supervisor: KAS
Date Analyzed:	9/27/2011			
County:	SPOKANE	Sample Location: S01		
Report To:	Address:	9103 E FREDERICK		
	City, State, ZIP	SPOKANE, WA 99206		
	Phone Number:	(509) 924-0960		

EPA Regulated Chemical

DOH #	Analyte	Result	Units	SRL	Trigger	MCL	Method	Analyst
20	Nitrate - N	0.781	mg/L	2	5	10	EPA 300.0	JLU

NOTES:

SRL (State Reporting Level): Indicates the minimum reporting level required by WA-DOH
Trigger Level: DOH drinking water response level. Systems exceeding this level are required to take additional samples. Contact the DOH immediately.
MCL (Maximum Contaminant Level): SDWA maximum contaminant level. If exceeded, contact the DOH immediately.
NDN(ot Detected): Indicates that the analysis was performed but the contaminant concentration is less than the SRL.

This report shall not be reproduced except in full, without the written approval of the laboratory.
The results reported relate only to the samples indicated.
Soil/solid results are reported on a dry-weight basis unless otherwise noted.

Lab Supervisor: Kathleen A. Sattler **Date:** 9/29/2011

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Inorganic Chemicals (IOC's) Analysis Report For Nitrates

System ID#:	54850Q	System Name:	CITY OF MILLWOOD	
Lab/Sample Number:	112 63146	Collect Date:	9/26/2011	DOH Source #: S02
Multiple Source Nos:		Sample Type:	B	Sample Purpose: C
Date Received:	9/26/2011	Date Reported:	9/29/2011	Supervisor: KAS
Date Analyzed:	9/27/2011			
County:	SPOKANE	Sample Location: S02		
Report To:	Address:	9103 E FREDERICK		
	City, State, ZIP	SPOKANE, WA 99206		
	Phone Number:	(509) 924-0960		

EPA Regulated Chemical

DOH #	Analyte	Result	Units	SRL	Trigger	MCL	Method	Analyst
20	Nitrate - N	2.06	mg/L	2	5	10	EPA 300.0	JLU

NOTES:

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MCL (Maximum Contaminant Level): SDWA maximum contaminant level. If exceeded, contact the DOH immediately.
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Lab Supervisor: Kathleen A. Sattler **Date:** 9/29/2011

Anatek Labs, Inc.

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Inorganic Chemicals (IOC's) Analysis Report For Nitrates

System ID#:	54850Q	System Name:	CITY OF MILLWOOD		
Lab/Sample Number:	112 63147	Collect Date:	9/26/2011	DOH Source #:	S03
Multiple Source Nos:		Sample Type:	B	Sample Purpose:	C
Date Received:	9/26/2011	Date Reported:	9/29/2011	Supervisor:	KAS
Date Analyzed:	9/27/2011				
County:	SPOKANE	Sample Location:	S03		
Report To:	Address:	9103 E FREDERICK			
	City, State, ZIP	SPOKANE, WA 99206			
	Phone Number:	(509) 924-0960			

EPA Regulated Chemical

DOH #	Analyte	Result	Units	SRL	Trigger	MCL	Method	Analyst
20	Nitrate - N	1.68	mg/L	2	5	10	EPA 300.0	JLU

NOTES:

SRL (State Reporting Level): Indicates the minimum reporting level required by WA-DOH
Trigger Level: DOH drinking water response level. Systems exceeding this level are required to take additional samples. Contact the DOH immediately.
MCL (Maximum Contaminant Level): SDWA maximum contaminant level. If exceeded, contact the DOH immediately.
NDN(ot Detected): Indicates that the analysis was performed but the contaminant concentration is less than the SRL.

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The results reported relate only to the samples indicated.
Soil/solid results are reported on a dry-weight basis unless otherwise noted.

Lab Supervisor: Kathleen A. Settles **Date:** 9/29/2011

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; IN:C-ID-01; KY:90142; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; CA:Cert2632; ID:WA00169; WA:C585; MT:Cert0095

City of Millwood Water Quality Report for 2010

Listed below are the drinking water contaminants that we detected during the 2010 calendar year. The presence of any contaminant in the water does not necessarily indicate that the water poses a health risk. Unless otherwise noted, the data presented in this table is from testing done January 1-December 31,2010. The state requires us to monitor for certain contaminants less than once per year because the concentrations of these contaminants are not expected to vary significantly from year to year.

