

Model Ordinance: Protecting Groundwater Sources of Drinking Water

Background

Protection of Oregon's drinking water resources is critical to supply a growing population and to support the state's continued economic health. Safe drinking water is fundamental to any community's viability, and the cost of treating contaminated water is extremely high. Source water protection beyond federal Clean Water Act requirements is mainly a voluntary program which relies on local governments to take steps to care for their drinking water resource. Protecting drinking water involves reducing the risk of contamination of the groundwater, rivers, streams and lakes that serve as sources of drinking water for local communities.

This document provides model ordinance language that jurisdictions can use to protect drinking water obtained from groundwater sources. Developing a drinking water protection ordinance is one of many tools communities can voluntarily use to safeguard community health and reduce risk of water supply contamination. DEQ urges communities to examine all potential management options (such as education, outreach, incentives, technical assistance and land acquisition) and tailor a protection strategy to meet their specific needs.

Why use an ordinance or overlay zone?

A jurisdiction might determine that an ordinance is necessary to protect public health if 1) current regulations don't protect the drinking water supply to the level the community desires, 2) other potential management options are not as effective for potential risks addressed, or 3) to limit higher-risk activities in developed areas with a strong hydrologic connection to the drinking water source.

A local ordinance has the potential for reducing risk to drinking water from both new and existing sources of contaminants. However, mechanisms for review, inspection and enforcement associated with new development are different from those for existing development. A local drinking water protection ordinance typically defines the management area using a map and applies an overlay zone in which high-risk activities are restricted to protect the resource. The Oregon Health Authority and

DEQ have prepared source water assessments (<http://www.deq.state.or.us/wq/dwp/dwp.htm>) for all public water supplies serving at least 25 individuals or 15 service connections for at least 60 days each year. These assessments are a valuable for establishing boundaries for a drinking water protection ordinance. They include maps of the drinking water source area and provide important information on: zones that estimate the time for contaminants to move through the aquifer, highly sensitive areas within those source areas, plus an inventory of potential contamination sources.

The model ordinance provides standards for various development and other activities by leveraging natural protective functions of overlying soils and moderating higher-risk human activity. Risk of drinking water contamination will be reduced by:

- Prohibiting known high-risk land uses (such as landfills or certain industrial facilities)
- Setting standards for the use, handling and storage of toxic substances
- Special permitting or siting requirements for land uses that pose a potential risk
- Performance standards such as secondary containment standards for petroleum or chemical storage over a certain volume.

Using the model ordinance

The model ordinance language in the following pages can guide jurisdictions that develop a drinking water protection ordinance and overlay zone. Jurisdictions may alter the language as needed. Within this ordinance language, material to be customized by local jurisdictions is included in [brackets]. Brackets also show where a decision needs to be made. When the word [jurisdiction] is in brackets, the name of the city or county or the word "city" or "county" should be inserted.

For an electronic version of the model ordinance to modify for your community, please contact Julie Harvey, Portland, at 503- 229-5664 (toll-free in Oregon at 1-800-452-4011, ext. 5664) or e-mail harvey.julie@deq.state.or.us.



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Drinking Water Protection Overlay District Model Code (For groundwater sources)

Section 1.0 - General

The regulations that apply to this Drinking Water Protection (DWP) Overlay District are in addition to those of the underlying zoning districts and other [jurisdiction] regulations. Where the regulations and permitted uses of an underlying district conflict with those of an overlay district, the more restrictive standards shall apply.

Section 2.0 - Purpose

The [jurisdiction] recognizes: (a) that residents of [jurisdiction] rely exclusively on groundwater for a safe drinking water supply, and (b) that certain land uses in [jurisdiction] can contaminate groundwater, particularly in shallow and surficial aquifers. The purpose of the Drinking Water Protection (DWP) Overlay District is to protect public health and safety by minimizing contamination risks to the aquifer(s) that supplies (supply) [jurisdiction] with drinking water. This ordinance establishes standards for the use and storage of hazardous materials and other contaminant sources within the DWP Overlay District.

Section 3.0 - Definitions

AQUIFER. A geological formation, group of formations or part of a formation capable of storing and yielding groundwater to wells and springs.

DENSE NON-AQUEOUS PHASE LIQUID (DNAPL). A dense nonaqueous phase liquid is a liquid that is denser than water and does not dissolve or mix easily in water (it is immiscible). In the presence of water it forms a separate phase from the water.

DEVELOPMENT. The carrying out of any construction, reconstruction, alteration of surface or structure or change of land use or intensity of use that requires a permit.

