*Rules and Regulations of the Department of Health*

# Greywater Reuse for Subsurface Irrigation Chapter 246-274 WAC

Effective July 31, 2011
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WAC

Washington Administrative Code

Washington State Department of Health
Division of Environmental Health
Office of Shellfish and Water Protection

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# Chapter 246-274 WAC

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## Contents

# Chapter 246-274 WAC
# Greywater Reuse for Subsurface Irrigation

## PURPOSE AND INTENT

### WAC 246-272A-001 Purpose - Intent

(1) The purpose of this chapter is to establish requirements that provide building owners with simple, cost-effective options for reusing greywater for subsurface irrigation.

(2) This chapter is intended to encourage water conservation and to protect public health and water quality.

### WAC 246-274-003 Applicability

(1) This chapter applies to greywater irrigation systems with design flows under three thousand five hundred gallons per day.

(2) This chapter does not apply to the reuse of greywater inside buildings regulated under the Uniform Plumbing Code as adopted in chapter 51-56 WAC.

(3) This chapter does not apply to reclaimed water use facilities regulated under chapters 90.46 RCW and 173-219 WAC.

### WAC 246-274-005 Other Applicable Requirements

(1) Greywater reuse must comply with all applicable local ordinances and codes, and state statutes and regulations including, but not limited to, the Uniform Plumbing Code, as adopted in chapters 51-56 and 51-57 WAC.

(2) For buildings using an on-site sewage system, the use of a greywater irrigation system does not change the design, capacity, or reserve area requirements, or any other requirement applicable to on-site sewage systems under RCW 43.20.050, chapters 70.118B RCW, or 246-272A, 246-272B, or 246-272C WAC.

(3) The use of a greywater irrigation system does not serve as an alternative to the use of an approved on-site sewage system or connection to an approved public sewer for greywater disposal at any building, including buildings using waterless toilets.

## WAC 246-274-007 Administration

(1) The local board of health and local health officer shall implement this chapter under authority of chapters 70.05, 70.08 and 70.46 RCW, as applicable, no later than three years after the effective date of this chapter. During the period of time that a local board of health does not implement this chapter, the provisions of chapter 246-272A WAC shall apply to greywater reuse for subsurface irrigation in that jurisdiction.

(2) If a local board of health is unable to adjust its resources to implement and enforce this chapter in accordance with subsection (1) of this section, the provisions of chapter 246-272A WAC shall continue to apply to greywater reuse for subsurface irrigation in that jurisdiction.

(3) The local board of health is authorized to establish fees under RCW 70.05.060 and the local health officer is authorized to collect fees under RCW 70.05.070 to implement this chapter.

(4) Nothing in this chapter prohibits the adoption and enforcement of more stringent regulations by a local board of health.

## WAC 246-274-009 Definitions

The definitions in this section apply throughout this chapter unless the context clearly requires otherwise.

(1) "**Evapotranspiration rate**" means the sum total of plant transpiration, evaporation off of the soil surface, and water used for plant growth.

(2) "**Failure**" means a condition of a greywater system or component that threatens the public health by creating a potential for contact between greywater and the public. Examples of failure include:

(a) Greywater on the surface of the ground;

(b) Greywater leaking from a storage tank;

(c) Inadequately treated greywater reaching ground water or surface water;

(d) Noncompliance with the installation permit; or

(e) Other noncompliance with the requirements of this chapter, as determined by the local health officer.

(3) "**Green roof**" means a roof of a building that is partially or completely covered with soil and vegetation.

(4) "**Greywater**" means domestic type flows from bathtubs, showers, bathroom sinks, washing machines, dishwashers, and kitchen or utility sinks. Greywater does not include flow from a toilet or urinal.

(a) "**Light greywater**" means flows from bathtubs, showers, bathroom sinks, washing machines, and laundry-utility sinks.

(b) "**Dark greywater**" means flows from dishwashers, kitchen and nonlaundry utility sinks alone or in combination with light greywater.

(5) "**Greywater irrigation system**" or "**system**" means an integrated system of components located on the property it serves, or on nearby property where it is legally allowed to be used, that conveys greywater from the residence or other building where it originates and provides subsurface irrigation of plants during the growing season.

(6) "**Growing season**" means the period of time between the last frost of spring and the first frost of autumn, when annual plants die and biennials and perennials cease active growth and become dormant. The growing season may be extended with the use of a greenhouse so long as the plants irrigated within the greenhouse continue active growth.

(7) "**Large on-site sewage system**" means an on-site sewage system with design flows of between three thousand five hundred gallons per day and one hundred thousand gallons per day.

