

OREGON’S SOURCE WATER ASSESSMENT AND DRINKING WATER PROTECTION PROGRAMS

By Dennis Nelson

Over the next 3 1/2 years, the Health Division, in partnership with the Oregon DEQ, will conduct assessments of public drinking water sources statewide. The questionnaire, that begins on page 5, gives you an opportunity to supply information to us to prioritize your water sources for scheduling of assessments. If you are interested in participating, please fill out the form and return as indicated. The article below describes the source water assessment project and the drinking water protection program in detail.

The 1986 Amendments to the Safe Drinking Water Act required that States develop Wellhead Protection Programs designed to prevent contamination from impacting public drinking water supplies derived from groundwater sources (wells and springs). EPA guidance to states in developing these programs indicated that programs should include

- Delineation of the wellhead protection area, that area on the surface that directly overlies that part of the aquifer that supplies water to the well, wellfield or spring,
- Inventory of potential contaminant sources within the wellhead protection area, and
- Development of a management strategy to reduce the risk of those potential contaminant sources.

Over the period from 1991 to 1996, the Oregon DEQ and Health Division worked with two Citizen Advisory Committees to develop a voluntary program that emphasized technical assistance from state agencies and management plan development at the local level by a community team comprising the various stakeholders in the area. EPA approved Oregon’s Wellhead Protection Program, now called Drinking Water Protection in Oregon, in September of 1996, calling it a national model for community-based protection. Since that time, two Oregon communities, Junction City and Coburg, have had their Drinking Water Protection plans certified by the DEQ. An additional seven water systems, Medford, Springfield, Powell Valley Road Water District, Fern Valley Estates Improvement District, Otter Rock Water District, Garibaldi and Hubbard have delineations that have been certified by OHD.

The 1996 Amendments to the Safe Drinking Water Act (section 1453) require primacy States to develop and implement source water assessment (SWA) programs for all public water systems in the state. The SWAs will (1) delineate the boundaries of groundwater- and

surface water source areas that supply drinking water to public water systems, i.e., the drinking water protection areas (DWPAs), (2) identify potential sources of regulated and unregulated contaminants in the DWPAs, and (3) determine the susceptibility of public water systems to those contaminants, i.e, assess the potential of contamination from either the practices of the facility associated with the contaminant, or the ease in which the contaminant if released, could migrate to the aquifer. The Amendments allow states to utilize up to 10 percent of the of the State’s Drinking Water State Revolving Fund capitalization grant, approximately \$1.892 million in Oregon, as a Source Water Assessment set-aside for this purpose.

The set aside funds provide Oregon with the opportunity to expand the existing EPA-approved groundwater-based drinking water protection program (a.k.a. wellhead protection) to include surface water sources and to provide water systems and communities with the data needed to development meaningful drinking water protection plans. The funds available are insufficient, however, to allow all of Oregon’s 3550 public water systems to be assessed in the same detail. Accordingly, OHD, DEQ and OHD’s Drinking Water Advisory Committee proposed that two different approaches be used in assessing Oregon’s systems. In Oregon, there are 883 community, 337 nontransient noncommunity and 1452 transient noncommunity water systems. In addition, there are approximately 50 small
(continued on page 4)

Inside this issue:

Filtration Endorsement	2
Cross Connection Update	2
3M 500 Series Bag Filters	3
Turbidity Quality Assurance	3
“A Guide to Selecting Consultants”	3
Determining Delineation Priority Survey	5
Training Calendar	12

**CERTIFIED WATER TREATMENT OPERATORS
WITH GRANDFATHERED FILTRATION ENDORSEMENT
Effective July 14, 1998**

The following list includes the names of all certified Water Treatment Plant Operators who have received their Filtration Endorsement through grandfathering. Operators who were certified at level WT2 or higher prior to December 31, 1997 *and* can document at least one year of experience of operational decision making at a class II or higher conventional treatment plant are eligible for grandfathering. Operators who meet this criteria and wish to apply for grandfathering should call (503)731-4899 and request the "Affidavit of Employment" form. The Health Division will accept applications through December 31, 1998.

