

Pipeline

Drinking Water Revolving Loan Fund awards top \$200 million

by Roberto Reyes-Colón

The Safe Drinking Water Act (SDWA) amendments of 1996 established the Drinking Water State Revolving Fund (DWSRF) program. The DWSRF was designed to assist public water systems with financing the infrastructure costs of achieving or maintaining compliance with SDWA requirements, and to promote the public health objectives of the Safe Drinking Water Act as amended.

Every year, Oregon applies to the U.S. Environmental Protection Agency (EPA) for its annual allotment of loan funds. This year (2010) marks the 13th year of Oregon's participation in the federal program.

The EPA has made available more than \$197 million in funds to the Oregon DWSRF program

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New water treatment plant in Sweet Home

Completion of new municipal water treatment plant is reflective of strong community pride and local commitment!

by Michael J. Adams

During the 1980s, Sweet Home experienced a major decline in population and industry as environmental issues forced the closure of sawmills and logging operations. During these tough times, the community banded together and rode out the changes, eventually turning the tide of recession into a wave of progression. It is through these opportunities the community of Sweet Home, Oregon, was able to once again prove its ability to step up to its responsibility of doing what is necessary for the community as well as the environment.

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The new WTP in Sweet Home completed in August 2009.

through the 2009 funding year, including \$28.5 million from the American Recovery and Reinvestment Act of 2009 (ARRA). A portion of each annual funding amount is “set-aside” for various administrative costs and targeted assistance programs, and the remaining funds are directed to capitalize the revolving loan fund. The DWSRF capitalization as of December 2009 includes \$164 million in federal funds, \$33 million in state matching funds, and \$36 million in loan repayments and investment earnings. More than \$220 million in loan commitments have been made to Oregon water systems with revolving loan funds for 117 water infrastructure projects. (See charts on pages 3 through 8)

In Oregon the partnership of the Department of Human Services (DHS) Drinking Water Program and the Oregon Business Development Department (OBDD) continues to provide low-interest loans to Oregon’s water systems. DHS administers the Drinking Water Program and OBDD provides 20 percent in state matching funds and manages the Safe Drinking Water Revolving Loan Fund. OBDD also manages the Drinking Water Protection Fund, which provides drinking water source water protection grants to Oregon communities.

The need for this program in Oregon is clear. A nationwide drinking water infrastructure needs survey sponsored by the U.S. EPA with assistance from the Department of Human Services, Drinking Water Program and water suppliers, was completed in 2009. That survey found that Oregon’s public drinking water systems had more than \$2.78 billion in infrastructure needs over the next 20-year period from January 2007 through December 2027 (4th Infrastructure Survey, EPA, February 2009).

The types of projects that are eligible for the DWSRF can range from planning and design to water conservation and efficiency. Each project is ranked by established criteria, to determine priority of order of funding. Those projects offering the greatest public health benefit receive the highest ranking. Disadvantaged communities may be eligible for an extended loan term, a reduced interest rate, and/or principal forgiveness if certain

criteria and conditions are met. Most Oregon loan recipients are small Oregon cities and towns with few or no resources available for major projects. Large cities and private water systems also benefit.

Roberto Reyes-Colón is the loan fund coordinator for the Drinking Water Program / 971-673-0422 or roberto.reyes-colon@state.or.us

Celebration!



Celebration at Woodburn on 2/18/10 of the successful implementation of the American Recovery and Reinvestment Act funding for drinking water systems in Oregon. Above Dr. Mel Kohn Oregon Public Health Director; Below: Congressman Kurt Schrader



Safe Drinking Water Revolving Loan Fund List

Updated 12/31/2009

Loan Recipient	Project #	Award Commitments	Forgivable Amount	Special Categories		
				Disadvantaged?	Large Sys?	Private Sys?
City of Bandon	S99001	\$ 500,000	\$ -			
City of Gold Beach	S99002	\$ 500,000	\$ -			
City of Talent	S99003	\$ 2,000,000	\$ -	X		
City of Mitchell	S99004	\$ -	\$ -			
City of Warrenton	S99005	\$ 2,000,000	\$ -	X		
Youngs River Water District	S99006	\$ 1,290,000	\$ -	X		
City of Glendale	S99007	\$ 244,650	\$ -	X		
City of Amity	S99008	\$ 1,200,000	\$ -	X		
City of Amity	S99008	\$ 250,000	\$ 250,000	X		
City of Carlton	S99009	\$ 2,238,625	\$ -	X		
City of Yamhill	S99010	\$ 1,500,000	\$ -	X		
City of Yamhill	S99010	\$ 250,000	\$ 250,000	X		
City of Sandy	S00001	\$ 1,876,133	\$ -			
City of Vale #1	S00002	\$ 879,706	\$ -	X		
City of Vale #2	S00003	\$ 294,497	\$ -	X		
City of Wasco	S00004	\$ 150,000	\$ -	X		
City of Lafayette	S00005	\$ 110,000	\$ -	X		
City of Lowell	S00006	\$ 223,000	\$ -	X		
Chenoweth Water Co-op	S01001	\$ 364,900	\$ -			
City of Banks	S01002	\$ 700,000	\$ -			
City of Pendleton	S01003	\$ 4,000,000	\$ -		X	
City of Drain	S01004	\$ 2,479,603	\$ -	X		
Fun River	S01005	\$ 101,972	\$ -			X
Burlington Water District	S01006	\$ 820,000	\$ -	X		
Burlington Water District	S01006	\$ 250,000	\$ 250,000	X		
City of Prairie City	S01007	\$ 2,000,000	\$ -			
City of Waldport	S01008	\$ 519,900	\$ -	X		
City of Waldport	S01008	\$ 250,000	\$ 250,000	X		
Port of Tillamook Bay	S01009	\$ 172,699	\$ -			
Valley View Water District	S01010	\$ 692,750	\$ -			
City of Burns	S01011	\$ 846,431	\$ -			
Town of Canyon City	S01012	\$ 49,341	\$ -			
Odell Water Company	S02001	\$ 1,243,188	\$ -	X		X
Odell Water Company	S02001	\$ 250,000	\$ 250,000	X		X
Springfield Utility Board	S02002	\$ 4,000,000	\$ -		X	
City of Wasco #2	S02003	\$ 478,000	\$ -	X		
Youngs River	S02004	\$ 650,000	\$ -	X		
Youngs River	S02004	\$ 250,000	\$ 250,000	X		
City of Westfir	S02005	\$ 833,564	\$ -	X		
City of Pendleton	S02006	\$ 1,900,000	\$ -		X	