Keep in mind that the MCLs are set at very stringent levels. A person would have to drink 2 liters of water every day at the MCL level for a lifetime to have a one-in-a-million chance of having the described health effect. Health standards are set by the Washington State Department of Health.

SOURCE WATER TESTING

CONTAMINANT	UNITS	MCLG	MCL	HIGHEST DETECTION	POSSIBLE SOURCE
NITRATE	ppm	10	10	1.70	Run off from fertilizer use;leaching from septic tanks, sewage; Erosion from natural deposits
Gross Alpha	pCi/L	0	15	4.17	Erosion of natural deposits
Radium 228	pCi/L	0	5	ND	
VOC's	Ug/l			ND	61 constituents were tested

DISTRIBUTION SYSTEM TESTING

CONTAMINANT	UNITS	MCLG	AL	90TH PERCENTILE	POSSIBLE SOURCE
LEAD (2009)	ppm	0	0.015	0.001	Corrosion of household plumbing systems;
COPPER (2009)	ppm	1.3	1.3	0.073	Erosion of natural deposits

MICROBIOLOGY

CONTAMINANT	MCLG	Samples Collected	HIGHEST DETECTION	POSSIBLE SOURCE
E. Coli Bacteria	0	33	0	Human and animal fecal waste

Terms and Abbreviations

AL - Action level - The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

MCL - Maximum Contaminant Level - The highest level of a contaminant allowed in drinking water.

MCLG - Maximum Contaminant Level Goal - The level of a contaminant in drinking water below which there is no known or expected risk to health.

ND - Not Detected

pCi/L - Pico Curies per Liter - a unit of radioactivity

NA - Not Applicable

ppm - parts per million or milligrams per liter

VOC - Volitile Organic Chemical

City of Millwood Water Quality Report for 2010

Water Use Efficiency (WUE) Report

The Municipal Water Supply Efficiency Requirements Act, known as the Municipal Water Law, adopted in 2003 requires the City of Millwood to adopt a water conservation program which will:

- Publicly establish water saving goals specifically directed towards their customers
- Evaluate or implement specific water saving measures to achieve customer goals
- Develop a WUE planning program to support the established goals
- Meet a 10% water loss standard
- Report annually on progress towards achieving goals and water loss

The City of Millwood has set a goal to reduce average water consumption by 2% between the months of April and September. Reduction of water use will be achieved through consumer education using a variety of means including the Mayors' newsletters, the electronic message board and utility bill inserts.

Examples of efficiency measures achieved through education include:

- Better irrigation practices: turning off sprinklers when it rains; avoid over watering, installing a rain sensor on sprinkler systems
- Turn off the tap when brushing teeth and while washing dishes
- Installation of low flow toilets and dual-flush toilets

Total Water Produced	(water pumped)	251,511,000 gallons
Authorized Consumption	(metered water)	164,030,000 gallons
System Leakage	(unmetered water and leaks)	87,481,000 gallons

The City is currently taking steps to meter our irrigation areas and will be conducting a leak survey of the water system during the 2011 year.

