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| Drinking Water in Clackamas County - Part I Co-chairs Sarah Chaplen and Christine Roth | Committee members Susan Macomson, Kathy Newcomb and Sylvia Smith  Introduction Scope: A two year study in three parts on water resources and municipal distribution of water in West Clackamas County, including but not limited to the following: a) historic perspective, including, state, local, and national positions, b) current and potential resources, c) needs, past, current and future, d) water quality, e) environmental constraints.  Part I provides a regional overview of resources needs, water quality, environmental constraints, regulatory framework and governance. It is presented for information and discussion. The Columbia River Region League of Women Voters has undertaken a detailed study of regional drinking water ownership and water systems, particularly of Bull Run water. Regional consensus and positions will come from that study.  Parts II and III are scheduled for 2002-2003. Part II will deal with the Clackamas River as the major drinking water source for Clackamas County up to water intakes at the treatment plants. Part III will review local, state and national positions and will discuss water supply from treatment plant or well to end-user in West Clackamas County. Both parts II and III will have questions for discussion and consensus |
| Overview  The Willamette Basin is about 150 miles long and 75 miles wide. The valley is surrounded on three sides by hills and mountains. On the north end it meets the Columbia River. The Willamette River is 187 miles long; it is one of the largest river systems in the continental United States. Land use in the Basin breaks down to 65% forestry (this number is dropping). 20% agriculture, 9 % urban (and growing) and the rest falls into other areas. The population in the Willamette Basin has been growing at a steady rate for 150 years. Today’s population in the basin is 2.3 million. It is expected to double by 2050, greatly increasing demand for water.  In the higher, less developed elevations the environmental impacts on the rivers come largely from logging, dams and herbicides. Recreation and mining are also having an impact. For the more developed areas agriculture, livestock, industry, and urban pollution impact the water |
| Major Water Sources  There are three major sources of municipal water in the metropolitan region, the Bull Run system, the Clackamas River system, and the Tualatin-Trask River system. In addition, wells provide lesser amounts of water in several areas. The Willamette Treatment Plant has the potential to become a fourth major water source of drinking water for municipal use.  **Bull Run** The system, owned by the City of Portland, provides water for about 800,000 people. Located 26 miles east of Portland, the Bull Run Reserve is separated five miles from the peak of Mt. Hood by a geologic ridge. Rainfall ranging from 80-170 inches per year is the major water source, not snow melt. The system is composed of two huge reservoirs, which hold 17 billion gallons. Due to routine turbidity, only about 11 billion gallons of this amount is normally available. The system is gravity-based, and excess power is sold to PGE. Bull Run has a capacity of 205-210 million gallons per day (MGD). Wells along the Columbia River shore can offer up to an additional 90 MGD. The system has adequate water quantity to provide for the estimated metro area population until the year 2050.  Great effort is made to protect the Bull Run Reserve. No sewage treatment or industrial plant effluents, and no farm or forest pesticides drain into the Bull Run. No public recreation or residences are allowed in the Reserve.  In the past, logging was permitted in the Reserve. Then beginning about 1970, there was disagreement between environmentalists on the one side and the Portland Water Bureau and the US Forest Service on the other regarding the impact of logging. Environmentalists claimed that logging aggravated turbidity. The other side claimed that logging prevented forest fires. Actual logging stopped in 1993. The matter was resolved with federal legislation in 1995 prohibiting commercial logging in the Reserve. Similar legislation in 2001 was passed affecting the Little Sandy watershed.  Unlike water from the other major sources, water from the system is not filtered or treated except for chlorinating, as required by the EPA. However, due to changing standards, additional treatment will be required by 2010 which may cost between $55,000,000 and $204,000,000. This range is so large because multiple treatment options are being considered. At present about 75,000 water analyses are performed on about 12,000 samples from the water system each year.Page Up  **Clackamas River** The Clackamas River provides water to about 175,000 people. Current water intake capacity is about 66 MGD on the lower 5 miles of the river. Another 22.5 MGD expansion is planned within the next 10 years.  