Larry Adams	John Collins	Rich Helinski	Derrell Nelson	Charles Scottie
Richard Adams	Lyle Cooley	Bruce Hemenway	Robert Noelle	Vince Seeno
Terry Ager	Carl Cox	James Hester	Richard Nyhus	David Shirley
David Akers	Dale Crum	Michael Hinton	Richard Nystrom	Gary Simantel
Andrew Albee	Leonard Custis	Diane Holmes	Terry Olson	Steven Simpson
Arthur Allen	Gene Davidson	Guy Holzworth	Debra Omans	Michael Slibsager
David Anderson	Charles Davis	Daniel Houston	Cecil Osborne	Randall Smith
Paul Anderson	Andrew Degner	Richard Howard	Wesley Oster	Larry Sparling
Dale Angell	Michael Dennee	Steve Human	Rodney Owens	Arthur Sprout
Lyle Arrant	John Dickinson	Chris Hunter	Terry Owings	Brian Stahl
Gary Atwood	Raymond Doan	Gregory Hunter	Raymond Pardee	Timothy Stetz
Terrence Ballweber	Floyd Dollar	H. Ingwerson	John Peasley	Steven Stewart
Dwayne Barnes	Michael Donovan	Kenneth Johnson	Thomas Penpraze	Paul Strader
Robyn Bassett	Patrick Dorning	Stella Kash	Daniel Perkins	Robert Strassner
Bryce Behnke	Louis Douglas	Hans Kaumanns	Robert Peterson	William Strawn
Gregory Benthin	Dean Dowell	Jerome Kimball	Sonja Pickner	Dennis Stryker
Jonas Bergh	Kevin Eddy	Robert King	Roderick Pike	Arley Sullivan
Richard Berry	Glen Edenfield	Charles Kingston	Les Plaep	Earl Swigert
Gary Biggs	Robert Elbert	Rodney Klug	Tim Platt	Doyle Tankersley
Steven Blair	David Eliasen	Ralph Lamar	Mitchell Postle	Henry Thomson
Robert Blezinski	Ronald Elliott	Wade Lindsay	Mark Prevo	Gary Trout
Alan Boschee	Lloyd Emigh	Richard Lindsey	Randal Prock	John Vandiver
Jon Boyd	Henry Erbele	Darrel Lockard	Eric Quinn	Shawn Vincent
Dave Bracken	John Evans	Roy Loftis	Deeann Ramos	Charles Walker
Timothy Brady	Cristina Evonuk	Glen Macdonell	Donald Ratcliff	Michael Walker
Steven Brent	Kenneth Forbes	Raymond Marshall	Mark Reagles	Steven Wallace
William Breshears	Susan Gage	Todd Mason	John Reed	James Ward
Alexander Brown	Filip Garcia	Gerald Matthews	Russell Reed	Wilbur Westerlund
Don Bryant	Kenneth Garrett	Robert McDaniel	Lorraine Reynolds	Steven Williams
Robert Burgeson	James Gohring	John McKeivitt	Wayne Riccetti	Daniel Wilson
George Burton	Michael Graham	Daryl McVey	Kurt Riemer	Rodney Wilson
C. Caley	Michael Greene	Robert Meade	Brian Rigwood	Douglas Wise
Joseph Carbone	Robert Grek	Richard Mendez	Michael Roark	Roy Wohlgemuth
Larry Carleton	Bruce Griffith	Mark Merry	Dale Rutledge	Keith Wolf
Rod Carrasco	Timothy Haller	Allen Middaugh	Ricardo Saavedra	Patrick Wood
Tom Chambers	Jerald Hansen	Edward Mills	Terry Saubert	Robert Worthean
Mack Clark	Randy Harris	Ray Misick	Robin Schab	Stephen Yoder
Rodney Clemons	Ed Harvey	Bill Mitchell	L. Schmidt	Robert Young
Ronald Coleman	Daniel Heiken	James Nash	Chris Schrader	Leonard Zinda

CROSS CONNECTION UPDATE

By Bonnie Waybright, PE

The current list of approved backflow assemblies is dated April 1998. Current lists of certified Cross Connection Inspectors and Backflow Assembly Testers are available upon request. Call (503)731-4899 to request this information.

Bonnie Waybright, PE, is Cross Connection Control Program Coordinator, Drinking Water Program

**IMPORTANT NOTICE FOR USERS OF
3M 500 SERIES BAG FILTERS**

by Kari Salis, PE

3M has recently informed the Health Division that as a result of live agent testing, they no longer recommend that the 525A bag filter be used in potable water applications. Similar studies showed that the 523A filter can only be used for the removal of *giardia lamblia*, not *cryptosporidium*, with a maximum pressure differential of 15 psi.