(8) "**Local board of health**" means a board created under chapter 70.05, 70.08, or 70.46 RCW.

(9) "**Local health officer**" means the person appointed under chapter 70.05 RCW as the health officer for the local health department, or appointed under chapter 70.08 RCW as the director of public health of a combined city-county health department, or a representative authorized by and under the direct supervision of the local health officer.

(10) "**Mulch**" means a protective covering for establishing a vegetative landscape that is spread or left on the ground to reduce evaporation, maintain even soil temperature, reduce erosion, control weeds, or enrich the soil.

(11) "**Nonresidential building**" means a building that is used for commercial or other nonresidential purposes.

(12) "**On-site sewage system**" means an integrated system of components located on or nearby the property it serves that conveys, stores, treats, and/or provides subsurface soil treatment and dispersal of sewage. It consists of a collection system, a treatment component or treatment sequence, and a soil dispersal component. An on-site sewage system also refers to a holding tank sewage system or other sewage system that does not have a soil dispersal component.

(13) "**Plant factor**" means a number which represents the approximate portion of evapotranspiration used by a plant species.

(14) "**Pressure distribution**" means a system of small diameter pipes equally distributing greywater.

(15) "**Proprietary treatment product**" means a greywater treatment technology, method, or material, subject to a patent or trademark that functions to treat greywater generated by residential or nonresidential buildings.

(16) "**Public sewer system**" means all facilities used in the collection, transmission, storage, treatment, or discharge of any waterborne waste, whether domestic in origin or a combination of domestic, commercial, or industrial wastewater. A public sewer system may also be known as a sanitary sewer system.

(17) "**Qualified professional**" means an on-site sewage treatment system designer licensed under chapter 18.210 RCW or a professional engineer licensed under chapter 18.43 RCW who is knowledgeable in irrigation system design.

(18) "**Residential building**" means a building used as a residence including single-family residences and multi-family residences.

(19) "**Restrictive layer**" means a stratum impeding the vertical movement of water, air, and growth of plant roots, such as hardpan, claypan, fragipan, caliche, some compacted soils, bedrock and unstructured clay soils.

(20) "**Single-family residence**" means one single-family house that is not used for commercial or other nonresidential purposes.

(21) "**Subsurface irrigation**" means applying greywater below the surface of the ground directly into the plant root zone.

(22) "**Suitable soil**" means unsaturated soil above the seasonally high water table and any restrictive layer in which the movement of water, air, and growth of roots is sustained to support healthy plant life and conserve moisture.

(23) "**Tier 1 greywater irrigation system**" means a light greywater irrigation system with maximum design flows of sixty gallons per day serving a single-family residence. A Tier 1 system serves a single-family residence connected to an approved public sewer system or on-site sewage system.

(24) "**Tier 2 greywater irrigation system**" means a light greywater irrigation system serving a residential or nonresidential building. A Tier 2 system only serves a building connected to an approved public sewer system or large on-site sewage system, except as provided in WAC 246-274-200 (1)(e).

(25) "**Tier 3 greywater irrigation system**" means a light or dark greywater irrigation system serving a residential or nonresidential building and using a treatment component. A Tier 3 system only serves a building connected to an approved public sewer system or large on-site sewage system, except as provided in WAC 246-274-300 (3)(e).

(26) "**Treatment component**" means a technology that treats greywater according to WAC 246-274-400 in preparation for subsurface irrigation of plants.

(27) "**Vector**" means an animal including, but not limited to, an insect, a rodent, or a bird, which is capable of transmitting an infectious disease from one organism to another.

## WAC 246-274-011 Greywater Irrigation Systems - General Requirements

(1) The following conditions and restrictions apply to all tiers of greywater irrigation systems:

(a) The greywater must be used only for subsurface irrigation.

(b) The greywater may be used for subsurface irrigation of plants that produce food but must not come into contact with edible portions of any plant.

(c) The greywater must consist of domestic type flows having the consistency and strength typical of greywater from domestic households.

(d) The greywater may not contain toxic substances, cleaning chemicals or hazardous household products derived from the waste from a water softener, activities such as cleaning car parts, washing greasy or oily rags or clothing, rinsing paint brushes, or disposing of waste solutions from home photo labs or similar hobbyist or home occupation activities, or from home maintenance activities.

(e) The greywater may not contain water used to wash diapers or similarly soiled or infectious materials.

(f) The greywater may not contain biomedical waste as defined in chapter 70.95K RCW.

(g) The greywater may not surface in any way, including through ponding or runoff. It must remain below the surface of the ground so that people and animals do not come into contact with it.