Loan Recipient	Project #	Award Commitments	Forgivable Amount	Disadvantaged?	Large Sys?	Private Sys?
Laurelwood Water Coop	S02007	\$ -	\$ -			
Heceta Water District	S02008	\$ 1,754,508	\$ -			
Columbia City Improvements	S02009	\$ 2,990,500	\$ -			
Woodburn Water Sys Imprv'nt	S02010	\$ 4,000,000	\$ -		X	
City of Warrenton	S02011	\$ 2,657,000	\$ -			
City of Amity	S02012	\$ -	\$ -			
City of Cove	S02013	\$ 1,421,000	\$ -	X		
City of Cove	S02013	\$ 250,000	\$ 250,000	X		
Corbett Water District	S03001	\$ 2,100,000	\$ -			
Dayton Water Sys Imprv'nt	S03002	\$ 3,983,000	\$ -	X		
Scappoose - Water Treatment	S03003	\$ 4,072,495	\$ -	X		
Scappoose - Water Treatment	S03003	\$ 250,000	\$ 250,000	X		
SW Lincoln Co. WD Water Line	S03004	\$ 81,399	\$ -	X		
SW Lincoln Co. WD Water Line	S03004	\$ 36,250	\$ 36,250	X		
Powers	S03005	\$ 309,750	\$ -	X		
Powers	S03005	\$ 103,250	\$ 103,250	X		
Neahkanie Water District	S03006	\$ 172,500	\$ -	X		
Neahkanie Water District	S03006	\$ 57,500	\$ 57,500	X		
Apache/Agate Water Co	S03007	\$ 3,395,000	\$ -	X		X
Apache/Agate Water Co	S03007	\$ 250,000	\$ 250,000	X		X
City of Heppner	S03008	\$ 2,968,255	\$ -	X		
Oakland	S03009	\$ 3,750,000	\$ -	X		
Oakland	S03009	\$ 250,000	\$ 250,000	X		
Mosier Water System	S03010	\$ 1,421,000	\$ -			
Seneca Water System	S03011	\$ 636,000	\$ -	X		
Seneca Water System	S03011	\$ 212,000	\$ 212,000	X		
Joseph Water System	S03012	\$ 1,412,549	\$ -			
City of North Plains	S03013	\$ 1,846,808	\$ -			
City of Mill City	S03014	\$ 4,000,000	\$ -	X		
City of Adrian	S03015	\$ 375,000	\$ -	X		
City of Adrian	S03015	\$ 125,000	\$ 125,000	X		
City of Richland	S04001	\$ 98,600	\$ -	X		
City of Sweet Home	S04002	\$ 7,250,000	\$ -	X		
City of Sweet Home	S04002	\$ 250,000	\$ 250,000	X		
City of Dayville	S04003	\$ 603,500	\$ -	X		
City of Dayville	S04003	\$ 166,102	\$ 167,000	X		
City of St Helens	S04004	\$ 4,000,000	\$ -	X	X	
City of Ukiah	S04005	\$ 958,351	\$ -	X		
City of Ukiah	S04005	\$ 250,000	\$ 250,000	X		
Neskowin	S04006	\$ 850,000	\$ -			
Chenowith PUD	S04007	\$ 1,534,332	\$ -			
Cottage Grove	S05001	\$ 6,270,000	\$ -			