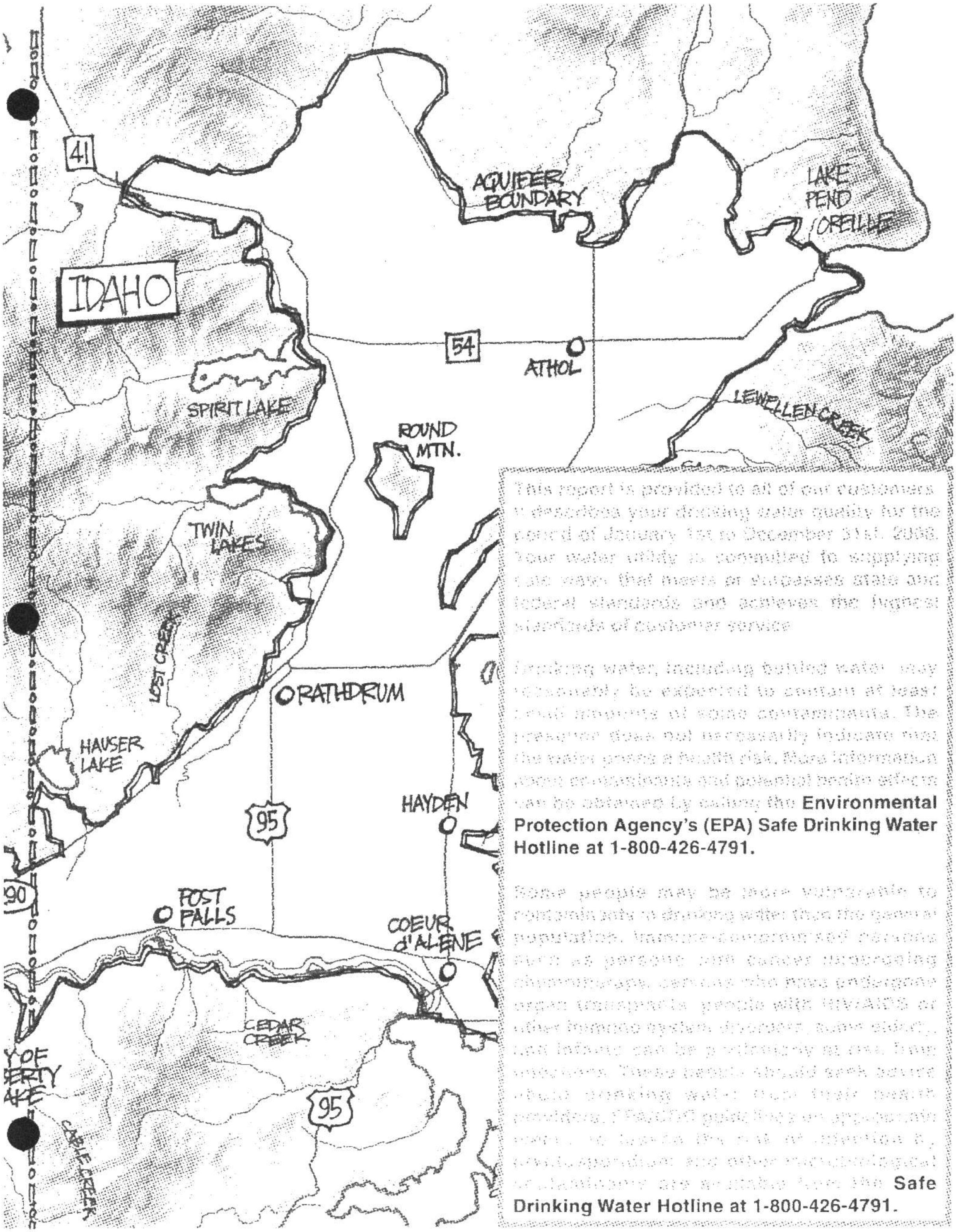
Sprinkler Systems

All sprinkler systems require backflow protection. Please check your system to see that it has an approved backflow device. If you install backflow protection, please contact the Millwood Water Department to be sure you have a correct device and that it is properly installed. Backflow installation and testing are mandatory State regulations.

Questions regarding this report or for changes in billing, contact:

City of Millwood
9103 E. Frederick
Spokane ,Wa. 99206
(509) 924-0960

Office hours:
8:00 a.m. – noon and 1 p.m.-5 p.m. Mon. –Fri.
City Council Meetings are held every first Monday at 7:00 p.m.



This report is provided to all of our customers to describe your drinking water quality for the period of January 1st to December 31st, 2008. Your water utility is committed to supplying safe water that meets or surpasses state and federal standards and achieves the highest standards of customer service.

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence 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 **Environmental Protection Agency's (EPA) Safe Drinking Water Hotline at 1-800-426-4791.**

Some people may be more vulnerable to contaminants in drinking water than the general population. Immune-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 providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbiological contaminants are available from the **Safe Drinking Water Hotline at 1-800-426-4791.**

ABBREVIATED TOWN OF MILLWOOD WATER SYSTEM
O&M MANUAL
(3/2002)

INVENTORY

The Town of Millwood operates and maintains 3 wells, the Old Park well, the New Park well, and the Butler well and a booster station which collectively supply the Town's approximately 800 services. An 800,000 gallon, 110 foot tall, 35-foot diameter steel reservoir in the Town Park provides the only storage capacity Millwood has at this time. The Town maintains about 65,000 linear feet of water mains, the older mains are cast iron while the new mains are PVC or ductile iron. Most existing residential services are 3/4" galvanized, which are currently being replaced with 1" copper.