(h) The greywater must be used and contained within the property boundary of the building it originates from or on nearby property where it is legally allowed to be used.

(i) The system may be used only during the growing season.

(j) The system must be located in suitable soil.

(k) The system must be located where the land is stable.

(l) The system may not be located in an environmentally sensitive area, as determined by the local health officer.

(m) The irrigation rates may not be greater than the evapotranspiration rate of the irrigation field.

(n) The system must include a readily accessible diversion valve so the greywater can be directed into the approved public sewer system or on-site sewage system when necessary; for example, when soils are saturated or frozen, or blockage, plugging, or backup of the system occurs, or the maximum allowed gallons per day is reached, or when the building owner chooses not to use the system.

(o) The diversion valve must be visibly labeled.

(p) Pipes and above-ground tanks must be labeled with the words: "CAUTION: NONPOTABLE WATER, DO NOT DRINK."

(q) If mulch is used, it must be permeable enough to allow rapid infiltration of greywater.

(2) The location of the system must meet the minimum horizontal setback requirements established in WAC 246-274-405, Table I.

(3) If the system fails or is suspected of failing, the owner shall immediately divert the greywater to the approved public sewer system or on-site sewage system serving the building as required under WAC 246-274-445.

## WAC 246-274-100 Tier 1 Greywater Irrigation Systems

(1) The following conditions and restrictions apply to each Tier 1 greywater irrigation system:

(a) The greywater must be light greywater.

(b) The total flow of greywater must be sixty gallons per day or less.

(c) The greywater must originate from a single-family residence.

(d) The single-family residence must be served by an approved public sewer system or on-site sewage system.

(e) The greywater must be diverted to the subsurface irrigation system through a single diversion point. Flows from fixtures located close enough to each other to be diverted through a single diversion point may be combined.

(f) The greywater must be delivered through the irrigation system by gravity distribution. Pumps may not be used to convey the greywater.

(g) The greywater may not be stored.

(h) The total minimum irrigation area available to receive the greywater must be adequate based on a calculation of:

(i) The estimated volume of greywater;

(ii) The evapotranspiration rate in inches per week for the geographic area of the state where the landscape or garden is located; and

(iii) The water requirements of the plants, known as a plant factor. A "Greywater System Checklist and Irrigation Area Estimation Tool" is available from the Washington State Department of Health's web site.

(i) The greywater must be distributed throughout the irrigation area.

(j) The homeowner may direct greywater to separate irrigation fields so long as the total flow of greywater to all fields combined does not exceed sixty gallons per day.

(k) The Tier 1 system must be covered by at least four inches of appropriate material which may include suitable soil or other material such as mulch, humus, or compost. If material other than suitable soil is used, the irrigation field cover must be augmented periodically as needed to maintain adequate cover during the growing season.

(l) The homeowner shall ensure that the Tier 1 system is properly operated and maintained.

(m) The homeowner shall maintain a record of the Tier 1 system that:

(i) Shows the location of the system;

(ii) Identifies the fixture(s) that are the source of the greywater;

(iii) Describes the system design and how it meets the requirements of WAC 246-274-100;

(iv) Describes the system's maintenance requirements; and

(v) Includes the calculation of the total minimum irrigation area required under subsection (h) of this section.

(n) The homeowner shall maintain the record of the system on a completed "Greywater System Checklist and Irrigation Area Estimation Tool."

(2) A homeowner may install and use a maximum of two separate Tier 1 systems, with combined flows of one hundred twenty gallons per day or less, to allow for reuse of greywater originating from two separate diversion points. The total flow of greywater to the irrigation field or fields used by each system must not exceed sixty gallons per day.

(3) The local health officer may require the homeowner to register the Tier 1 greywater system(s) by filing the record, required in subsection (1)(m) of this section, with the local health jurisdiction. He or she may require additional review when two separate systems are installed or if the property is served by an on-site sewage system with design flows of less than three thousand five hundred gallons per day.

(4) The owner shall comply with any more stringent regulations adopted by the local health jurisdiction including design and permitting requirements.

## WAC 246-274-200 Tier 2 Greywater Irrigation Systems

(1) The following conditions and restrictions apply to Tier 2 greywater irrigation systems:

(a) The greywater must be light greywater.

(b) The total flow of greywater must be less than three thousand five hundred gallons per day.

(c) The greywater may originate from a residential or nonresidential building.

(d) The building must be served by an approved public sewer system or large on-site sewage system, except as provided in subsection (e) of this section.