The Clackamas River runs diagonally from the southeastern corner of Clackamas County to the county’s northwest corner near the Willamette River. The sources of the river include its watershed, Timothy Lake, and Olallie Lake in Jefferson and Marion Counties. The watershed can roughly be divided in half, with nearly all of the upper watershed within the Mt. Hood National Forest, managed by the US Forest Service. About 72% of the total land in the watershed is publicly owned, about 3% is tribal and 25% is privately owned. The river has four major dams, all of them generating electricity for Portland General Electric.  Discharge into the river is limited. There are eight non-major sources on the river that have discharge permits. There are an additional two overflow permits. However, Department of Environmental Quality’s Three Basin Rule, (1995), which applies to the Clackamas, North Santiam and McKenzie Rivers, prohibits putting additional municipal sewage or industrial effluent into the rivers. (Sewage treatment plants located near the mouth of the Clackamas River discharge treated water into the Willamette River.) Public recreation is allowed on the Clackamas and its sources, for the most part, although access is not always easy.Page Up  **Tualatin/Trask Rivers** The Tualatin/Trask River system begins at the far west end of Washington County and supplies 73 MGD of water. By intergovernmental agreement, Joint Water Commission ownership includes cities such as Forest Grove, Hillsboro and Beaverton, Tualatin Valley Water District (TVWD) and certain additional areas. It serves about 250,000 people. The high tech industry is a major consumer.  Barney and Hagg Lake are the reservoirs. Hagg Lake is heavily used for recreation. Motorized boating is allowed on portions of the reservoir. A timber company discharges effluent by permit into Scoggins Creek. The TVWD is proposing pipes to carry the water from Hagg Lake to the Tualatin, bypassing the timber company effluent and any possible failing septic tanks. There are no sewage treatment plants above the major water intake located south of Forest Grove. There is a minor intake located at Cherry Grove.  Tualatin Valley Water District is the largest customer for the Bull Run system with about 160,000 customers. TVWD normally receives about 60% of its water from the Bull Run system, and about 40% of its water from the Tualatin/Trask. However, due to last year’s drought, about 80% of its water came from the Bull Run, and about 20% from the Tualatin/Trask. TVWD then provided some of its water in the Tualatin system to other members of the Joint Water Commission.Page Up  **Willamette River** The $49,000,000 Willamette Treatment Plant in Wilsonville came on-line about April 17, 2002. The plant’s co-owners are the city of Wilsonville and the Tualatin Valley Water District (TVWD). Wilsonville holds water rights for 20 MGD and TVWD has rights for 130 MGD, making a total of 150 MGD of Willamette River water available between them. (The state Department of Corrections contributed $10,000,000 to the cost of the treatment plant.) At present, the plant’s prime customer appears to be the city of Wilsonville. Original plans called for the cities of Sherwood, Tualatin and Tigard, and eventually TVWD, to serve as customers; this appears unlikely at present. Immediate plant capacity is 15 MGD with two to six MGD scheduled for initial production. Ultimate plant capacity after modular expansion could be 70 MGD.  Twenty or more major sewage treatment plants and industries drain effluent into the Willamette upriver from Wilsonville. Pollution also comes from surface runoff, especially from agricultural areas. Parts of the Willamette are heavily used for recreation, including boating and fishing although advisories have been issued regarding eating the fish, on occasion. |
| Governance  Water is supplied by a variety of governmental agencies. The most familiar is a city water department. The department is a division of city government and is frequently an enterprise fund. That is to say, the fund pays for itself through revenue from sales of water. This greatly decreases the need for general tax revenue to be used to support the provision of water.  Three other types of water purveyors also exist in Oregon. The first is a water district. Water districts are county chartered municipal corporations. They are not-for-profit tax exempt organizations with elected boards of directors. The organization and function of water districts is governed by the State. Some districts were formed to serve urbanizing areas that were not annexed into cities or some serve a group of cities. For example, South Fork Water District was formed to serve Oregon City, West Linn and Gladstone. Numerous small water districts serve areas throughout the state.  The second type of water purveyor is the Peoples Utility District or PUD. PUD’s were first allowed to form in 1930 as a way to provide utility service to customers who otherwise would not be served by utility providers. Each customer is also a member of the PUD. Memberships are paid annually and dues are at least $5.00 but not more than $100.00 per year with provisions made to allow low income/financially disadvantaged individuals to be members. Oregon PUD's are defined in the Oregon Revised Statutes. There are currently six active PUD's in Oregon. They are similar in structure to Rural Electric Cooperatives in other parts of the country. The Emerald Peoples Utility District in Eugene is the largest in the state providing both water and electricity.  