HAZARDOUS MATERIALS. Substances defined as such in any of the following:

- (a) Hazardous waste as defined in ORS 466.005(7).
- (b) Toxic substances as defined in ORS 465.003(9)
- (c) Any substance defined as a hazardous substance pursuant to Comprehensive section 101(14) of the federal Comprehensive Environmental Response, Compensation and Liability Act, P.L. 96-510, as amended, and P.L. 99-499.
- (d) Oil as defined in ORS 465.200(19); and
- (e) Any substance designated by the Environmental Quality Commission under ORS 465.400.

INERT. Containing only constituents that are biologically and chemically inactive and that, when exposed to biodegradation and/or leaching, will not adversely impact the waters of the state or public health.

PRIMARY CONTAINMENT. A tank, pit, container, pipe or vessel of first containment of liquid or chemical.

RELEASE. Any unplanned or improper discharge, leak, or spill of a potential contaminant including a hazardous material.

SECONDARY CONTAINMENT. A second tank, catchment pit, pipe, or vessel that limits and contains liquid or chemical leaking or leaching from a primary containment area; monitoring and recovery are required.

TIME-OF-TRAVEL ZONE. The amount of time it takes groundwater to flow within an aquifer to a given well.

Section 4.0 - Drinking Water Protection (DWP) Overlay District and Zones

[Note: the Drinking Water Source Area is identified in the Source Water Assessment and may be certified by Oregon Health Authority (formerly the Department of Human Services). Jurisdictions are encouraged to update or enhance the Source Water Assessment delineation and assessment of sensitive areas to account for changes in well usage or pumping rates. When defining Zone A the jurisdiction should consider areas

that are highly sensitive and have a higher susceptibility. The jurisdiction may consider establishing administrative boundaries of the DWP Overlay District (based on streets or other landforms) that would encompass the Drinking Water Source Area for ease of implementation and enforcement.]

The Drinking Water Protection Overlay District is composed of the surface and subsurface area surrounding a water well, spring or well field supplying the public water system through which contaminants have a potential to move toward and reach that water well, spring, or well field. The Drinking Water Protection Overlay District includes two zones:

Zone A: Includes areas identified as highly sensitive [located within the 2-year time-of-travel zones or areas mapped as highly sensitive] in the Source Water Assessment; and

Zone B: All areas within the DWP Overlay District that are not included in Zone A.

The locations of Zone A and Zone B for each wellhead are shown on the Drinking Water Protection Overlay District Area Maps on file with the [jurisdiction]. The areas within the DWP Overlay District are based on the drinking water source areas certified by Oregon Health Authority, under the Oregon Administrative Rules that apply to Oregon's EPA-approved Drinking Water Protection Program, in Oregon Health Authority (Delineation Certification # [insert number and date].

Section 5.0 – Applicability

- A. The procedures and requirements of the DWP Overlay District:
 - 1. Apply in addition to the standards of the property's underlying zone;
 - 2. Supersede the property's underlying zone where the underlying zone does not provide the level of resource protection afforded by the DWP Overlay Zone.
- B. In determining the location of a property within a Zone of the DWP Overlay District, the following criteria shall apply:
 - 1. That portion of a tax lot that lies within a DWP Overlay District Zone shall be governed by the restriction applicable to that Zone; and
 - 2. Tax lots having parts lying within more than one Zone shall be governed by the standards of the more restrictive Zone. The [City/County Planning Director] may waive the requirement that the more restrictive standards apply when all of the following apply:
 - a) Storage, use, handling, treatment, production, and/or transportation of hazardous materials will not take place within the portion of the tax lot having the more restrictive DWP Overlay District Zone standards;
 - b) Storage, use, handling, treatment, production, and/or transportation of hazardous materials will not take place within 50 feet of the portion of the tax lot having more restrictive DWP Overlay District Zone standards; and
 - c) The tax lot is 20,000 square feet or larger.
- C. Activities Subject to Review. Activities subject to the review shall include all development and permitted use or storage of hazardous materials on properties within the DWP Overlay District that are not specifically exempted from review as outlined in Section 5(D) including:
 - 1. New development and all activities requiring development approval;
 - 2. Applications for a change of occupancy or tenancy that result in a change of use to a use that will store or use 20 or more gallons of non-exempt hazardous materials;
 - 3. Expansion of a non-conforming use, to the extent allowed by the underlying zone, is permitted only under the terms of a special exception and must conform to Section 6(B). Non-conforming uses are existing uses within Zone A of the DWP Overlay District that are otherwise prohibited by Section 6(A).
- D. Exemptions. This ordinance does not exempt any material or use from requirements under the Uniform Fire Code. Except as otherwise provided by this ordinance, the following activities and/or materials are exempt from this regulation:
 - 1. Use, storage, and handling of specific hazardous materials that do not present a risk to the groundwater drinking water source, as determined and listed by the [City/County Planning Director] in consultation with [public water supplier]. These materials may still need to be included on the Hazardous Material Inventory Statement as required by Fire Code. A Hazardous Material Exemption Request may be submitted to the [City/County Planning Director] for hazardous materials that can be demonstrated to pose no threat to the public groundwater source. These materials may be exempt from this regulation and added to the list of materials that do not pose a threat to the drinking water source. The demonstration of no threat is the responsibility of the applicant seeking the exemption and will be subject to review