As of December 31, 1999, 3M will no longer be manufacturing filter technologies for the potable water industry. RP and US Filter (Censys) also use 3M filters under their own name. At least 36 public water systems in Oregon rely on 3M technology for meeting the Surface Water Treatment Rule.

Systems using the 525A filter must switch to the 523A model immediately or no later than the next time the filter is changed. The 523A bags must be changed before the pressure drop exceeds 15 psi. All systems using 3M products must develop a plan to phase out use of the 3M filter by the end of 1999, and switch to a different product approved through third party certification. Other acceptable bag or cartridge filters currently on the market consist of: Ametek CBC-10 and CMR-10, Harmsco HUR-170-hp, and Rosedale GLR-DO-825-2. Plans for all modifications must be reviewed and approved by the Health Division prior to construction.

For further details or technical assistance, contact Carrie Gentry, EIT at (503) 731-4317.

Kari Salis, PE, is in the Field Services Unit of the Drinking Water Program

TURBIDITY QUALITY ASSURANCE CHECK

By Carrie Gentry

In January, the Health Division conducted the biennial Turbidity Quality Assurance Check. The purpose of this program is to alert operators to the fact that turbidimeters need to be routinely calibrated. 343 sample bottles were sent to 280 systems, with unfiltered systems receiving 2 bottles. The samples contained a polymer standard of unmarked turbidity. After calibrating their machines, the water systems measured the turbidity of the unknown sample and sent the results to the Health Division. 72% of the water systems responded, with the results falling into the following ranges:

Difference: measured from actual	Percent of responses within range
0 to ±0.14	75
±0.15 to 0.34	16
±0.34 to 0.65	6
greater than ±0.65	3

75% of the results fell within the target range of less than ±0.14 NTU. Two-thirds of the measurements were greater than the actual value, which would produce an error on the conservative side.

There are several reasons why the measured value would deviate from the actual value. Some of these are unavoidable, such as agitation of the sample in the mail or transferring the sample into a cuvette. However, there are steps that water systems can take to help prevent inaccurate readings, such as:

- Checking for outdated calibration standards - these should be replaced at least annually.
- Scheduling routine maintenance and cleaning of the turbidimeter. Calibrate the turbidimeter regularly.
- Checking the cuvette for stains, scratches, or spotting. Replace if necessary.

Carrie Gentry, EIT, is Regional Engineering Assistant in the Field Services Unit of the Drinking Water Program

**“A GUIDE TO SELECTING CONSULTANTS”
HANDBOOK**

By Jerry Sheridan

The publication “A Guide to Selecting Consultants for Rural Communities” was initially prepared in December, 1996. The second edition was completed in December, 1997. It was developed because many small communities did not have, in place, a process they could follow to select a consulting engineer or architect. They often hired the first consultant who came through their door, without knowing what their needs were or if the consultant had expertise in the field in which they needed assistance.

The Guide was developed by members of Oregon Rural Community Assistance Program with funding from Rural Community Assistance Corporation (RCAC). Kevin Dowell of RCAC was instrumental in the development of the initial publication. The second edition was completed by Chris Marko soon after he became an employee of RCAC. Representatives of Oregon Department of Environmental Quality, Oregon Health Division, Oregon Economic Development Department, Rural Development, and the Consulting

Engineers Council of Oregon also contributed to the completion of the final document. Steve Anderson of Anderson-Perry Engineering was also instrumental in providing background information for the December, 1997 update of the publication.

The Guide was developed with the idea of outlining a step by step process for small communities to use when hiring a consultant to assist them with a community infrastructure project. The hiring of a consultant is a very important step for a community, and often is the case, a long-term working relationship can be developed with the consultant. It is therefore very important to hire the most qualified individual or firm, based on the experience that the individual or firm possesses. The Guide allows the community to develop a selection process for hiring a consultant that is tailored to the needs of the community.

The community needs to hire a highly qualified professional to do a job that few people are qualified to do. It is essential that the consultant with the best qualifications and the strongest commitment to the project be hired. This does not, however, rule out the cost of service as a factor in the selection process. The cost should become a factor only after the best qualified consultants are rated and ranked based on their qualifications. At that point cost can be weighed, prior to making the final selection.