The third type of purveyor is a group of governing agencies who can choose to work together to provide water. The most common way this is done is with an intergovernmental agreement, called an IGA. IGA’s are negotiated between parties and can be dissolved by terms agreed upon in this agreement. Intergovernmental agreements occur in many forms and are widely used for many governmental functions. The Joint Water Commission, for example, was formed by intergovernmental agreement.  A regional water system could be a method of providing water to a large area or population, combining the resources of multiple water providers, large water rights and spreading the cost of the system among many users. It can be a stable and cost effective way to provide water resources. A regional system could be formed either by IGA or take the form of a PUD.  In the metropolitan area, a provider consortium was created through an intergovernmental agreement and formed to implement the Regional Water Supply Plan and work on water issues of regional interest. It is a group composed of Beaverton, Clackamas River Water, Fairview, Forest Grove, Gladstone, Gresham, Hillsboro, Lake Oswego, Milwaukie, Oak Lodge Water District, Portland, Powell Valley Water District, Raleigh Water District , Rockwood Water PUD, Sandy, South Fork Water District, Sunrise Water Authority,Tigard, Tualatin, Tualatin Valley Water District, Wilsonville, and West Slope Water District .  Another group is the Bull Run Regional Water Agency which began in April, 2001. Portland City Council directed Commissioner Eric Sten and Water Bureau staff to initiate discussions with the public and regional water utilities about the possibility of developing a regional drinking water agency. The purpose is to provide more efficient use of water resources and water utility services through regional ownership. A report published, December 12, 2001, is a progress report on those discussions. It provides background on the regional issues, a summary of the process, criteria which has guided the discussion, some governance alternatives, and recommendations for next steps.  The participating agencies for the Bull Run Regional Group include the Clackamas River Water and Sunrise Water Authority from Clackamas County; the Cities of Gresham and Portland, Powell Valley Water District, Raleigh Water District, and Rockwood PUD from Multnomah County; the Cities of Beaverton, Tigard, and Tualatin, Tualatin Valley Water District, Clean Water Services (formerly United Sewerage Agency), and West Slope Water District from Washington County; and Metro.  The organizations are somewhat confusing, since some water providers belong to both groups. The difference is as follows: the Regional Water Providers Consortium is a voluntary grouping of water providers who own their own facilities and would continue to be separate but cooperate in the provision of water to participating areas. The Bull Run Regional Water Initiative would ultimately form a ‘super agency’ that is governmental in form, and the agency would own certain water sources and distribution system. It would be similar to a “Metro water government”. |
| Funding  Various sources of funding are available to finance the provision of water. Revenue from water sales is the basis of most funding. Property taxes, sales of bonds and Systems Development Charges are also used to fund water systems. Property taxes collected from property owners are used as local governments choose to use them. Bonds are long term methods of borrowing and can either be financed by general or specific revenue sources. General Obligation bonds can be repaid from any revenue source. Revenue bonds are paid for from specific sources and only those sources. Water revenue bonds are financed by the sale of water to customers. Systems Development Charges (SDC’s) are assessed by governments on only new development and the money collected must be separately accounted for and used for only projects which enlarge or upgrade system capacity. SDC’s can not be used for routine operations or maintenance. State law is very specific and restrictive regarding collection and use of SDC’s. |
| Ownership and Use of Water  “Under Oregon law, all water is publicly owned. With some exceptions cities, farmers, factory owners, and other users must obtain a permit or water right from the Water Resources Department to use water from any source - whether it is underground, or from lakes or streams.” Water Rights in Oregon, page 6.  Water rights are appropriated to users by the Water Resources Department in two forms, senior and junior. Senior water rights were granted by the State of Oregon prior to 1910 and any junior water right has been granted subsequent to the original senior grants. Junior rights are always subordinate to senior rights. Water rights are granted in perpetuity unless very specific conditions occur, which are defined by Oregon law. Water disputes are adjudicated by either the Water Resources Department or under specially declared emergencies by the Governor. Senior water rights are very valuable and seldom relinquished or voluntarily limited. Water rights in many water bodies are over allocated. That is to say, more water rights have been granted than water is available.  Water usage in Oregon is controlled by various agencies depending on the use of the water. Municipal water use is licensed by Water Resources Department through the granting of water rights. Drinking water is regulated by the Oregon Health Division. Wastewater from sewage treatment plants is governed by Oregon Department of Environmental Quality (DEQ), as is the industrial effluent discharge from factories and manufacturing facilities. DEQ also regulates water quality discharges from landfills. |