(e) If the building is served by an approved on-site sewage system with design flows of less than three thousand five hundred gallons per day, the greywater must originate from a single-family residence and the total flow of greywater must not exceed three hundred gallons per day. If the building is something other than a single-family residence, the local health officer may allow the use of a Tier 2 system if he or she determines that applicable requirements can be met.

(f) Application of the greywater to the plants must be even throughout the irrigation field. This is typically achieved through pressure distribution.

(g) If the greywater is stored, it may not be stored for more than twenty-four hours.

(h) Warning signs must be visible at each fixture from which greywater is diverted at a nonresidential building. The signs must notify the employees and the public that water from the fixture is reused for subsurface irrigation of plants and that chemicals and other hazardous materials may not be poured down the drain.

(i) The owner shall maintain a record of the Tier 2 system that:

(i) Shows the location of the system;

(ii) Identifies the fixture(s) that are the source of the greywater;

(iii) Describes the design of the system and how it meets the requirements of WAC 246-274-410 and 246-274-415;

(iv) Identifies the person responsible for designing the system;

(v) Describes the maintenance requirements of the system; and

(vi) Includes an estimated calculation of the total irrigation area pursuant to WAC 246-274-415 (1) and (2).

(2) The owner shall obtain a permit, in accordance with WAC 246-274-425, from the local health officer before installing the system, except as provided in WAC 246-274-425 (2)(d).

## WAC 246-274-300 Tier 3 Greywater Irrigation Systems

(1) A Tier 3 greywater irrigation system is a system that uses a treatment component.

(2) A treatment component is required when the system:

(a) Reuses dark greywater;

(b) Involves storage of greywater for more than twenty-four hours;

(c) Irrigates a green roof;

(d) Serves a high public exposure area such as a playground or sports field; or

(e) Is otherwise deemed by the local health officer to require treatment to protect public health or water quality.

(3) The following conditions and restrictions apply to Tier 3 systems:

(a) The greywater may be light or dark greywater.

(b) The total flow of greywater must be less than three thousand five hundred gallons per day.

(c) The greywater may originate from a residential or nonresidential building.

(d) The building must be served by an approved public sewer system or large on-site sewage system, except as provided in subsection (e) of this section.

(e) If the building is served by an approved on-site sewage system with design flows of less than three thousand five hundred gallons per day, the greywater must originate from a single-family residence and the total flow of greywater must not exceed three hundred gallons per day. If the building is something other than a single-family residence, the local health officer may allow the use of a Tier 3 system if he or she determines that applicable requirements can be met.

(f) Application of the greywater must be even throughout the irrigation field. This is typically achieved through pressure distribution.

(g) Warning signs must be visible at each fixture from which greywater is diverted at a nonresidential building. The signs must notify the employees and the public that water from the fixture is reused for subsurface irrigation of plants and that chemicals and other hazardous materials may not be poured down the drain.

(h) The owner shall maintain a record of the Tier 3 system that:

(i) Shows the location of the system;

(ii) Identifies the fixture(s) that are the source of the greywater;

(iii) Describes the design of the system and how it meets the requirements of WAC 246-274-410 and 246-274-415;

(iv) Identifies the person responsible for designing the system;

(v) Describes the maintenance requirements of the system; and

(vi) Includes an estimated calculation of the total irrigation area pursuant to WAC 246-274-415 (1) and (2).

(4) The building owner shall obtain a permit from the local health officer, in accordance with WAC 246-274-425, before installing the system.

## WAC 246-274-400 Greywater Reuse Treatment Technologies - Tier 3 Greywater Irrigation Systems

(1) This section applies to treatment technologies for Tier 3 greywater irrigation systems.

(2) All proprietary greywater treatment products used to treat light greywater shall meet the requirements of NSF/ANSI Standard 350-1, 2011, of the National Sanitation Foundation International (NSF), "Onsite Residential and Commercial Graywater Treatment Systems for Subsurface Discharge."

(3) All proprietary treatment products used to treat dark greywater shall meet the requirements of NSF/ANSI Standard 40, 2009.

(4) All proprietary treatment products shall bear the NSF seal of approval indicating that the product meets the requirements of NSF Standard 350-1 or NSF Standard 40 as applicable.

(5) Public domain treatment technologies may be used to treat greywater if the department has developed recommended standards and guidance for the technologies.

## WAC 246-274-405 Location

Tier 1, Tier 2, and Tier 3 greywater irrigation systems shall be designed and installed to meet the minimum horizontal setback requirements specified in Table I.