The Guide provides the community with a mechanism to identify the problem they have, to collect all available information, and then to determine if professional help is needed. Once the decision is made the Guide can be used to hire the consultant with the capacity to perform the task that is necessary.

The process begins with the solicitation of proposals from prospective consultants. The community then receives and evaluates the proposals, rates and ranks those who have submitted proposals, negotiates a service agreement, and then as construction commences, monitors work and makes progress payments for the work performed.

The Guide can be obtained from any of the following organizations free of charge.

Oregon Department of Environmental Quality
2020 SW Fourth Avenue, Suite 400
Portland, Oregon 97204
(503)-229-5588

Rural Community Assistance Corporation
921 SW Morrison, Suite 529
Portland, Oregon 97205
(503)-279-1477

USDA-Rural Development
101 SW Main, Suite 1410
Portland, Oregon 97204
(503)-414-3360

Oregon Health Division
PO Box 14450
Portland, Oregon 97214
(503)-731-4010

Jerry Sheridan, Chief, Rural Development, Rural Utility Service, USDA

Source Water Assessment (*continued from page 1*)

schools that are outside the federal water system classification that Oregon chooses to include in the SWAP. In our Source Water Assessment program, community- and nontransient noncommunity water systems, as well as the ~50 schools that are in Oregon's state regulated classification, will have full assessments, i.e., delineations, potential contaminant inventories and susceptibility analyses conducted in a manner consistent with Oregon's existing drinking water protection program. Transient noncommunity water systems will be assessed using a generalized delineation method and an outreach program, addressing contaminants in general, but focusing on those that are capable of rendering an acute response in humans, i.e., pathogenic microorganisms and nitrate.

The implementation of Oregon's SWA and Drinking Water Protection programs will be accomplished primarily by the DEQ and OHD. Oregon will have 3.5 years, or until approximately January 1, 2002, to accomplish the source water assessments using the set-aside funds. Of the ~1270 full assessments listed above, OHD will perform delineations on the ~990 groundwater systems and the DEQ will perform delineations on the ~280 surface water systems. Where conjunctive delineations are appropriate, they will be accomplished cooperatively. Inventories will be performed on all 1270 systems by the DEQ, and the susceptibility analyses will be performed on all 1270 systems by OHD, with assistance from the DEQ. DEQ will also provide technical assistance to communities, initiate community outreach programs and take the lead in developing a GIS framework for displaying the results of the SWAs. OHD will also provide technical assistance to communities and will implement the outreach program for the ~1450 transient noncommunity water systems.

The agencies are designing the Source Water Assessment program through the use of a citizen's (and technical) advisory committee, referred to as the Drinking Water Protection Advisory Committee (DWPAC). For continuity in the drinking water protection program development, agencies sought membership in the DWPAC from the earlier wellhead protection committee. In addition, new membership, reflecting surface water/watershed interests were recruited, e.g., Portland Water Bureau, Eugene Water and Electric Board, City of Bend, City of Corvallis, South Fork Water Board, and the City of Nehalem. As with the existing wellhead protection program, the

(*continued on page 9*)

**Survey Worksheet for Supplying Information
Relevant to Determining Delineation Priority**

Public Water Systems that wish to supply information to the Drinking Water Program to help establish the priority in which they will be contacted for the delineation and/or outreach effort are encouraged to complete this questionnaire and return it to the address below. Water systems that do not submit this form will still be prioritized for delineation, however it will be accomplished using file data that may be less site-specific (and less accurate!).

Please respond to the questions below, adding comments as appropriate:

Public Water System Name: _____ PWS ID#: _____

Name of Individual Completing Survey: _____

Address: _____

Telephone Number: _____

Location of Well(s) or Spring(s): Provide all known information

Nature of Source(s); check as appropriate:

Well _____ Spring: _____ Wellfield: _____

Name of Source (if applicable): _____

County: _____ Street Address: _____

Tax lot # _____ City: _____

Jurisdiction (city, county): _____

Township: _____ Range: _____

Section: _____ 1/4 _____ 1/4

Latitude: _____ Longitude: _____

If possible, please locate well(s) or spring(s) on an assessor's plot map and attach to this form

Contaminant Detection:

Indicate whether any of the following has occurred and if so, the most recent date of occurrence:

Date

Yes No Source-related coliform detection.