| The Water Year  The water year consists of a wet cycle followed by a dry cycle. The metropolitan region may be considered as “water rich” in the winter time and “water poor” in the summer. The summer shortage is primarily due to increased residential demand and limited storage capacity, as well as increased seasonal agricultural use. Population growth particularly in the west and southwest metro areas may create future difficulties.  Therefore collection and retention of water is very important. Long term surface collectors are lakes and reservoirs retained by dams. These dams also may provide for hydroelectric generation, flood control, fish protection, water temperature control, and pollution dilution. Any or all of these uses may impact provision of water for consumption, either seasonally or full time.  Underground water is collected in aquifers and tapped by wells. Aquifer storage and recovery (ASR) is a new to Oregon technology. In ASR, the empty aquifers are pumped full of water when it is available and pumped out when needed.... a natural underground storage tank. Salem has four ASR wells, Beaverton has a number of working ASR wells, Tigard is working on a large test well for ASR, and Clackamas River Water District is currently converting an existing well to ASR.  The possibility of global climate change introduces another variable to planning for water use. Current models differ as to the effect of climate change and no one can predict accurately what any effect may be. |
| Demand and Supply  The demand for water is expressed as MGD, which stands for million gallons per day. Daily average demand for the metro area is estimated at 187.6 MGD. The demand is greatest in summer when rain is scarce. Peak demand for water in the metro area is estimated at 398 MGD. The Regional Water Consortium Report estimates the average daily demand for Portland, Eastside (Gresham, Rockwood, Powell Valley Water District, Wood Village, Fairview and undeveloped areas), and Clackamas (Lake Oswego, Milwaukie, Canby, Clackamas River Water, South Fork, Oak Lodge, Mt. Scott and Damascus Water Districts) as 128 MGD . The peak daily demand is 269 MGD. These three areas, Portland, Eastside and Clackamas are the focus of the report.  Portland water comes mainly from Bull Run Reservoirs and some from the Columbia South Shore Well Fields. Eastside water is a combination of Bull Run and local wells. The Clackamas region draws its water from the Clackamas River. |
| Emergency Water Supplies  Short-term emergency water supplies generally consist of reservoirs. A three-day average supply of water is generally considered appropriate. Water providers also have longer-term backup sources, such as connections with other water providers. The Bull Run system primarily depends on the Columbia South Shore well fields for its emergency source.  The Clackamas area water providers primarily depend on other Clackamas River sources for their emergency backup. If there were to be a problem in the upper reaches of the Clackamas River, no other significant emergency supply would be available at present. However, Clackamas River Water is currently investigating ASR. The Lake Oswego system and Clackamas River Water do have connections to Portland which could provide small amounts of emergency water. Lake Oswego also has connections via Tualatin and Tigard which might possibly provide emergency water. In addition, installing pipes to connect to the Willamette River treatment plant could provide another emergency source of water.  The Tualatin/Trask system is indirectly backed up by Bull Run. Tualatin Valley Water District is Bull Run’s largest customer outside of Portland.  Wilsonville is dependent on its own wells and the Willamette River with some limited backup from Tualatin.  One of the reasons for the creation of a regional consortium of 26 water providers was the recognition that they had limited ability to transport large volumes of water through out the region to meet added demand or emergencies. To rectify this situation, providers must raise great capital sums for improvement or creation of infrastructure. Currently the Consortium’s main concerns are analysis and planning. |