**Table I**
**Minimum Horizontal Setbacks**

| | From edge of subsurface irrigation components | From tank and other system components |
|---|---|---|
| Building foundations | | |
| Down-gradient[1]: | 10 ft. | N/A |
| Up-gradient: | 2 ft. | N/A |
| Property or easement line | 2 ft. | 2 ft. |
| Pressurized water supply line/public water main | 10 ft. | 10 ft. |
| Interceptor/curtain drains/drainage ditches | | |
| Down-gradient: | 30 ft. | N/A |
| Up-gradient: | 10 ft. | N/A |
| In-ground swimming pool | 10 ft. | 5 ft. |
| Spring or surface water measured from the ordinary high-water mark[2] | 100 ft. | 50 ft. |
| Well or suction line | 100 ft. | 50 ft. |
| Public drinking water well | 100 ft. | 100 ft. |
| Public drinking water spring measured from the ordinary high-water mark | 200 ft. | 200 ft. |
| Decommissioned well (decommissioned in accordance with chapter 173-160 WAC) | 10 ft. | N/A |
| Down-gradient cuts or banks with at least 5 ft. of original, undisturbed soil above a restrictive layer due to a structural or textural change | 25 ft. | N/A |
| Down-gradient cuts or banks with less than 5 ft. of original, undisturbed soil above a restrictive layer due to a structural or textural change | 50 ft. | N/A |
| On-site sewage system primary and reserve areas | 10 ft. | N/A |

[1]The item is down-gradient when liquid will flow toward it upon encountering a water table or a restrictive layer. The item is up-gradient when liquid will flow away from it upon encountering a water table or restrictive layer.
[2]If surface water is used as a public drinking water supply, the greywater system must be located outside of the required source water protection area.

## WAC 246-274-410 Design Requirements - General - Tier 2 and Tier 3 Greywater Irrigation Systems

(1) Tier 2 and Tier 3 greywater irrigation systems must be designed by a qualified professional, except:

(a) The local health officer may allow a resident owner of a single-family residence, not adjacent to a marine shoreline, to design a system for his or her residence when the system reuses no more than three hundred gallons per day of greywater; or

(b) The local health officer may design the system if he or she performs the soil and site evaluation.

(2) The person designing a Tier 2 or Tier 3 system must use the following criteria when developing the design:

(a) Storage and pump tanks must be:

(i) Constructed of solid, durable materials not subject to excessive corrosion or decay;

(ii) Water-tight;

(iii) Tamper proof and not susceptible to intrusion by humans or vectors;

(iv) Installed below ground on dry, level, well compacted soil or above ground on level, stable footing;

(v) Anchored to prevent overturning;

(vi) Provided with an overflow pipe with a diameter at least equal to that of the inlet pipe diameter that flows by gravity to the approved public sewer system or on-site sewage system with a check valve or backwater valve, as appropriate, that prevents backflow from sewer or septic tank; and

(vii) Provided with a drain pipe and a vent pipe.

(b) The operating capacity must be based on the estimated flows of greywater diverted from the approved public sewer or on-site sewage system.

(i) The total flow available may be estimated using the flow from each fixture multiplied by the number of people using the fixtures. The flow from each fixture is based on design flow of the fixture.

(ii) If the fixture's design flow is unknown, the following standards must be used:

| | |
|---|---|
| Laundry: | Water conserving washing machine - 8 gallons per person per day |
| | Traditional washing machine - 11 gallons per person per day |
| | Laundry sink - 3 gallons per person per day |
| Bathroom: | Water conserving sink - 5.4 gallons per person per day |
| | Water conserving shower - 10 gallons per person per day |
| | Traditional sink - 6 gallons per person per day |
| | Traditional shower - 17 gallons per person per day |
| Bathtub: | 24 gallons per bath |
| Kitchen sink: | 6 gallons per person per day |
| Dishwasher: | 1 gallon per person per day |

(c) If the building is served by an on-site sewage system with design flows of less than three thousand five hundred gallons per day, the total flow of greywater diverted must not adversely affect the functioning of the on-site sewage system.

(d) The sensitivity of the site where the greywater irrigation system will be installed must be considered.

(i) Examples of sensitive sites include shellfish growing areas, designated swimming areas, designated wellhead protection areas for Group A public water systems, areas in which aquifers used for potable water as designated under the Growth Management Act, chapter 36.70A RCW, are critically impacted by recharge, and other areas identified by the local management plan required in WAC 246-272A-0015, where fecal coliform constituents or other greywater constituents can result in public health or water quality concerns.