Yes No Confirmed detection of VOC/SOC

Which ones and at what concentrations?

Yes No Nitrate at or above 5 mg/L

What concentration?

Yes No Other inorganic constituent:

Which ones and at what concentrations?

Regional Considerations:

In which of the following land use(s) is your well(s) or spring(s) located?

_____ non-sewered residential

_____ industrial/commercial

_____ irrigated agriculture

_____ non-irrigated agriculture

_____ public/private forest land

_____ Other (please specify)

In which drainage basin (watershed) is your well or spring located?

Are there planning issues (e.g., periodic review, pending land-use application) currently being considered about an area within three miles of your drinking water source(s) that may be assisted by learning about the source area(s) that supply your water system? Explain.

Are there other public water system sources within three miles of your drinking water source(s)? Please list.

Site-Specific Issues:

Indicate the classification of your water system:

- _____ State-Regulated (Less than 15 connections)
- _____ Transient Noncommunity (Campground, restaurant, etc)
- _____ Nontransient Noncommunity (School, business/industrial)
- _____ Community (Residential)

What is the population served by your water system? _____

Place a check by any of the following facilities that you know about that occur within 0.5 miles of your drinking water source. In the parentheses (), indicate the approximate number of these facilities that occur.

- | | | | |
|--|-----|---|-----|
| _____ Body Shop | () | _____ Gas Station | () |
| _____ Repair Shop | () | _____ Boat Services | () |
| _____ Chemical/Petroleum
Storage/Processing | () | _____ Dry Cleaners | () |
| _____ Electrical Mfg. | () | _____ Fleet/Truck/Bus Terminal | () |
| _____ Furniture Repair/Mfg. | () | _____ Home Mfg. | () |
| _____ Junk/Scrap Yards | () | _____ Machine Shop | () |
| _____ Metal Plating/Finishing
Fabricating | () | _____ Parking Lots (>50 spaces) | () |
| _____ Photo Proc/Printing | () | _____ Plastic/Synthetics Prod. | () |
| _____ Research Laboratory | () | _____ Wood Preserving/Treatment | () |
| _____ Wood/Pulp Paper
Processing | () | _____ Auction Lots | () |
| _____ Confined Animal Lot | () | _____ Farm Machinery Repair
Shop | () |
| _____ Lagoon/Liquid Waste | () | _____ Pesticide/Fertilizer/Petroleum
Storage, Handling, Mixing
Cleaning areas | () |
| _____ Airport Maintenance or
Fueling area | () | _____ Landfill/Dump | () |
| _____ Railroad Yards | () | _____ Residential areas with
Septic Systems (>1/acre) | () |
| _____ Injection/Dry Well/Sump | () | _____ Military Installation | () |

- _____ Historic Gas Stations () _____ Confirmed Leaking Fuel ()
 or Chemical Storage Tank
- _____ Other (list) ()

Enter the following information for your well(s)

Date drilled: _____

Depth: _____

Well Log? _____

Average Monthly
Use (gpd): _____

If well reports (logs) are available, please send them with this form

Please check the appropriate statement(s) regarding the level of local interest that currently exists in developing a Drinking Water Protection Plan to protect your resource.

- _____ Interest at the water system level
- _____ Interest at the local government level (please explain below)
- _____ Interest at the community level (please explain below)

Additional comments that may relevant to the prioritization of this water system:

Mail completed questionnaire (and well reports if appropriate) to the following address:

Dennis Nelson, Groundwater Coordinator
 Oregon Health Division
 Drinking Water Program
 442 A Street
 Springfield, OR 97477

Source Water Assessment (continued from page 4)

agencies will expend significant effort to ensure that the composition of the citizen advisory committee reflects the diversity of stakeholders in the state.

Representatives from county, state and federal agencies, e.g., Curry County Environmental Health, ODA, DLCD, WRD, USGS, USFS, BLM, etc., were recruited for the technical committee, including agencies that are currently dealing with watershed projects and programs. Committee membership also includes representatives from the consulting community, Associated Oregon Industries, Oregon Natural Resources Council, Oregon Association of Water Utilities and Oregonians for Food and Shelter. It is the intent of DEQ and OHD to integrate the SWA program with existing efforts at the local, State and Federal level. To date, the Committee has met in February, April and June of 1998. All meetings are advertised and open to the public; information is distributed via an "Interested Party" mailing. Those interested in being added to the Interested Party list should notify Sheree Stewart, DEQ's Drinking Water Protection Coordinator, at 503-229-5413.