| Pollution  *It is important to maintain water quality and to preserve a natural environment which is both a reflection of, and a prerequisite for a healthy water system.* --EPA  **Types of Contaminants** Six major types of contaminants found in the Willamette Basin are:   1. Bacteria. High bacteria levels may be caused by failing septic systems, poorly treated sewage, sewage overflows and animal wastes. 2. Sediments. Soil erosion is caused by forestry, construction, agriculture and mining. 3. Toxics. The greatest sources are sewage and industrial wastewater, but toxics are also found in runoff from forests, farms and urban areas. 4. Absence of dissolved oxygen. This results from overabundant nutrient enrichment and the decay of large amounts of organic matter. 5. Nutrients. Phosphorus causes increased algae growth, and fertilizers, treated domestic sewage and faulty septic systems also contribute to increased nutrient levels. 6. Nitrates. Nitrates are the most common form of groundwater pollution and originates from human and animal wastes and fertilizers. Nitrates are harmful at high levels.   Protection of the riparian environment is vital. Protection includes, but is not limited to:   * maintaining and/or restoring key watershed vegetation corridors * reducing contaminated surface run off by using better agricultural and forest practices * using various kinds of on site detention and buffers for run off * controlling the depositing of industrial effluents and untreated wastes into underground and surface water systems   Fish and wildlife are a major indicator of a healthy riparian environment, as well as important components of its ecology. They are affected by changes in the water flow, water volume, water temperature and turbidity, by barriers to their natural movements and by changes in vegetation and shade, and by the presence of harmful contaminants either natural or man-made.  Spawning grounds and fish migrations are particularly hard hit by these factors. Pollutants can cause changes in fish and wildlife populations. Birth defects, including gender deformities have been detected in some aquatic life.  Various human health problems are also associated with pollutants. Pesticides designed especially to kill or damage living organisms are a serious problem. Short-term exposure can cause nausea, headaches, convulsions, and diarrhea. Long-term effects can include cancer, fertility problems, endocrine disruption, and chronic damage to the nervous system. Cancers in both humans and animals have also been linked to some registered pesticides. (In Oregon approximately 300 active pesticide ingredients are registered for use each year with the Oregon Department of Agriculture.)  Metals, such as lead and mercury, and chemicals like those found in old-fashioned dry cleaning fluids, battery acids, and creosote can settle and leach through the ground, polluting both ground and surface water. In surface water, they may settle in the riverbeds or lower water levels for long periods of time. For example, dioxin is a major contaminant in some chlorine-based industrial processes and can persist in the environment for decades. It is a very stable compound that degrades only slowly in the environment. Ultraviolet radiation from the sun is the only natural process which causes dioxin to break down. Since dioxin residues are found primarily in river bottom sediments, little sunlight reaches it. Dioxin is a known human carcinogen and causes birth defects, hormone disruption and other serious problems in animals and may also do so in humans. These chemicals may also recombine into mixtures with harmful or as yet unknown effects.  Regulations allow hormones in livestock feed because no risk to humans has been proven, even though residues show up in the meat. Recent studies are finding high levels of hormones in feed lot wastes; these chemicals will find their way down stream, where scientist have found fish with abnormal sexual characteristics. Scientists also believe these hormones may be the cause of falling sperm counts and premature maturation in girls. (NYT Magazine 31 Mar 02)Page Up  **Non Point Pollution** Non point pollution refers to a use of the land that generates and transports pollutants to the rivers, or causes pollutants to seep into underground water sources (leaching) The DEQ estimates 70%-80% of pollution enters the Willamette River system from non-point sources.  Forestry practices are a major contributor of pollution in western Oregon. Clearcuts are the dominant logging method in Oregon. Roads are carved out of the hills to get equipment in and logs out. Slides caused by clearcutting steep slopes change the course of streams and destroy spawning grounds. The resulting land disturbance causes excess turbidity in streams. Water temperatures increase where the stream side tree cover is removed. After clearcutting, herbicides are applied to suppress vegetation growth while the newly replanted areas get established. Oregon is slowly working on improving logging practices, aiming at minimizing environmental disturbance.  Agriculture is second in non point pollution. Current farming practices typically use large amounts of pesticides and highly soluble fertilizers. The Willamette River alone has been found to carry 48 different pesticides. New agricultural computer technology combined with satellite photography is available to reduce amounts of fertilizer and chemicals used, as does a new appreciation of organic agriculture, but progress is slow.  