Loan Recipient	Project #	Award Commitments	Forgivable Amount	Disadvantaged?	Large Sys?	Private Sys?
City of Oakridge	S05002	\$ 3,156,209	\$ -	X		
City of Oakridge	S05002	\$ 250,000	\$ 250,000	X		
Dumbeck Lane WD	S06001	\$ 710,189	\$ -	X		
Dumbeck Lane WD	S06001	\$ 236,729	\$ 236,729	X		
Gates	S06002	\$ 625,000	\$ -	X		
Buell-Red Prairie WD	S06003	\$ 1,750,000	\$ -	X		
Buell-Red Prairie WD	S06003	\$ 250,000	\$ 250,000	X		
Creswell	S06004	\$ 4,000,000	\$ -			
Depoe Bay	S06005	\$ 1,602,000	\$ -			
Nehalem	S06006	\$ 3,250,000	\$ -	X		
Nehalem	S06006	\$ 250,000	\$ 250,000	X		
Bay Hills WA	S06007	\$ -	\$ -			X
Luckimute WD	S06008	\$ 1,002,834	\$ -			
Dallas	S07001	\$ 5,650,000	\$ -		X	
Irrigon	S07002	\$ 1,062,000	\$ -			
Stayton	S07003	\$ 4,761,900	\$ -			
Scappoose - Dutch Canyon	S03003B	\$ 1,954,250	\$ -	X		
Powers	S08001	\$ 1,472,239	\$ -	X		
Powers	S08001	\$ 250,000	\$ 250,000	X		
Myrtle Creek	S08002	\$ 1,600,000	\$ -			
Astoria	S08003	\$ 2,173,200	\$ -		X	
Columbia City Improvements	S02009B	\$ 400,000	\$ -		X	
City of Sherwood	S08004	\$ 6,000,000	\$ -		X	
City of Lostine	S08005	\$ 600,000	\$ -	X		
North Hill Water Corp	S09001	\$ 265,238	\$ -	X		X
North Hill Water Corp	S09001	\$ 88,412	\$ 88,412	X		X
SW Lincoln Co WD	S09003	\$ 90,000	\$ -			
Country View Estates	S09004	\$ 45,000	\$ -			
Christmas Valley WD	S09005	\$ 1,145,800	\$ -	X		
Christmas Valley WD	S09005	\$ 113,000	\$ 113,000	X		
City of Rogue River	S09006	\$ 1,034,200	\$ -			
South Coast Water Dist., Inc.	S09007	\$ 127,500	\$ -			X
South Coast Water Dist., Inc.	S09007	\$ 42,500	\$ 42,500			X
Rivergrove WD	S09008	\$ 510,000	\$ -			
Winston-Dillard WD	S09009	\$ 5,500,000	\$ -			
City of Detroit	S09010	\$ 1,512,070	\$ -	X		
City of Detroit	S09010	\$ 250,000	\$ 250,000	X		
Nesika Beach - Ophir WD	S09011	\$ 3,325,000	\$ -	X		
Nesika Beach - Ophir WD	S09011	\$ 250,000	\$ 250,000	X		
Roberts Creek WD	S09012	\$ 250,000	\$ -			
City of Portland	SZ9001	\$ 1,300,000	\$ 650,000		X	
City of Rockaway Beach	SZ9002	\$ 2,407,870	\$ 1,203,935			

Loan Recipient	Project #	Award Commitments	Forgivable Amount	Disadvantaged?	Large Sys?	Private Sys?
City of Bend	SZ9003	\$ 5,613,000	\$ 2,806,500		X	
City of Fairview	SZ9004	\$ 1,250,000	\$ 625,000			
Marshland Water Association	SZ9005	\$ 261,894	\$ 130,947			X
Arch Cape WD	SZ9006	\$ 1,458,000	\$ 900,000	X		
City of Gresham	SZ9007	\$ 4,810,000	\$ 2,000,700		X	
Falcon Cove Beach WD	SZ9008	\$ 220,000	\$ 110,000	X		
Tri-City WD	SZ9009	\$ 186,600	\$ 93,300			
City of The Dalles	SZ9010	\$ 5,977,545	\$ 2,988,773		X	
City of Woodburn	SZ9011	\$ 2,800,000	\$ 2,800,000	X	X	
City of Warrenton	SZ9012	\$ 5,399,048	\$ 2,699,524			
City of Elgin	SZ9014	\$ 1,260,200	\$ 630,100			
City of Tigard	SZ9015	\$ 4,796,000	\$ 2,398,000		X	
City of Aurora	SZ9016	\$ 661,625	\$ 330,813			
Wickiup WD	SZ9017	\$ 2,251,500	\$ 1,125,750			
Timber Water Association	SZ9018	\$ 675,685	\$ 337,843			X
Valley View Water District	S10001	\$ 750,000	\$ -			
City of Dundee	S10002	\$ 2,790,000	\$ -			
City of Sherwood	S10003	\$ 6,000,000	\$ -		X	
City of Myrtle Creek	S10004	\$ 4,423,872	\$ -	X		
City of Myrtle Creek	S10004	\$ 500,000	\$ 500,000	X		
City of Siletz	S10005	\$ 555,290	\$ -	X		
City of Siletz	S10005	\$ 250,000	\$ 250,000	X		
City of Yamhill	S10006	\$ 402,000	\$ -			
TOTAL		\$ 220,026,007	\$ 28,262,826			

- "SZ" denotes American Recovery and Reinvestment Act of 2009 (ARRA) awarded project. -
Other Projects are denoted by "S" then the 2-digit state fiscal year (SFY) in which the project was funded (i.e., "S02002" is the second project funded in SFY 2002).