Water system control and monitoring functions are handled by the central computer at the Town Hall. The two basic operating modes are the Fill and Draw cycles of the standpipe. During the Fill cycle, the lead pump supplies water to both the system and the reservoir. When the water level in the reservoir reaches 100 feet (or current setting), the lead pump stops and the reservoir booster pump comes on to start the Draw cycle. This phase continues until the water level in the reservoir is 60 feet (or current setting) at which time the Fill cycle begins.

RESERVOIRS

Improperly maintained reservoirs are a main cause of contamination in public water systems. This is often a result of contaminants entering the reservoir through cracks or tears in the vent, overflow or drain screens. Deteriorating hatch covers and vandalism can also compromise reservoir water quality. It is therefore important to perform routine reservoir maintenance. This includes careful annual inspection of screens, vents and overflows and the repair or replacement of cracked or torn screens. In addition, the reservoir drain must be operated and the reservoir run to overflow to ensure the appurtenances are functioning properly. Reservoir paint condition, both interior and exterior should also be inspected annually and repaired if necessary. An interior check will require the reservoir be drained and, due to the height of the reservoir, the use of a "spider". This check should be done on an annual basis.

Cycling of the water in the reservoir is important to ensure a fresh water supply. The current cycling practice of the Town, filling the reservoir than partially draining it every three to four days depending on demand, should be adequate to ensure the water is fresh.

Common sense safety, including the use of safety belts while climbing on the reservoir is essential.

A written record of reservoir maintenance should be kept at the Town Hall.

WELLS AND PUMPS

The Old Park well supplies about 50% of the total water supply and operates as the lead pump for 5

months a year (Apr-June, Sept.-Oct.). The well is 16" diameter x 112' deep and was constructed in 1952. The well casing is perforated from 56' to 111'. Initial pump testing at 1100 GPM resulted in a 1' drawdown (well logs for all wells are included in the appendix to the Water System Plan). The present pump is a 100 HP Fairbanks Morse five stage vertical turbine line shaft pump.

The New Park well, constructed in 1981, is 18" in diameter x 196' deep with 250 slot stainless steel well screen from 175' to 196'. The well was originally pump tested at up to 2819 GPM with 6' of drawdown. The New Park well generally operates as lead pump in July and August in order to meet summer demand. The present pump is a 200 HP Peerless five-stage vertical turbine line shaft pump.

The Butler well, constructed in 1959, is 16" in diameter x 130' deep with casing perforations from 80' to 130'. The well was originally pump tested at 850 GPM with 2' of drawdown. The Butler well generally operates as lead pump from November through March. The present pump is a 60 HP, Fairbanks Morse, four-stage, vertical turbine pump.

A good well maintenance program begins with good record keeping. Well performance testing should be performed yearly to determine any trends in well performance. In addition, this information can be used to calculate the energy cost (or changes in energy cost from the past) per unit volume of water withdrawn.

Pump maintenance should be in accordance with the pump manufacturer's recommendations on file at the Town Maintenance Shop.

Pump startup procedure (when not controlled by telemetry)

1. Enter pump house.
2. Be sure that discharge valve is open.
3. Exit pump house and go to the valve downstream of the pump (connecting pump to transmission line). Be sure it is open.
4. Be sure pre-lube valve is open.
5. Check oil level on pump.
6. Switch HOA switch to HAND.
7. Turn on the pump.

Pump shut off procedure (when not controlled by telemetry)

1. Turn off the pump.

Procedures for pump operation by telemetry are in the telemetry system O&M manual.

Safe operation of well/pumps requires that the operator take the time to ensure the appropriate valves are open including the discharge valve, the valve downstream at the transmission main and the pre-lube valve. Determining whether the pump has enough oil is accomplished differently for different pump manufacturers. Consult the pump manufacturer's handbook if uncertain as to how to check pump oil level. Finally, pump houses should be securely locked to assure against

unauthorized access.

BOOSTER STATION

Separate O&M manual for the booster station is currently on file at the Town Maintenance Shop.

TELEMETRY SYSTEM

Separate O&M manual for the telemetry is currently on file at the Town Maintenance Shop.

METERS

Accurate water metering is an essential financial component of the water system. Water metering is essentially a three part process. First is accurately metering the water that is being pumped out of the ground. Second is accurately metering the water being used by each user. Third is keeping track of all this information.