Urban and industrial areas contribute heavy metals, oils and other petroleum products, solvents, PCBs, Dioxin, herbicides and pesticides, untreated waste and surface run-off to streams. Failing septic tank systems contribute to degradation of streams and ground water.Page Up  **Point Pollution** Point, also referred to as source, pollution occurs from a specific site or sites. Typical examples are landfills, hazardous waste disposal areas, industrial sites (like pulp and paper mills), chemical-using plants, sewage treatment plants, and large septic systems. These pollution sources are controlled through systems of permits, discharge licenses, periodic self-testing, against set standards and penalties for noncompliance. However, enforcement is weak, and permit renewal is frequently not current.  *The Willamette River Above Willamette Falls as a Contrast to Bull Run and the Clackamas River* In the Willamette Valley over 80% of the wetlands which are a natural pollution filter have been lost. In addition to forest and agricultural non source pollution there are major sewage treatment plants discharging treated sewage at Eugene, Corvallis, Albany, Salem, Newberg, Canby and Wilsonville. Other plants discharge into Willamette River tributaries at Sweet Home, Lebanon, Albany and Cottage Grove. When it rains hard, some treatment plants receive both sewage and stormwater and the resulting high volume of water may be dumped into the waterways without adequate treatment.  Major sources feeding into the upper Willamette include paper companies. Chemicals from the papermaking processes, some of which may create dioxin are discharged after treatment. Many regulations apply to these companies. They must have frequent self-testing for pollutants to meet permit and enforcement standards. Industrial plants discharging into the Willamette River above the Falls, including Teledyne Wah Chang (a Super Fund site since 1983) in Millersburg, Oregon Metallurgical in Albany, and Evanite in Corvallis.  According to the Willamette River Basin Water Quality Study of 1997, problems in the river can be described by segment, as follows:   * Segment 1, in the Portland area, the river has serious water quality problems with toxic chemicals and low dissolved oxygen. No domestic water source is anticipated from segment 1. (Portions of Segment 1 are listed as Super Fund sites.) * Segment 2 is the 29-mile stretch from the Willamette Falls to the Yamhill River above Newberg, known as the Newberg Pool. “The number of fish showing deformities was highest in this reach, and pollution from surface runoff, mainly from agriculture, was also the most pronounced. Federal guidelines for toxins in water and sediments were often exceeded.” (The water intake for the treatment plant is in Wilsonville, somewhat west of I-5, within the Newberg Pool.) * Segment 3, from the Newberg Pool to Corvallis, included pollution “from both surface runoff and pipes” and again, “federal guidelines for toxins in water and sediments were often exceeded.” * Segment 4, from Corvallis to Eugene, water quality usually met acceptable standards.Page Up   **Pollution Controls and Monitoring** *Water Quality - first,start with the purest water. Environmental Protection Agency Standards for Safe Drinking Water* The Federal Safe Drinking Water Act (SDWA) passed in 1974 and amended twice since, established a system for creating minimum standards for drinking water quality. The EPA was directed to set two levels for contaminants in drinking water: MCLG (maximum contaminant level goal) and MCL (maximum contaminant level).  The MCLG is set at a level where no known or anticipated health risk will occur and which allows an adequate margin of safety. For some contaminants the MCLG is zero. The MCLG is a goal and not the enforceable standard. The MCL is the actual enforceable level set by the EPA. The MCL is based on the ability of systems to both detect and treat contaminants as well as what is technically and economically feasible. So, the MCL is not strictly based on health considerations. (US EPA 1999)  *Gaps in Drinking Water Protection* MCL's are limited by technical and economic feasibility. This may leave the most vulnerable sectors of the population exposed to health problems, e.g., the very young and very old, and those with certain medical conditions.  MCL's do not yet exist for many contaminants. This is also true for various chemical "recombinations" which may occur when the original products are exposed to each other, or water, sunlight, air, and temperature changes.  Private wells are not subject to SDWA regulations, so no routine testing or monitoring is required. Nearly half a million Oregonians rely on domestic wells. (OHD, 1998)  In Oregon the Oregon State Health Division (OHD) has the authority to regulate public water systems for compliance with the SWDA. The Oregon Drinking Water Quality Act (1981) maintains the same goals as the SWDA and grants authority to develop standards exceeding federal standards. However, more stringent standards have yet to be developed.  