(ii) When the greywater irrigation system will be installed in an area that is not covered by a local management plan required in WAC 246-272A-0015, examples of sensitive sites include similar types of areas where greywater constituents can result in public health or water quality concerns.

(e) For greywater irrigation systems conveying greywater from a nonresidential source, documentation must be provided that:

(i) Shows the greywater consists only of domestic type flows and does not include any other type flows; and

(ii) Identifies how chemicals and other hazardous materials will be kept out of the greywater.

(3) The person designing the system shall ensure that the owner is provided with the record information required under WAC 246-274-200 (1)(i) and 246-274-300 (3)(h).

## WAC 246-274-415 Design Requirements - Irrigation Field Components - Tier 2 and Tier 3 Greywater Irrigation Systems

Greywater irrigation fields for Tier 2 and Tier 3 systems must be designed to meet the following requirements:

(1) Calculation of the total irrigation area is based on:

(a) The operating capacity of the system; and

(b) Irrigation rates that are dependent on the plant factor and evapotranspiration rate.

(2) The total irrigation area shall be determined by using the following equation:

| | | |
|---|---|---|
| Irrigation area (square feet) | = | Greywater volume (gallons per week) divided by Evapotranspiration x Plant Factor x 0.62 |

Where:

| | | |
|---|---|---|
| Evapotranspiration (ET) | = | The monthly average of May through September ET rates in inches divided by four, as determined by the Washington State University, State of Washington Irrigation Guide, 1985 (as amended 1990; 1992 for select western Washington crops), or weekly averages based on actual conditions; |
| Plant Factor | = | 0 to 0.3 for low water use plants;<br>0.4 to 0.6 for average water use plants; and<br>0.7 to 1.0 for high water use plants; |
| 0.62 | = | The conversion factor (from inches of ET to gallons per week) |

(a) This formula includes a factor of 1 for irrigation efficiency based on subsurface irrigation evenly distributed.

(b) The Washington State University, State of Washington Irrigation Guide, is available from the Washington State Department of Health's web site.

(c) The person designing the system may demonstrate to the satisfaction of the local health officer that adjustments to the values identified in this subsection are appropriate based on:

(i) Professional judgment; and

(ii) Applicable reference materials considering relevant factors such as water requirements of plants, density of plantings, microclimates of the site, irrigation efficiency of the system, and soil conditions.

(3) Irrigation rates must not exceed maximum allowable soil loading rates in Table II based on the finest textured soil in the lower twenty-four inches of suitable soil. The soil loading rate in Table II may be increased up to a factor of 2 for soil types 1-4 and up to a factor of 1.5 for soil types 5 and 6 when a treatment technology that meets the requirements of WAC 246-274-400 is used.

**Table II**
**Soil Type Description and Maximum Hydraulic Loading Rate**

| Soil Type | Soil Textural Classification Description | Loading Rate for Greywater gal./sq. ft./day |
|---|---|---|
| **1** | Gravelly and very gravelly coarse sands, all extremely gravelly soils excluding soil types 5 and 6, all soil types with greater than or equal to 90% rock fragments. | Not suitable without augmentation 1.0 with augmentation |
| **2** | Coarse sands. | Not suitable without augmentation 1.0 with augmentation |
| **3** | Medium sands, loamy coarse sands, loamy medium sands. | 0.8 |
| **4** | Fine sands, loamy fine sands, sandy loams, loams. | 0.6 |
| **5** | Very fine sands, loamy very fine sands; or silt loams, sandy clay loams, clay loams, and silty clay loams with a moderate structure or strong structure (excluding a platy structure). | 0.4 |
| **6** | Other silt loams, sandy clay loams, clay loams, silty clay loams. | 0.2 |
| **7** | Sandy clay, clay, silty clay, and strongly cemented firm soils, soil with a moderate or strong platy structure, any soil with a massive structure, any soil with appreciable amounts of expanding clays. | Not suitable |

(4) The subsurface irrigation components of the greywater irrigation system must be installed in suitable soil. The suitable soil may consist of original, undisturbed soil or original soil that is augmented.

(5) The subsurface irrigation components of the greywater irrigation system must be installed a minimum of four inches deep and no deeper than twelve inches below the finished grade. The four-inch cover layer must consist of two inches of suitable soil and two inches of mulch.

(6) There must be a minimum of twenty-four inches of suitable soil between the subsurface irrigation components of the greywater irrigation system and any restrictive layer or the highest water table during the growing season.