Well meter calibration is important to enable the Town, to ensure compliance with water right permits, to comply with water conservation programs and to ascertain the efficiencies of pump and motor equipment. User meter calibration is important because a sizable amount of revenue can be lost through inaccurate metering of water, especially to large commercial users. Finally accurate record keeping is essential to accurately determine the percent of water which is accounted for as well as for financial and water supply and usage trends.

In general, the larger the meter size, the more often it should be tested and calibrated.

Meter Size	Recommended Test Interval
1 3/4" or less	7-10 years
2" to 4"	3-5 years
4" or larger	2 years

The Town is in the process of replacing all old water meters with new digital readout meters. Therefore all meters should be in good condition for some years to come. However, after meters have been in service for about 3 years, a representative sample from each size category, say 5%, should be tested each year thereafter to ensure their accuracy. If all sample meters pass, it is likely that all meters are in good condition. If some fail, however, more extensive testing should be done to the extent of meter replacement necessary.

A written record should be kept of all testing and calibration performed and meters replaced.

VALVES AND FIRE HYDRANTS

The Town should exercise distribution system valves on an annual basis making a written record of which valves have been exercised so as to miss none. Valves that do not close tightly should be

repaired or replaced. Equally as important, valves must be opened completely lest unnecessary head loss result from partially closed valves. Valves that are part of a pump, the reservoir, or any other valve should also be exercised and inspected periodically to ensure they function.

Inspection and testing for fireflow capabilities and periodic exercising of fire hydrants should also be performed on a yearly basis in conjunction with the fire department with written record being kept as to which fire hydrants have been inspected and how they fared.

Common sense safety is essential when operating valves and fire hydrants. The water is under a high amount of pressure and careless operation can result in damage to the distribution system as well as the operator.

EMERGENCY RESPONSE

In the event of a potential emergency situation, the water system operators are the first to be notified by way of the Millwood Town Hall. For after-hours emergencies, the operators are currently alerted usually through the Mayor. It is planned that a recording at the Town Hall will be set up to give a pager number where an operator can be reached at any hour. Of course, in emergencies with an immediate threat to human life, 911 is the first number to call followed by notification of the water system operators.

SUPPLIERS				
COMPONENT	NAME	SUPPLIER	ADDRESS	PHONE
WELLS/PUMPS				
	Pump, Motor, Controls	AAA Pump Service	17 S Willow Rd. Spokane, WA 99206	926-4462
		Dickerson Pump	3627 E. Broadway Ave., Spokane, WA 99202	534-2671
	Flow Meter	HD Fowler	6625 E. Sharpe, Spokane, WA.	568-8400
		Familian NW	10208 N. Division, Spokane, WA 99202	534-6500
	Power Supply	Avista	-	800-936-6629
BOOSTER PUMPS				
	Pump	Power Pump	4101 E. Broadway Ave., Spokane, WA 99202	534-5616
		Dickerson Pump	3627 E. Broadway Ave., Spokane, WA 99202	534-2671
	Motor	K&N Electric	611 E. Sprague Ave., Spokane, WA	838-8000
	Variable Freq. Drive			
	Pressure Switch	HD Fowler	6625 E. Sharpe, Spokane, WA.	568-8400
		Familian NW	10208 N. Division, Spokane, WA 99202	534-6500
	Controls	Automatic Electrical Systems (AES)	PO Box 256, Rathdrum, ID. 83858	(208) 687-0627
SHOP/WORK TOOLS				
	Pumps	United Rental	204 S. Fancher, Spokane, WA.	532-1235
	Compactor	United Rental	"	"
	Rental Equip.	United Rental	"	"
SAFETY EQUIPMENT				
	Cones			
	Delineators	Oxarc	4003 E. Broadway, Spokane WA 99202	535-7794
	Barricades	"	"	"
	Barrier Tape	"	"	"
	Evac. Rigging	"	"	"
	Safety Harness	"	"	"
	Hard Hats	"	"	"
	Glasses	"	"	"
	Gloves	"	"	"
	Vests	"	"	"
	Rain Gear	"	"	"
	Rubber Boots	"	"	"
	Breathing Apparatus	"	"	"
	Air Quality Monitor	"	"	"
REPLACEMENT PARTS				
	Various	Familian	10208 N. Division, Spokane, WA 99217	534-6500
		HD Fowler	6625 E. Sharpe, Spokane, WA.	568-8400
	Electrical			