by [jurisdiction]; *[Note: jurisdiction can make this determination in consultation with a technical expert such as a consultant or OHA]*

2. Hazardous materials offered for sale in their original containers of five (5) gallons or less; A Hazardous Material Exemption Request for original containers of greater than 5-gallons in size may be submitted to the [City/County Planning Director]. These materials may be exempt from this regulation if an applicant can demonstrate that a larger size container does not pose a threat to the drinking water source. The demonstration of no threat is the responsibility of the applicant seeking the exemption and will be subject to review by technical experts;
 3. Hazardous materials in fuel tanks and fluid reservoirs attached to a private or commercial motor vehicle and used directly in the motoring operation of that vehicle;
 4. Hazardous materials in fuel tanks and fluid reservoirs attached to machinery, including but not limited to fuel, engine oil and coolant;
 5. Fuel oil used in existing heating systems;
 6. Emergency use, storage and handling of hazardous materials by governmental organizations or non-governmental disaster relief organizations in the public interest;
 7. Hazardous materials used and stored specifically for water treatment processes of the public water system and private systems for the same purpose when approved by the [City/County Planning Director];
 8. Hazardous materials contained in properly operating sealed units (transformers, refrigeration units, etc.) that are not opened as part of routine use;
 9. Natural gas distribution lines;
 10. Any commonly used office supply, such as toner or cleaning supplies, where supplies are purchased off-site for use onsite;
 11. Hazardous materials not already listed in this section used in association with Farm Practices as defined in ORS 30.930 in an Exclusive Farm Use Zone and Confined Animal Feeding Operations (CAFOs) as defined OAR 603-074-0010;
 12. Pesticide use and storage specifically addressed by state preemption of local pesticide regulation under OAR 634.055 through 634.065;
 13. Hazardous material use in association with Forest activities conducted under the Forest Practices Act; and
 14. Aggregate quantities equal to or less than 20 gallons of non-exempt hazardous materials, which are not dense non-aqueous phase liquids (DNAPLs)
- E. Agency Review. Decisions made by the [Jurisdiction] under this ordinance do not supersede the authority of the state or federal agencies which may regulate or have an interest in the activity in question. It is the responsibility of the landowner to ensure that any other necessary state or federal permits or clearances are obtained.

6.0 – General Requirements

- A. Prohibited Uses. The following uses shall be prohibited within Zone A of the DWP Overlay District:
1. Storage, use, or production of hazardous materials, except as provided in Section 5(D);
 2. Fueling facilities and automobile service stations, except as provided in Section 5(D);
 3. Injection wells/dry wells/sumps except drywells for roof drainage;
 4. Underground storage tanks except those with spill, overflow, and corrosion protection requirements in place;
 5. Disposal of hazardous materials or solid wastes, except for inert substances such as rock, dirt and concrete as allowed by [reference local provisions and DEQ rule].
 6. Treatment of hazardous material, except remediation programs authorized by a government agency to treat hazardous material present at a site prior to the adoption of this ordinance;
 7. Disposal of septage or septic sludge;
 8. Automobile wrecking yards or activities, commercial or otherwise, that result in the accumulation of [4] or more non-operating vehicles; and
 9. Outside storage of [8] or more nonfunctioning appliances;

[Note: Consider other uses that might impact your ground water drinking water supply and list them here. Provide clear and objective definitions or otherwise provide standards for activities that are allowable if best management practices (BMPs) are used. Refer to your Source Water Assessment for information on types and location of potential sources of contamination. Consider whether to

prohibit uses from the entire DWP Overlay District or just the DWP Zone A based on local conditions and risk.]