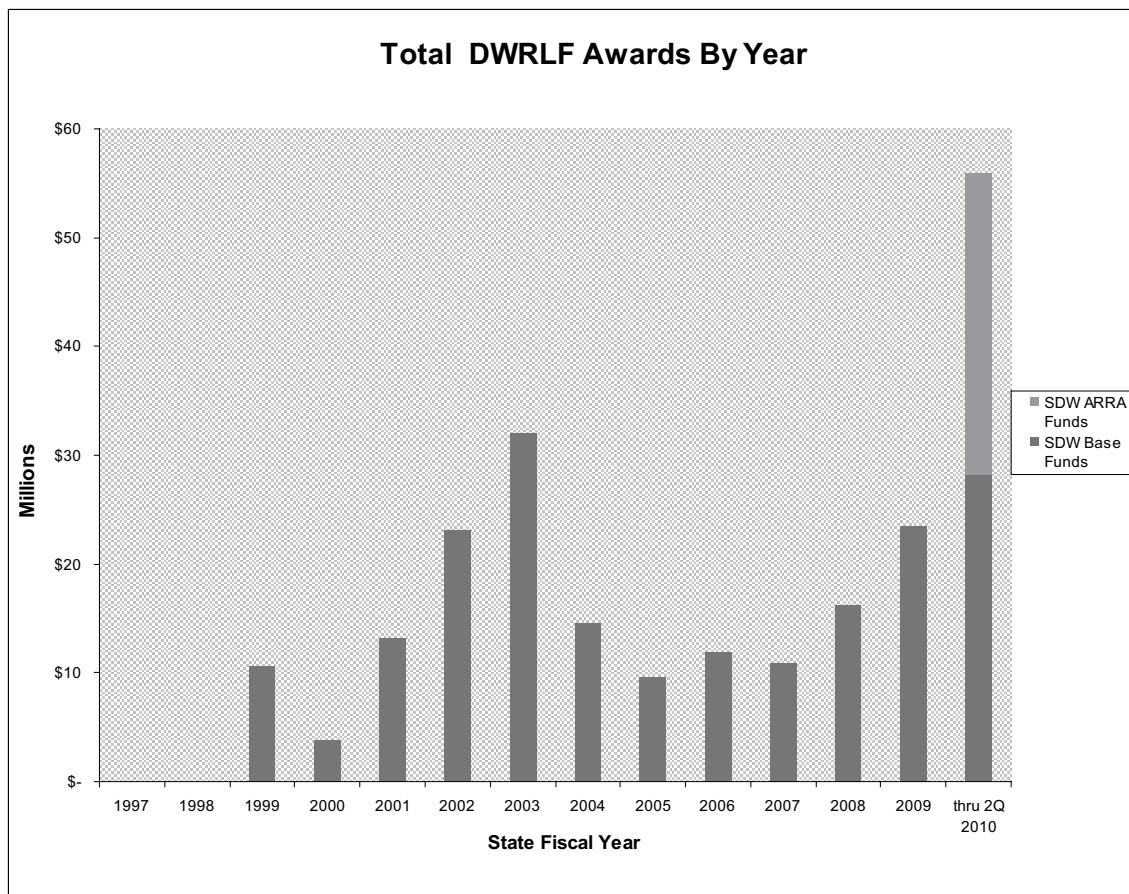
SDWRLF ARRA Project List

DHS Rating	Project	Recipient	Project Amount	ARRA Loan	ARRA Forgivable	Base Loan	Other Funds
35	SZ9001	Portland	\$ 1,300,000.00	\$ 650,000.00	\$ 650,000.00	\$ -	\$ -
50	SZ9002	Rockaway Beach	\$ 2,407,870.00	\$ 785,879.00	\$ 1,203,935.00	\$ 418,056.00	\$ -
70	SZ9003	Bend	\$ 5,613,000.00	\$ -	\$ 2,806,500.00	\$ 2,806,500.00	\$ -
60	SZ9004	Fairview	\$ 1,654,500.00	\$ 625,000.00	\$ 625,000.00	\$ -	\$ 404,500.00
65	SZ9005	Marshland	\$ 261,894.00	\$ 130,947.00	\$ 130,947.00	\$ -	\$ -
75	SZ9006	Arch Cape	\$ 1,477,768.00	\$ 300,000.00	\$ 900,000.00	\$ 258,000.00	\$ 19,768.00
20	SZ9007	Gresham	\$ 4,810,000.00	\$ 2,000,700.00	\$ 2,000,700.00	\$ 808,600.00	\$ -
30	SZ9008	Falcon Cove Beach	\$ 250,000.00	\$ -	\$ 110,000.00	\$ 110,000.00	\$ 30,000.00
25	SZ9009	Tri-City Water	\$ 207,100.00	\$ 93,300.00	\$ 93,300.00	\$ -	\$ 20,500.00
23	SZ9010	The Dalles	\$ 8,232,700.00	\$ 435,671.00	\$ 2,988,773.00	\$ 2,553,101.00	\$ 2,255,155.00
60-65	SZ9011	Woodburn	\$ 2,800,000.00	\$ -	\$ 2,800,000.00	\$ -	\$ -
85	SZ9012	Warrenton	\$ 5,469,048.00	\$ -	\$ 2,699,524.00	\$ 2,699,524.00	\$ 70,000.00
20	SZ9014	Elgin	\$ 1,260,200.00	\$ -	\$ 630,100.00	\$ 630,100.00	\$ -
30	SZ9015	Tigard	\$ 5,154,000.00	\$ -	\$ 2,398,000.00	\$ 2,398,000.00	\$ 358,000.00
65	SZ9016	Aurora	\$ 676,625.00	\$ 330,812.00	\$ 330,813.00	\$ -	\$ 15,000.00
25	SZ9017	Wickiup	\$ 2,251,500.00	\$ 278,895.00	\$ 1,125,750.00	\$ 846,855.00	\$ -
60	SZ9018	Timber	\$ 675,685.00	\$ 337,842.00	\$ 337,843.00	\$ -	\$ -
Total			\$ 44,501,890.00	\$ 5,969,046.00	\$ 21,831,185.00	\$ 13,528,736.00	\$ 3,172,923.00