MCL's and MCLG's have been set for 96 contaminants, 23 of which are pesticides. Local water providers must test for contaminants regulated under the SWDA once every three years (OHD 2000). If a contaminant is detected at a higher level than the MCL, the drinking water system is held to be in violation and must act to remove the contaminant or use an alternative water source. Providers may test for other contaminants if they are thought to be present.  Industrial and other source polluters perform periodic self-testing to show that their discharges are within DEQ’s permitted bounds. However, due to limited funds, the state itself does not routinely test the contaminant levels of such effluents but instead checks approximately yearly for the existence of records, level of training, and calibration of instruments. According to the Oregonian, 6/19/99, the EPA found Oregon's record for issuing or renewing discharge permits the worst in the nation, with a backlog of 65%.  In summary, the setting of standards for contaminants, testing, and monitoring lags far behind current events and current needs. Inadequate funding and lack of scientific knowledge are produced by the failure to give these concerns a high priority.  For example, in 1989, the Oregon Groundwater Protection Act was enacted. It focuses on addressing contamination from non-point source pollution and emphasizes pollution prevention and community involvement. However the DEQ has not been given resources to implement the program, which requires extensive ground water mapping and testing.  In 1996, the SDWA was amended so that annual Consumer Confidence Reports (CCR's) must be issued by water providers to communicate specific information to consumers. This information includes levels of detected regulated contaminants, violations, notice if operating under a variance or exemption only, levels of unregulated contaminants for which monitoring is required (e.g., lead, copper and asbestos) and other data. (More discussion of that in parts II and III of this study.)  The 1996 amendments to the SDWA also established the importance of source water assessment plans (SWAPS) which focus on water providers having good information about local threats to drinking water quality so communities can focus on pollution prevention. The SWAP's have three parts: 1) identifying and outlining the watersheds, 2) an inventory of potential sources of contaminants, and 3) analysis of how sensitive the watershed is. In Oregon the SWAP's are done by the OHD and DEQ. All phases of their plans are supposed to be completed by 2003.  Oregon DEQ has also developed a statewide program to assess and monitor groundwater resources. The Oregon Wellhead Protection Program is a voluntary program designed to help local communities protect the groundwater resources that supply public water systems. Approximately 70% of Oregon's citizens depend on groundwater for their drinking water. DEQ says more than 380 water systems in Oregon have detected contaminants in their drinking water. It is extremely expensive to treat contaminated drinking water or to find an alternative source should a water supply be lost because of contamination. So, the need to monitor groundwater sources is important. |
| Conclusion  The metropolitan area has been blessed historically with abundant water of excellent quality. The area is now faced with an ever-growing demand for water for multiple, and often conflicting uses. This demand, especially in the summer, will increase as the regional population grows.  Fortunately the area’s largest water source is the largely protected Bull Run system with ample clean water for an expanded population. However, the delivery system for that water needs substantial capital investment for renovation and expansion. How to achieve funding of improvements is under discussion by regional water providers.  The Clackamas River, for the most part is protected from heavily polluted run-off. However, the demands on its water are ever increasing and are in competition with each other.  On the far westside, the Tualatin/Trask system is feeling the strain of providing sufficient water for all users. It is also exposed to agricultural run-off. The Tualatin/Trask and Bull Run systems provides sufficient supplementary water to Tualatin Valley Water District users at present. But, the water transmission lines are reaching their maximum capacity. Potentially the Willamette Treatment Plant may provide alternative sources in some areas.  The Willamette River System has potential to become a sizable drinking water source. However various segments, at present, are examples of the consequences of pollution and of the difficulty in dealing with contamination to the satisfaction of many varied users.  Pollution is a continuous and growing problem. Dealing with pollution is extremely expensive. A legal framework exists for action but efforts are weakened by lack of political will, insufficient scientific knowledge, and lack of funding. Fragmented providers are struggling to deal with non-point pollution, regional water transmission, emergency back-up, and necessary large capital investments. |
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