(7) If the original soil is augmented, the mixture used for augmentation must meet the following criteria to ensure that suitable soil is used:

(a) The mixture must have an organic content that is at least five percent to support plant life and increase soil structure, and no greater than ten percent to prevent excessive decomposition;

(b) The mixture must be a well blended mix of mineral aggregate (soil) and compost where the soil ratio depends on the requirements for the plant species; and

(c) The mineral aggregate must have the following gradation:

| Sieve Size | Percent Passing |
|---|---|
| 3/8 | 100 |
| No. 4 | 95 - 100 |
| No. 10 | 75 - 90 |
| No. 40 | 25 - 40 |
| No. 100 | 4 - 10 |
| No. 200 | 2 - 5 |

(8) If native soil is augmented, the additional soil must be tilled into the native soil a minimum of four inches.

(9) Soil types 1 and 2 must be augmented before use. Soil type 7 is not suitable for subsurface irrigation.

(10) The irrigation field may only be located on slopes of less than thirty percent, or seventeen degrees.

(11) Irrigation scheduling should incorporate the use of adjustment features so that application rates are closely matched with soil and weather conditions.

## WAC 246-274-420 Soil and Site Evaluation - Tier 2 And Tier 3 Greywater Irrigation Systems

(1) A soil and site evaluation is required for Tier 2 and Tier 3 greywater irrigation systems. Only qualified professionals or local health officers may perform soil and site evaluations. Soil scientists may perform soil evaluations.

(2) The local health officer may allow a resident owner of a single-family residence, not adjacent to a marine shoreline, to perform the evaluation for his or her residence when the system reuses no more than three hundred gallons per day of greywater.

(3) The person evaluating the soil and site shall:

(a) Ensure that the soil types of the site are properly identified, and will provide suitable soil capable of supporting healthy plant life.

(b) Determine texture, structure, compaction, and soil characteristics and classify the soil as in WAC 246-274-415, Table II.

(c) Use the soil names and particle size limits of the United States Department of Agriculture Natural Resources Conservation Service classification system.

(d) Provide a report to the local health officer that includes:

(i) A soil map showing the soils within the project site. If the original, undisturbed soil will be augmented with additional soil, include a description of the additional soil, how it will be tilled into the original soil, and how the resulting soil will meet the requirements of WAC 246-274-415(7);

(ii) The drainage characteristics of the site and those areas immediately adjacent to the site that contain characteristics impacting the design;

(iii) The existence of designated flood plains and other areas identified in the local management plan required in WAC 246-272A-0015; and

(iv) The location of existing features affecting system placement, including the items requiring setback, identified in WAC 246-274-405, Table I, and other features such as:

(A) Surface water and storm water infiltration areas;

(B) Abandoned wells;

(C) Outcrops of bedrock and restrictive layers;

(D) Driveways, parking areas, and other impervious surfaces;

(E) The approved on-site sewage system serving the building, if any; and

(F) Underground utilities.

## WAC 246-274-425 Installation Permit Requirements - Tier 2 and Tier 3 Greywater Irrigation Systems

(1) Before beginning the construction of a Tier 2 or Tier 3 greywater irrigation system, a person proposing the installation of the system shall provide information to, and obtain a permit to install from, the local health officer. The information provided must include:

(a) The following general information:

(i) Name and address of the property owner;

(ii) Parcel number and if available, the site address;

(iii) Identification of the approved public sewer system or on-site sewage system serving the property;

(iv) Size of the parcel;

(v) Name, signature, and stamp, if applicable, of the person responsible for designing the system;

(vi) Date of application;

(vii) Name and signature of the owner or the owner's authorized agent; and

(viii) Certification by the owner or owner's authorized agent that the greywater will not contain anything prohibited under WAC 246-274-011.

(b) The soil and site evaluation specified under WAC 246-274-420;

(c) A dimensioned site plan of the proposed irrigation field, including:

(i) General topography and slope;

(ii) The location of existing and proposed encumbrances affecting system placement, including legal access documents, if any component of the system is not on the lot where the greywater is generated.

(d) A description of how the design of the system meets the requirements of WAC 246-274-410 and 246-274-415, including location, type, and size of the irrigation system components;

(e) Flow rate in gallons per minute, application rates in inches per hour, and design operating pressure per square inch for each zone;

(f) Source of greywater (fixtures) and the location of the diversion valve; and

(g) Any additional information required by the local health officer.

(2) Local health jurisdiction review.

(a) The local health officer shall:

(i) Issue a permit when the information submitted under subsection (1) of this section meets the requirements contained in this chapter and in applicable local rules; and

(ii) Specify the permit expiration date on the permit.