WITHDRAWN / DECLINED FUNDING:

40	SZ9013	Fern Valley	\$ 1,449,850.00	\$ -	\$ 724,925.00	\$ 724,925.00	\$ 724,925.00
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SUMMARY OF SDWRLF FUNDING	
Total ARRA Funding:	\$ 27,800,231.00
Total Base Program Funding:	\$ 13,528,736.00
Total SDWRLF Funding:	\$ 41,328,967.00
Total Other Funding:	\$ 3,172,923.00
Total Projects Funded:	\$ 44,501,890.00



New water treatment plant in Sweet Home — continued from cover

In spite of economic hardships and ongoing, costly environmental compliance corrections in water and wastewater utilities, the City of Sweet Home with its population base of 9,045 has reason to be proud of the recently completed construction of its 6-million-gallon-per-day (MGD) water treatment plant.

In late 1998, the City of Sweet Home received a Notice of Violation and Remedial Order from the Oregon Health Division (OHD) indicating the need to comply with treatment technique requirements, such as minimum contact time (CT) values after filtration. Given that the original water treatment plant was built in the early 1930s, with the last update in the 1960s, it was not surprising the new regulations were challenging. Based upon engineering analysis, the best solution to meet this newly revised treatment requirement was to build a new treatment facility at a new location.

After many years of discussions and project planning among the city, state, and U. S. Army Corps of Engineers followed by negotiations with private property owners, construction of a raw water transmission line and fish screen began in early/mid-2006 and was completed in early 2007. This portion of the overall project included the installation of a 42" high-capacity raw water intake screen and air wash system, as well as the installation of approximately 4,600 linear feet of buried 30" HDPE and 600 linear feet of above-ground 24" ductile iron raw water transmission line.

The construction of the water treatment facility began in mid-2008 on a five-acre parcel of property generously donated to the city by a local property developer. Capable of meeting the municipal water needs for Sweet Home for many years to come, this

state-of-the-art facility is capable of producing 6 MGD of high quality domestic water (approximately three times current demand) by incorporating three 1,400-gallon-per-minute (gpm) mixed media filter units. Should it become necessary in the future, provisions have been incorporated that make the facility easily expandable to 10 MGD by adding two additional filter units and minimal building modifications.

In addition to the three filter units, the 17,280-square-foot, split-faced block and metal building houses an observation deck, office, conference room, shower and locker room, electrical room, and control room. Other components of the project include a raw water holding pond and pump stations; 2,000 linear feet of raw water lines; 3,150 linear feet of finished water lines; concrete backwash ponds; and an on-site chlorine generation system.

A process that began many years ago, the new municipal water treatment plant project has culminated with a facility all Sweet Home citizens and water customers can be proud of. The total estimated cost of the entire project is approximately \$12.450 million and is primarily funded by low-interest state revolving fund loans to be paid back entirely through user rates. Paying for this important and necessary project is quite an accomplishment for a town in which more than 51 percent of its entire population base is considered to be at the "low-moderate" income level.

Making this project more impressive is the fact this small, financially strapped community has been required to incur an additional \$9.8 million in low-interest loans to correct and eliminate the inflow and infiltration (I&I) of storm water into its sanitary sewer collection system since 1999/2000 as required by Oregon DEQ. It is currently anticipated it will cost an additional \$22 million to finally correct the sanitary sewer overflow issues.

Although there are many people and groups responsible for the completion of this important project, there are none more deserving of special thanks than the citizens and rate payers of Sweet



Sweet Home's old treatment facility.

Home. This project is a symbol of their ability to do what is necessary for the present population as well as for future generations, and would not have happened without their willingness to financially support this project.

Erwin Consulting Engineering (Lebanon, Oregon) is the design and project engineer for this project. Pacific Excavation, Inc. (Eugene, Oregon) is the general contractor.

The water treatment plant is operated and maintained by our contracting partner, CH2M-Hill/OMI, Inc.

The City of Sweet Home took first place in the AWWA Cascade-to-Coast Subsection's Third Annual Best Tasting Water Contest held in Springfield April 15, 2010. Out of 16 total entries, Sweet Home beat out second-place winner Springfield Utility Board and third-place winner Eugene Water & Electric Board. Congratulations to all the dedicated employees who treat and deliver drinking water to the citizens of Sweet Home! Well done!

This information was compiled by Public Works Director Michael J. Adams, City of Sweet Home. Mr. Adams has been PWD for 11 years with the City of Sweet Home and has a Bachelor of Science in Business Administration from Oregon State University, with a minor in Forest Products. He also holds a Certificate of Public Management from Willamette University Graduate School of Management.

What is the point of it all? ... and other nagging questions about the Ground Water Rule

by Betsy Parry

Note: The beginning section of this article is condensed from the EPA's "Basic Information" publication online at www.epa.gov/safewater/disinfection/gwr/basicinformation.html.

What is the point of the new Ground Water Rule? What is a "risk-based" approach to implementation?