State Source Water Assessment Programs

States are required to submit their proposed Source Water Assessment Programs to EPA for approval by February of 1999. In order to meet the specific objectives outlined in EPA's Final Guidance for State Source Water Assessment Programs, there are a number of tasks that must be completed by the DWPAC by Fall of 1998. These tasks are listed with brief discussion below.

1. Delineation of Source Areas.

- A. Determine how to acquire accurate location data for public water system intakes, wells or springs in a timely fashion. Location data will be accomplished using a GPS unit so that an accurate GIS coverage of Oregon water systems can be constructed. Some data is already available and will be incorporated as appropriate into this effort.
- B. Delineation of the approximately 990 community and nontransient noncommunity groundwater systems will be accomplished using the existing EPA-approved Wellhead Protection Program Guidance. The methodology that will be used for each system is dependent on the population served by the system (Table 1).
- C. Develop a procedure for delineating the ~280 surface water supplied water systems. Although topographic delineations of the existing watersheds upstream from the intakes will be a part of this effort, it may be necessary to develop enhanced methods to look at high priority areas within the watershed as well.
- D. Prioritize the groundwater systems for delineation. Although all community and nontransient noncommunity water systems will have a formal delineation accomplished during

the 3.5 year effort, a priority list will be established (see below) in order to determine the order in which water systems will be delineated. Groundwater-based systems will be started first because the methodology has already been established.

- E. Prioritize the surface water systems for delineations. Criteria for determining the order in which the community and nontransient noncommunity water systems using surface water will be delineated must be established.
 - F. Determining where and how to conduct conjunctive delineations. It is recognized that most surface waters obtain part of their flow from groundwater. In turn, many groundwater sources are in hydraulic connection with surface water. Conjunctive delineation refer to the identification of both groundwater and surface water contributions to a given public water system.
2. Inventorying the source areas for potential contaminant sources.
The committee must decide what constitutes a significant potential source of contamination for the inventory purpose. This effort has already been accomplished for groundwater-based systems (Oregon's Wellhead Protection Guidance Manual) but not yet for surface water-based systems.
 3. Conducting a susceptibility analysis for public water systems.
The susceptibility analysis that the DWPAC develops will consist of two parts: identifying land uses practices associated with the potential risk of contamination, and determining the sensitivity of the aquifer or watershed to contamination. Stated another way, the susceptibility analysis estimates the risk of contamination of drinking water occurring as a result of the combined effects of land use activities and the characteristics of the aquifer and/or the watershed.
 4. Developing an Accessible Database.
The DWPAC will determine how to make the results of the assessments readily available to the water system, other agencies and the public. Collecting the assessment data is only worthwhile if it is ultimately used by the water system and public to protect the resource. Making the data easily accessible facilitates this protection effort. In addition, there are several different programs in operation by various agencies that could utilize the assessment data. Making it available reduces the cost of duplication and ensures a consistent approach to water quality related issues.
 5. Developing Outreach Materials.
The assessment of transient noncommunity water systems will be based on an outreach program that focuses on the potential contamination from nitrate or microbial sources. The committee will develop the approach and provide direction with respect to the target audience and the kinds of outreach material to be distributed.

Table 1. Delineation methods for groundwater drinking water sources

Source	Population Served	Delineation Requirement
Well(s)	≤ 500	Calculated Fixed Radius
Well(s)	501 - 3299	Regional Conceptual Model/ Analytical Model
Well(s)	3300 - 50,000	Site-Specific Conceptual Model/Analytical Model
Well(s)	>50,000	Site Specific Conceptual Model/Numerical Model
Spring(s)	All	Hydrogeologic Mapping

Contributions from Public Water Systems

In order to make most efficient use of available funds and with the intent of increasing local ownership in the SWAs, OHD and DEQ will strongly encourage participation of the public water system and/or the community in providing information during the delineation effort. For groundwater systems, this contribution may include the following:

- Supplying the appropriate well reports (e.g., well logs) for the system’s wells.
- Supplying constant-rate pump test data (especially necessary for systems serving >3300 residents)
- Supplying accurate water use data for the system
- Assisting in the location of area wells

The information above is extremely important in order to construct a delineation that is representative of the actual water system. The aquifer test (pump test) is particularly useful in that it allows us to determine the specific characteristics of the aquifer, e.g., permeability that are necessary to accurately delineate the drinking water protection area. Recommendations for aquifer tests are provided in Appendix A of the Oregon’s Wellhead Protection Program Guidance Manual and in the Fall 1995 issue of OHD’s PIPELINE.