(b) The local health officer may deny, modify, suspend, or revoke a permit for just cause. Examples include, but are not limited to:

(i) Construction or continued use of a greywater irrigation system that threatens public health or water quality;

(ii) Misrepresentation or concealment of material fact in information submitted to the local health officer; or

(iii) Failure to meet conditions of the permit, this chapter, or any applicable local rules.

(c) The local health officer may stipulate additional requirements for a particular permit if necessary for public health or water quality protection.

(d) The local health officer may reduce permitting requirements, or require registration instead of permitting, when a qualified professional designs a Tier 2 system for a single-family residence and the system reuses no more than three hundred gallons per day of greywater.

## WAC 246-274-430 Installers - Tier 2 and Tier 3 Greywater Irrigation Systems

(1) Only a person approved by the local health officer to install greywater irrigation systems may construct and install a Tier 2 or Tier 3 system.

(2) The local health officer may allow the resident owner of a single-family residence, not adjacent to a marine shoreline, to install the Tier 2 or Tier 3 system for his or her residence when the system reuses no more than three hundred gallons per day of greywater.

(3) The installer shall:

(a) Follow the approved design;

(b) Have the approved design in possession during installation;

(c) Make no changes to the approved design without the prior authorization of the person who designed the system and, if a permit is required, the local health officer; and

(d) Be on the site at all times during the excavation and construction of the system.

## WAC 246-274-435 Installation Inspection - Tier 2 and Tier 3 Greywater Irrigation Systems

(1) For Tier 2 greywater irrigation systems that require an installation permit, and for Tier 3 greywater irrigation systems, the local health officer shall:

(a) Either inspect the system before cover or allow the person who designed the system to perform the inspection before cover if the designer is not also the installer of the system; and

(b) Keep the application submittal on file, with the approved design documents.

(2) The person responsible for the final construction inspection shall assure the system meets the approved design.

## WAC 246-274-440 Operation and Maintenance - Tier 2 and Tier 3 Greywater Irrigation Systems

(1) The owner of a Tier 2 or Tier 3 greywater irrigation system is responsible for properly operating, monitoring, and maintaining the system as follows:

(a) Obtain approval from the local health officer before altering or expanding the system;

(b) Protect the greywater irrigation system from damage, including damage from surface drainage and direct drains, such as footing or roof drains. The drainage must be directed away from the area where the greywater system is located;

(c) Ensure that the greywater originates from the correct fixtures; and

(d) Provide maintenance and needed repairs to promptly return the system to proper operating condition or promptly divert the greywater to the approved public sewer system or on-site sewage system serving the building until the system is repaired.

(2) At the time of property transfer, the owner must provide to the buyer the record information required under WAC 246-274-200 (1)(i) or 246-274-300 (3)(h) and, if available, maintenance records, in addition to the completed seller disclosure statement in accordance with chapter 64.06 RCW for residential real property transfers.

(3) If the greywater system is abandoned or otherwise permanently removed, the owner shall notify the local health officer in writing.

## WAC 246-274-445 Failures

If a Tier 1, Tier 2, or Tier 3 greywater irrigation system fails or a failure is suspected, the owner of the system shall immediately divert the greywater to the approved public sewer system or on-site sewage system serving the building. No person may use the greywater system until the failure is corrected.

## WAC 246-274-450 Enforcement

(1) The local health officer shall enforce these rules and may initiate enforcement actions against the system owner or other person causing or responsible for the violation of these rules. Enforcement actions may include, but are not limited to, requiring a person to stop work on any greywater system, or to divert the greywater to the approved public sewer system or on-site sewage system serving the building, until all permits, approvals, and registrations required by rule or statute are obtained.

(2) Enforcement orders issued under this section shall be in writing and shall include the violation and the corrective action required, and the name, business address, and phone number of an appropriate staff person who may be contacted regarding the order.

(3) Enforcement orders shall be personally served in the manner of service of a summons in a civil action or in a manner showing proof of receipt.

## WAC 246-274-455 Hearings

All local boards of health shall establish rules for conducting hearings requested to contest a local health officer's actions under this chapter. If the local board of health determines that the rules established under WAC 246-272A-0440 (1)(b) for conducting hearings to contest a local health officer's actions are adequate for this purpose, those rules may be used.

## WAC 246-274-460 Waivers

The local health officer may grant a waiver from specific requirements of this chapter if he or she determines:

(1) That the waiver requested is the minimum deviation from the specific requirements of this chapter that is necessary for the conditions; and

(2) The alternative approach proposed by the person requesting the waiver is consistent with the requirements and intent of these rules.

## WAC 246-274-465 Effective Date

This chapter shall take effect on July 31, 2011.