The Ground Water Rule (GWR) is intended to increase protection of groundwater sources of public drinking water supplies from disease-causing viruses and bacteria. Research on occurrence of waterborne viral and bacterial pathogens indicates that there is a subset of groundwater systems that are susceptible to fecal contamination. In 1996, Congress required EPA to take a targeted risk-based approach such that systems identified as being at the greatest risk of contamination will take action to protect public health. (Previous legislation would have required all public systems using groundwater to disinfect, posing a great challenge for the approximately 147,000 such systems in the United States.) The GWR risk-based approach increases requirements for systems that either have identified deficiencies (that is, not meeting all public drinking water standards), or whose GW source is considered susceptible to fecal contamination (for such reasons as proximity of fecal sources, aquifer sensitivity, etc.).

What types of pathogens can be found in water provided by groundwater systems?

Although less susceptible than surface water, under some circumstances groundwater can be contaminated with harmful viruses or bacteria from a fecal source. Viral pathogens may include *echovirus*, hepatitis A and E, rotavirus and noroviruses (i.e., Norwalk-like viruses). Fecal bacterial pathogens in groundwater may include *Escherichia coli*, *Salmonella* species, *Shigella* species, and *Vibrio cholerae*. Ingestion of these

pathogens can cause gastroenteritis or, in certain rare cases, serious illnesses such as meningitis, hepatitis, or myocarditis. Health implications in sensitive subpopulations (such as children and the elderly) may be severe and cause death.

What causes contamination of groundwater?

Viral and bacterial pathogens are present in human and animal feces, which can, in turn, contaminate drinking water. Fecal contamination can reach groundwater sources, including drinking water wells, from failed septic systems, leaking sewer lines, concentrated livestock areas, and by passing through the soil and large cracks in the ground. Fecal contamination from the surface may also get into a drinking water well along its casing or through cracks if the well is not properly constructed, protected, or maintained.

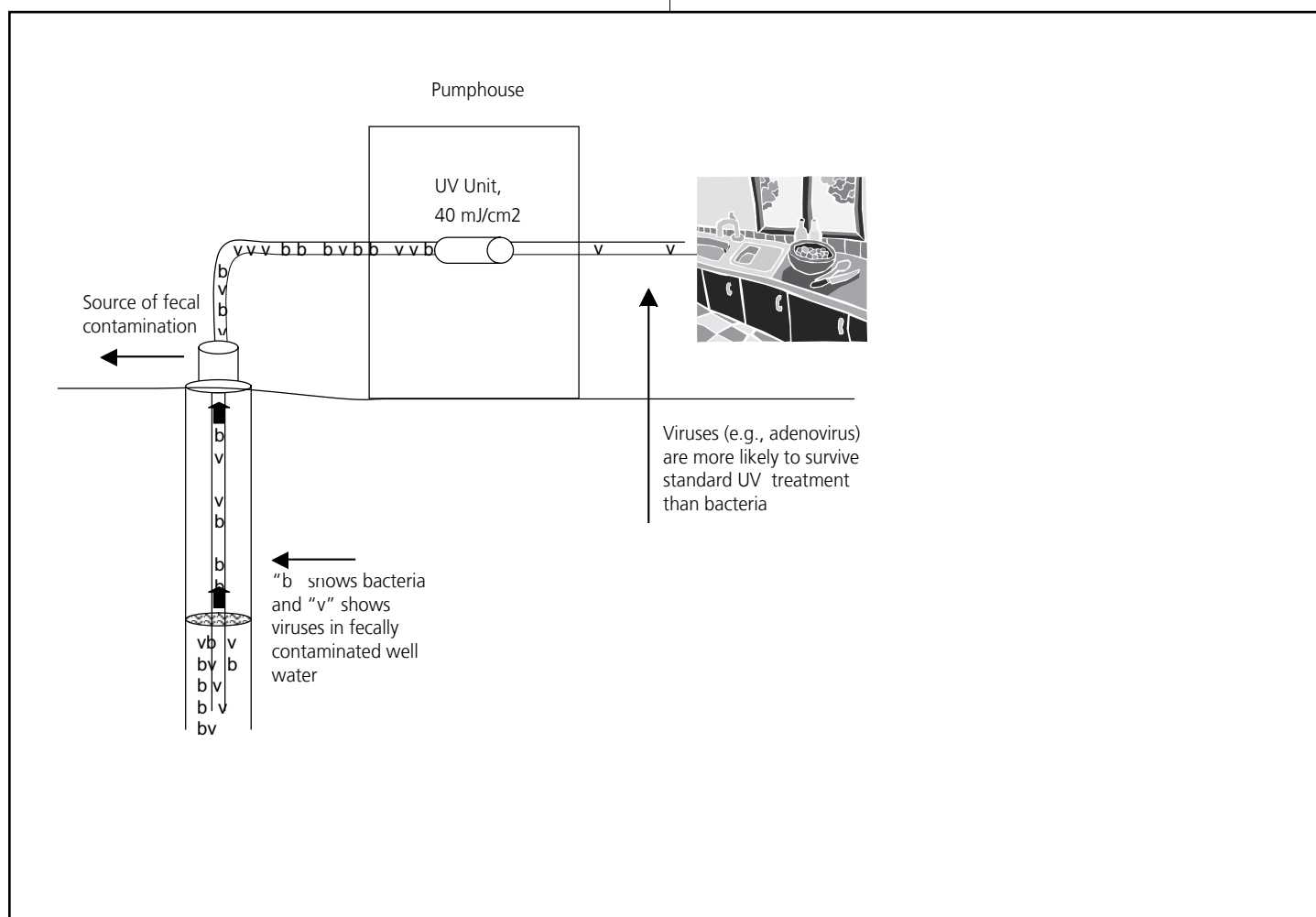
We treat the water to kill bacteria. What is the point of measuring *E. coli* (a bacteria) at the well, when we know it will be gone before the water reaches consumers?