Implementation of Protection

The activities associated with the Source Water Assessment Program, i.e., delineation, inventory and susceptibility analysis, are primarily limited to data collection. The protection of drinking water sources begins with the management phase, where the type of facility, its practices, its location relative to the drinking water source and aquifer susceptibility if appropriate, are considered together to develop strategies to minimize the risk the facility poses to

groundwater and/or surface water. It is fundamental that the delineation, potential contaminant source inventory and susceptibility analysis be taken from the report level to the field level. Oregon will utilize a portion of set-aside funds to assist communities in utilizing the information derived from the SWAs to develop their own local drinking water protection plans.

The DEQ, as the lead agency for drinking water protection in Oregon and as the agency responsible for certifying drinking water protection plans in the state, will have the responsibility of conducting this phase of the project. Other agencies will assist the DEQ in the implementation effort as resources allow.

The focus of this part of the program is education, at all community levels, from local government, to the water system, to the general public. Our experience in Oregon indicates that these individuals need to know where their drinking water comes from, how it is vulnerable to past and present land use practices, how to develop a drinking water protection plan locally, what such a plan will do for them, and what it will not do to them. The DEQ will utilize the set-aside funds in the following areas:

- Technical assistance for implementation of Drinking Water Protection Plans
- Technical assistance directed at those communities that have documented but unresolved high priority contamination sources near their public water supplies.
- Community involvement programs.

The Oregon experience indicates that even communities that have an expressed interest in developing and implementing Drinking Water Protection plans need assistance in doing in completing this task. This is especially the case for small communities with limited resources and staffing. The effort aimed at providing

implementation technical assistance will be focused on helping a community develop a local Drinking Water Protection Team and assisting them in moving forward with the process. This will involve helping them identify issues, set objectives and resolve technical questions that will arise during the Team discussions. Without this level of assistance, we believe that the implementation process will be prolonged and inefficient, and in some communities, may stall.

In order for a community to implement a drinking water protection plan with widespread success, the community at large must understand and support the effort. Our experience indicates that although it has improved in the last five years, the general public is under informed regarding drinking water issues, including the relation between land use activities and water quality. Patterned in part from earlier limited duration efforts, the DEQ will develop programs targeting the general population in communities where Drinking Water Protection Plans are being developed or are in need of being developed. Community forums, school education programs, nitrate testing opportunities, etc., are types of activities that have been successful in earlier programs.

Making Assessments Available to the Public

Information collected during the assessment phase must be made available to the public in a format that is usable by the community in developing their drinking water protection plans. Of importance to the community are maps that display the delineation and the potential contaminant inventory. These are important tools that allow a drinking water protection plan to be built. Delineations will be placed in a GIS format as they are completed by either OHD (groundwater) or DEQ (surface water). The Oregon DEQ will take the lead in the development of GIS coverages for both the delineations and the potential contaminant inventory. These coverages will be overlain onto standard coverages, e.g., political boundaries, roads, water features, etc. to prepare a final map for the community.

It is also important to some members of the community to understand how the data was collected that was used to produce these maps. The community will receive a copy of the delineation report that outlines pertinent hydrogeological and/or hydrological information and details the assumptions and methods pertaining to the delineation. Given that such a document will not be suitable for general public consumption, the agencies will establish a FACT SHEET tailored to each community that will allow for the presentation of sufficient information to the public to provide credibility to the products. To facilitate this task for the DEQ and OHD, OHD will develop a template that will allow the inclusion of both general and site-specific information that can be disseminated to the public.