B. Performance Standards. Commercial activities occurring wholly or partly in the DWP Overlay District that involve the storage or use of more than 20 gallons of non-exempt hazardous materials or any volume of hazardous materials that contain dense non-aqueous phase liquids (DNAPLs) including businesses located in the DWP Overlay District Zone A that have received special exemption for non-conforming use as provided for in Section 5(C) shall be allowed upon compliance with the following conditions:

1. Storage, handling, treatment, use, production or otherwise keeping on premises hazardous materials shall be in compliance with containment and safety standards set by the most recent Fire Code adopted by [jurisdiction];
2. All hazardous materials that pose a risk to groundwater shall be stored in areas with approved secondary containment in place (Uniform Fire Code Articles 2 and 8003.1.3.3);
3. Underground tanks or buried pipes carrying such materials must have double walls and sumps which provide access for inspection and maintenance;
4. Requirements found in Uniform Fire Code Appendix II-E 3.2.6 for a monitoring program and in Article 8003.1.3.3 for monitoring methods to detect hazardous materials in the secondary containment system shall be met for all amounts of non-exempt hazardous materials-that pose a risk to groundwater;
5. Requirements found in Uniform Fire Code Appendix II-E Section 3.2.7 for monthly in-house inspection and maintenance of containment and emergency equipment for all amounts of non-exempt hazardous materials that pose a risk to groundwater shall be met; and
6. A Safe Drinking Water Plan (SDWP) shall be prepared by the applicant in accordance with Section 7.0 and a copy submitted to [Name of Authority (local government authority or water utility)]. This plan must be updated annually and kept on the premises. SDWP approval in accordance with Section 7(C) shall be obtained before any change of use, construction, storage or development begins.

[Note: The jurisdiction shall verify that the above referenced appendices of the Uniform Fire Code have been adopted by the jurisdiction.]

Section 7.0 - Safe Drinking Water Plans

A. Safe Drinking Water Plan Submittal Requirements:

1. For new development and all activities requiring development approval, a Safe Drinking Water Plan shall accompany any new application involving the storage or use of non-exempt hazardous materials.
2. Existing businesses that are required to have a SDWP by Section 6(B) of this ordinance shall submit a copy of the SDWP within [12 months] of the effective date of this ordinance.
3. New or expanding businesses that that are required to have a SDWP by Section 6(B) of this ordinance and will occupy existing structures or for other reasons will not require review by the planning or building department shall prepare or update their SDWP and submit it to [Name authority] prior to beginning or expanding operations. For the purpose of this ordinance, expansion is defined as a greater than [10%] increase in the use, storage or production of hazardous materials, since the previous SDWP was submitted. *[Note: Without periodic inspection or reporting requirements jurisdictions need to rely on business owners to initiate reporting for this provision. Outreach and education may be needed to inform business of their responsibility.]*

B. The Safe Drinking Water Plan shall contain the following information:

1. Hazardous Material Inventory Statement and, upon request from the [City/County Planning Director], a Material Safety Data Sheet for any hazardous materials to be used, stored or produced on site that are not exempt by Section 5(D) of this ordinance. Hazardous material weights shall be converted to volume measurement for purposes of determining amounts-10 pounds shall be considered equal to 1 gallon in conformance with Uniform Fire Code 80001.15.1;
2. A detailed description of the activities conducted at the facility that involve the storage, handling, treatment, use or production of non-exempt hazardous materials;
3. A description of the primary and secondary containment devices proposed and an explanation of whether such containment devices will drain to sanitary or storm sewer;
4. A proposed Hazardous Material Management Plan for the facility that describes procedures to

be followed to prevent, control, collect and dispose of any accidental release of hazardous material including a list of available equipment;

5. Spill reporting procedures, including a list of affected agencies to be contacted in the event of a spill
 6. A description of procedures for inspection and maintenance of containment devices and emergency equipment; and
 7. A description of procedures for disposition of unused hazardous materials or hazardous material waste products including the type of transport and proposed route;
 8. A list of the chemicals to be monitored through the analysis of groundwater samples and a monitoring schedule if ground water monitoring is anticipated to be required under state or local government water quality permit, cleanup agreements, or other requirements ;
 9. Location of all operating, unused and abandoned wells on the property.
- C. Safe Drinking Water Plan Review and Approval

The Safe Drinking Water Plan shall be reviewed under Type II procedures [reference appropriate section of jurisdictions code or see Oregon Department of Land Conservation and Development's *Model Development Code & User's Guide for Small Cities, 2nd Edition, 2005 for examples*].