Here is an aspect of the GWR that causes confusion. Previous water sampling requirements under the Total Coliform Rule tested for the presence of coliform bacteria, and called for the effective treatment of bacteria before public consumption. However, disinfection methods that are very effective against bacteria are not always as successful with the smaller, better-armored viruses. For example, the recommended ultraviolet dose of 40 mJ/cm² for potable water is effective against bacteria and many viruses, but it is not even a quarter of the strength necessary to sufficiently inactivate adenoviruses¹ (one group of disease-causing viruses). And viruses require a greater exposure to chlorine agents for inactivation as compared to bacteria.

¹Yates, M.V., J. Malley, P. Rochelle, and R. Hoffman. June 2006. Effect of adenovirus resistance on UV disinfection requirements. *Journal AWWA*. 98:6.

Thus, one objective of the GWR was to give greater attention to the risk of viral contamination in the groundwater (fecal viruses in particular). Such viruses may not have been adequately addressed by previous GW treatment standards. However, collecting water samples for virus detection is very difficult, and the lab tests are quite expensive. Therefore, the EPA chose to use a "fecal indicator" to determine whether fecal contamination is present in the groundwater. In Oregon, as in most other states, the fecal indicator used is *E. coli* (a

type of coliform bacteria associated with feces). The reasoning is that, if *E. coli* has reached the groundwater, then there is a pathway from fecal matter. This pathway can carry other fecal-related microbes such as the disease-causing viruses. If *E. coli* is not present, there is no reason to expect that other fecal contaminants are present. Therefore, we test for *E. coli* in the groundwater as a proxy to see whether other fecal-related pathogens may be present, and then take protection measures as appropriate.



Continued on page 12

What is all of this “4-log inactivation” stuff?

Log inactivation is a convenient way to express the effectiveness of the disinfection process. It is called “log inactivation” because it uses a logarithmic scale (i.e., orders of magnitude of reduction) to indicate the number or percent of microorganisms that are inactivated (either killed or unable to replicate) by a given process. The “log number” coincides with the number of nines in the percent reduction² (see box). For example, a 3-log inactivation value means that 99.9% of the microorganisms of interest have been inactivated.

Log Inactivation

- 1 log: 90% inactivation
- 2 log: 99% inactivation
- 3 log: 99.9% inactivation
- 4 log: 99.99% inactivation

And 4-log inactivation of viruses means that 99.99% of the viruses will be inactivated. Keep in mind that this scale states the effectiveness for a specific type of microbes; a 4-log inactivation level for *Giardia* or for coliform bacteria would not equate with a 4-log inactivation of viruses.

Betsy Parry is a natural resource specialist with the Drinking Water Program / 541-726-2587, Ext. 30, or betsy.l.parry@state.or.us

²Disinfection: CT and Microbial Log Inactivation Calculations. May 2009. Drinking Water Reference Guide: Colorado Department of Public Health and Environment, Water Quality Control Division - Engineering Section.

New requirement for groundwater systems that disinfect: At least one source sample per year

by James Nusrala

The purpose of the Groundwater Rule is to reduce the risk of illness from microbial contamination in groundwater sources (see *Winter 2009 Pipeline article*). To this end, systems must periodically monitor their source water (at well or spring) for the presence of the specific fecal indicator species, *E. coli*. Starting with the 2010 calendar year, most groundwater systems that disinfect (either with chlorine or ultraviolet light) are required to take a source water sample *at each active source at least once a year*. A smaller group of systems — at higher risk for source contamination — were previously notified of more frequent sampling requirements.

This annual source sampling requirement:

- Applies to all groundwater systems that treat with chlorine or other oxidant (ozone), or use ultraviolet light, and are not verifying their 4-log treatment of viruses through compliance monitoring. (See September 3, 2009, letter at www.oregon.gov/DHS/ph/dwp/docs/gwater/gwsystems.pdf for information on 4-log treatment and compliance monitoring.);
- Must be taken at a raw sample tap installed at the well or spring, prior to any treatment;
- May be satisfied by a triggered source water sample (taken after a routine positive in the distribution system) during the same calendar year.

Please make plans to collect the annual source sample well before the year’s end. If you have questions about this requirement, contact the regulator for your drinking water system.

James Nusrala is a regional engineer with the Drinking Water Program / 971-673-0459 or james.b.nusrala@state.or.us

Operator Certification Corner: Renewing your certification online

by Dottie Reynolds

Online renewal for systems with multiple operators

Renewing your operator certification is **the individual's** responsibility, not the employer's. The employer (the secretary, manager, supervisor, etc) should not renew your certification online for you. There have been instances where operators have been missed, creating a late fee. And there have been instances where continuing education units (CEUs) were not faxed and/or mailed, also creating a late fee. For employers who reimburse fees, set up a place especially for online renewal where all operators can use one or two computer(s) close to the personnel who hold the company's Visa® or MasterCard®. That way each operator can renew his or her certificate and rest assured the renewal is complete, and can fax or mail their CEUs, thus saving the secretary's time. This online renewal service is working great in other states. A few states are using the online renewal process exclusively. No renewal forms, only a postcard reminder to renew online. Is this our future?