Prioritizing Groundwater-Based Water Systems for Delineation

As described above, establishing a method to prioritize the order in which groundwater-based community and nontransient noncommunity water systems will be delineated, is a task before the DWPAAC. Discussions thus far have identified the following criteria:

1. A confirmed detection of a contaminant in the source water of
 - a. any VOC/SOC or microbial contaminant,
 - b. nitrate at concentrations that exceed 5 mg/L, or
 - c. any other inorganic constituent detection above what is reasonably likely to be natural levels.
2. Regional Issues: Well(s) located in
 - a. a high-risk land use, e.g., industrial/commercial, irrigated agriculture, septic systems on small lots,
 - b. a sensitive hydrogeologic setting, e.g., highly permeable sands and gravels or highly fractured bedrock at or near the surface,
 - c. an area undergoing periodic review or in which other planning-related questions are being raised, or
 - d. an area where a number of public water systems can be found in proximity to one another, e.g., within 2 miles of one another.
3. Site-Specific Issues that are Important for Ranking Purposes:
 - a. Population served by the water system.
 - b. Shallow well (< 75 feet) in an unconfined aquifer.
 - c. High-risk potential contaminant source(s) within 1/2 mile of the well.
 - d. Average pump rate during highest 3 month period
 - e. There is a demonstrated high level of motivation and interest with regard to developing a local drinking water protection plan.
 - f. The well is older than 1970.

Of the criteria above, some can be completed directly by OHD (i.e., 1a, 1b, 1c, 2b and 3a) and the Division will be able to establish a priority based on information from our files. Some of the above information, however, can best be supplied by the local water system. Accordingly, we have compiled the questionnaire below that can be filled out and returned to OHD by systems that want to be considered for a higher priority. Questionnaires should be returned to the address indicated. The water system will be notified of the approximate ranking and estimated time in which the delineations will be completed. Questions can be directed to Dennis Nelson, OHD Groundwater Coordinator at 541-682-4424

Dennis Nelson is the Groundwater Coordinator, Drinking Water Program



Drinking Water Program, Oregon Health Division
 Department of Human Resources
 P.O. Box 14450
 Portland OR 97293-0450

PERIODICALS
 POSTAGE
PAID
 PORTLAND OR

TRAINING CALENDAR

HDR Engineering

Lynne Ellis Chicoine/(503)768-3700
 Oct. 26-28 PNPCA-65th Annual Conf.
 Clean Water

Oregon Assoc. Of Water Utilities

(503)873-8353

Sept. 9 Pumps & Pumping
 Sept. 9 Troubleshooting Activ. Sludge
 Sept. 16 Treatment Tech./Surface Water
 Sept. 23 Troubleshooting Activ. Sludge
 Oct. 5 Disinfection Alternatives
 Oct. 6 Disinfection Alternatives
 Oct. 7 Disinfection Alternatives
 Oct. 14-15 WD & WT Levels I & II
 Oct. 19-20 WD & WT Levels I & II
 Nov. 5 Source Water Protection
 Nov. 10 Water System Mapping
 Nov. 17 Treatment Tech./Surface Water
 Nov. 19 Consumer Confidence Report

Cross Connection/Backflow Courses

Backflow Management Inc. (B)
 800-841-7689
 Clackamas Community College (C)
 (503) 657-6958 ext. 2364

Backflow Assembly Tester Course

Sept. 14-18 Oregon City (C)
 Sept. 14-18 Pendleton (B)
 Oct. 19-23 Portland (B)

Backflow Assembly Tester Retraining/ Recertification

Sept. 18 Pendleton (B)
 Oct. 16 Oregon City (C)
 Oct. 23 Portland (B)

Cross Connection Inspector Course

Sept. 21-24 Portland (B)
 Nov. 16-19 Oregon City (C)

Cross Connection Inspector Update

Sept. 25 Portland (B)
 Nov. 20 Oregon City (C)

Water System Training Courses

Oregon Health Division

Roberta Lindgren/(503)731-4317

Sept.* Bend
 Oct.* Lincoln City and McMinnville
 Nov.* Deer Island and Tillamook

*dates and exact locations to be announced

PIPELINE is intended to provide useful information on technology, training, and regulatory and policy issues to those involved with the state's public water systems to improve the quality of drinking water in Oregon. PIPELINE may be copied or reproduced without permission provided credit is given.

PIPELINE is published quarterly free of charge by the staff of the Oregon Health Division, Drinking Water Section, 800 NE Oregon St., Portland OR 97232. Periodicals postage paid at Portland OR. POSTMASTER: Send address changes to PIPELINE, P.O. Box 14450, Portland OR 97293-0450.