[Note: Type II decisions are typically made by the City/County Planning Director or someone he or she officially designates with consultation from appropriate officials such as building, fire, or public water system entity. The jurisdiction may choose to coordinate with the local water utility and direct plan submittals under Section 6(B) and SDWPs to the water utility for review.]

Section 8.0 - On-Site System Inspection and Maintenance

Reserved [For drinking water sources that are at risk for elevated nutrient or bacteria levels the implementation of a periodic inspection and maintenance requirement for owners of individual onsite septic system should be considered to ensure proper functioning of the system. In 2010, an external advisory committee convened by DEQ suggested changes to the state rules governing onsite systems including recommendations for time-of-property-transfer inspections, periodic maintenance and reporting requirements, and increased enforcement for violations. DEQ is implementing portions of these recommendations as resources allow. Contact DEQ's onsite program for updated rule-making information and DEQ's drinking water protection program for technical assistance if the local jurisdiction is interested in adopting language that is more restrictive than the state rules].

Section 9.0 - Abandoned Wells

Since it is known that unused or improperly abandoned wells can become a direct conduit for contamination of groundwater by surface water, all unused wells shall be properly abandoned and abandoned wells should be properly plugged according to Oregon Water Resources Department regulations.

Section 10.0 Request for Overlay District Modification

A property owner may request the DWP Overlay District be modified by submitting a DWP Overlay District Change application to the [jurisdiction]. Any request for modification of the DWP Overlay District shall be accompanied by certification of the DWP Overlay District as proposed to be modified by the Oregon Health Authority , under the Administrative Rules that apply to Oregon's EPA-approved Drinking Water Protection Program. *[Note. Since the overlay zone is a part of the zoning code, any change would also have to be submitted to DLCD as a Post-Acknowledgement Plan Amendment (PAPA).]*

Section 11.0 - Appeals

The portions of this ordinance that are subject to appeal are Section 7(C) approval of Safe Drinking Water Plan, Section 5(D)(1) and 5(D)(2) Hazardous Materials Exemptions Request and *[consider adding other sections if modified from model code.]* The appeal of a decision of the [City/County Planning Director] may be appealed to the [Planning Commission] under [Type III or amend procedure type as appropriate] as specified in [reference appropriate section of code].

Section 12.0 - City/County Liability

Warning and Disclaimer of Liability. The degree of aquifer protection required by this Article in the DWP Overlay District is based on scientific and engineering considerations. The nature of these considerations is such that the exact boundaries of Zone A and Zone B have an associated uncertainty that renders conclusions based on them to be estimates. Under no conditions should this Article be construed to

guarantee the purity of the ambient ground water or guarantee the prevention of ground water contamination. Therefore, this Article shall not create liability on the part of the [jurisdiction], or any [jurisdiction] personnel, for any contamination that may result from reliance on this Article or any administrative decision made under this Article.

Section 13.0 - Enforcement

[Reference to appropriate section of the Development Code.]

Section 14.0 - Saving Clause

Should any section or provision of this ordinance be declared invalid, such decision shall not affect the validity of the ordinance as a whole or any other part thereof.

For more information

Contact Julie Harvey, DEQ Drinking Water Protection Program, Portland, 503-229-5664 (toll-free in Oregon at 1-800-452-4011, ext. 5664) or e-mail harvey.julie@deq.state.or.us.

To obtain a local or regional map or copy of an individual source water assessment report, or to arrange a presentation on drinking water protection, contact **Julie Harvey**, drinking water protection specialist, DEQ, Portland, phone listed above. For information on land-use planning for drinking water protection, contact **Amanda Puntun**, Oregon Department of Land Conservation and Development, **971-673-0961**.

Oregon OHA – Drinking Water Program

<http://www.healthoregon.org/dwp>

Oregon DEQ

<http://www.deq.state.or.us/wq/dwp/dwp.htm>

Oregon Department of Land Conservation and Development

Water Quality Model Code and Guidebook

<http://www.oregon.gov/LCD/waterqualitygb.shtml>

U.S. Environmental Protection Agency

EPA's Office of Ground Water and Drinking Water <http://www.epa.gov/safewater/>

Alternative formats

Alternative formats (Braille, large type) of this document can be made available. Contact DEQ's Office of Communications & Outreach, Portland, at 503-229-5696, or call toll-free in Oregon at 1-800-452-4011, ext. 5696. Hearing-impaired persons may call 711.