Don't lose your operator certification! Change your address online!

Every year, several operators lose their certification for failure to provide us with new information. The renewal packet that is sent out every November comes back to the department as "undeliverable" or "moved, left no forwarding address." We make every effort to keep our records up-to-date, but it is the responsibility of the operator to inform the Drinking Water Program office of any changes in address, home or work telephone numbers, and changes in employment. If you are reading this and it happens to be YOU, you can make address and telephone changes directly online by going to the DHS Public Health Online Licensing Services Web site at www.oregon.gov/DHS/ph/dwp/renewal.shtml. At the bottom of the page there is a link to the online system. If you renewed your certification

using the online licensing service last year, simply log in using your password from last year. (Did you save your password?) If you did not renew your certificate online, you will need to locate your copy of the renewal form or call Lee Keyes at 971-673-0413 to provide you with your PIN number to register. The instructions for registering and logging onto the Web site are at www.oregon.gov/DHS/ph/dwp/renewal.shtml. Please add any updates to your personal contact information.

You can also use this same online feature to look at the status of your certification.

Please get used to this licensing service, look around and check it out!

Dottie Reynolds is the Operator Certification Program coordinator in the Drinking Water Program / 971-673-0426 or dottie.e.reynolds@state.or.us



Staff updates

Kurt Putnam retired May 1, 2010, after nearly 22 years with the state Drinking Water Program. He was a Registered Environmental Health Specialist for the Technical Services Unit, who served in many areas over the years, including rules adoption coordinator and public water system security coordinator. Some of his most notable contributions include implementation of the Lead and Copper Rule; expertise in corrosion control treatment; implementing the waiver process for VOCs and SOCs, asbestos and dioxin; developing and implementing the capacity development program for public water systems in Oregon; conducting capacity assessments for water systems applying for an SRF loan; and providing training to water systems on developing emergency response plans. Most recently, he developed a guide for Drinking Water Program staff on how to enter Water System Surveys into the Safe Drinking Water Information System (SDWIS).

His many contributions — his knowledge of the rules; of drinking water quality and treatment; his experience with public water systems and working with water system operators; and his good nature and sense of humor — will be greatly missed.

We wish him well on his next adventure!

Roberto Reyes-Colón retired June 1, 2010. He began his employment with the Drinking Water Program as the State Revolving Loan Fund Coordinator in October 2003. During these years Roberto received the Administrator's award and several other awards for his work with the Revolving Loan Fund, as well as his work with the Diversity program. Roberto also has served as a mentor to several Office of Environmental Public Health staff.

Prior to joining the Drinking Water Program, Roberto served as the Immigration Reform and Control Act of 1986 coordinator for the Governor's Immigration Coordinating Committee under Gov. Neil Goldschmidt and Gov. Barbara Roberts.

Roberto also served as administrator of the Office of Quality, Education and Employee Support, and as the statewide manager for the Division of Vocational Rehabilitation Facilities Program for the State of Washington. Prior to that Roberto was appointed by then-Gov. Mike Lowry as the executive director of the Washington State Commission on Hispanic Affairs.

During Roberto's eight-year tenure with the Drinking Water Program, the SRF fund has disbursed approximately \$146 million in funding to maintain and improve Oregon's water infrastructure and, as of December 2009, helped more than 144 projects in Oregon get off the ground.

Congratulations for a job well done, Roberto, and best of luck in all your future endeavors!



MEETING CALENDAR

Drinking Water Advisory Committee

Department of Human Services

Diane Weis/971-673-0427

July 21, 2010

October 20, 2010

All meetings are held at the Public Utility Commission Office, 550 Capitol St., N.E., Salem, Oregon, 97310

Cross Connection Advisory Board

Go to: www.oregon.gov/DHS/ph/crossconnection/docs/AdvisoryBoardSchedule.pdf

Oregon Environmental Services Advisory Council

Go to: www.oesac.org/meeting_schedule

TRAINING CALENDAR

CEUs for Water System Operators

Check www.oesac.com for new offerings approved for drinking water

OAWU

503-873-8353

- | | |
|-------------|---|
| Aug. 23-26 | Summer Classic XVI |
| Sept. 14 | Control Valves by GC Systems |
| Sept. 14-15 | Wastewater Treatment/
Collections Certification Review |
| Sept. 15 | Advance Control Valves by GC
Systems |

Backflow Management Inc.

503-255-1619

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| Sept. 29 | Confined Space Entry |
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Cross Connection/Backflow Courses

Backflow Management Inc. (B)

503-255-1619

Backflow Assembly Tester Course

Sept. 13-17 Portland (B)

Umppqua Community College

541-440-7691

Aug. 24, 25, 26 UBOS Short School

Small Water System Training Course

OAWU

503-873-8353

- | | |
|----------|---------------|
| July 15 | Newport |
| July 20 | Klamath Falls |
| Aug. 12 | Eagle Point |
| Aug. 17 | Bend |
| Aug. 23 | Seaside |
| Sept. 14 | Dallas |
| Sept. 15 | Springfield |

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Drinking Water Program
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