



# Director's Rule 29-2017

<b>Applicant:</b>  City of Seattle Department of Construction and Inspections	<b>Page</b>  1 of 3	<b>Supersedes:</b>  N/A
	<b>Publication:</b>	<b>Effective:</b>
<b>Subject:</b>  Graywater Holding Requirements for Floating on Water Residences (FOWRs) and House Barges expanding by more than 120 square feet	<b>Code and Section Reference:</b>  SMC 23.60A.203, 23.60A.204	
	<b>Type of Rule:</b>  Code Interpretation	
	<b>Ordinance Authority:</b>  SMC 3.06.040	
<b>Index:</b>  Seattle Land Use Code	<b>Approved</b>	<b>Date</b>
	Nathan Torgelson, Director, SDCI	

## Issue

This Director's Rule clarifies the graywater containment required when a floating on-water residence (FOWR) or house barge is expanded by more than 120 square feet and the owner chooses not to hook up to the City's waste-water disposal system. The code does not provide a specific method for calculating the required graywater storage capacity, so there is a need to clarify the requirements. This Rule also applies when a FOWR or house barge is replaced and the new residence is more than 120 square feet larger than the verified FOWR or house barge. This Rule does not apply to FOWRs or house barges that are not expanding or whose total expansions over the life of the FOWR or house barge are less than 120 square feet.

## Seattle Shoreline Master Program (SMP) requirements:

For expansions greater than 120 square feet over the life of the FOWR or house barge, the Seattle Municipal Code (SMC) requires one of two options: either graywater containment or a waste-water hookup that disposes the gray water to the City's waste-water disposal system. See SMC 23.60A.203C.1.e.5 for FOWRs and SMC 23.60A.204.C.1.e.5 for house barges. The

code does not provide direction for calculating the required graywater storage capacity should the owner choose the containment option.

### Impacts of graywater

Graywater is water that has been used for bathing, cooking, dishwashing, laundry, and similar activities, and discarded. It may be contaminated with body fluids, food waste, soap, detergents, household cleaning materials, or anything else that passes through the kitchen, bathroom, or other drains on a floating residence, with the exception of toilet water. Most FOWRs and house barges discharge graywater directly into the lake. Graywater can contribute to undesirable bacterial growth in the water, add materials that act as nutrients for weed growth and decrease oxygen, and introduce chemicals that are unhealthy for fish, plants, and wildlife. As a result, graywater discharges are prohibited in some jurisdictions, including Kitsap County and inland lakes of British Columbia. Oregon requires all floating homes and other floating residences that do not move to be hooked up to a waste-water sewer system.

### Graywater treatment as alternative to code requirements

Treatment of graywater before discharge has been suggested as an alternative to the code requirement of hooking up to sewer or containing (and then pumping out) graywater. This alternative is not authorized by the Seattle Shoreline Master Program, so it cannot be used to meet graywater requirements for expansion. FOWRs and house barges that have not expanded beyond 120 square feet, and any vessels that discharge graywater directly to the waters of Seattle may use graywater treatment systems, and doing so could help limit graywater impacts on the aquatic environment. SDCI does not regulate graywater treatment.

### Pump-out facilities

According to a report prepared for the Washington State Department of Ecology in 2013, Phase 2 Vessel Population and Pumpout Facility Estimates, there were four pump-out operators servicing the Seattle area. These mobile pumpout services travel by water to moorages to pump out graywater or blackwater (toilet water). The report states that mobile pumpout operators confirmed their availability to handle larger ships (with larger pumpout needs), but noted that multiple trips would be required. The largest pumpout tank identified by a mobile operator in the report was 150 gallons. Internet research in 2017 also identified four mobile pump-out businesses in the Seattle area. The other pumpout option is to use land-based pumper truck operators. These trucks have a much larger capacity. A small to medium sized pumper truck, as is used to pump septic tanks or stormwater detention, could have an 1800 – 3500 gallon capacity. Based on this research, SDCI has confirmed that pumping out graywater containment as required by the SMP and this rule is a feasible option.

### Calculation of Graywater Production:

For residences connected to City sewer, including floating homes, indoor water use in the City of Seattle has been calculated by Seattle Public Utilities (SPU) at 47 gallons per person per day. FOWRs and house barges have characteristics similar to on-land residences. One difference, however, is that toilet water, known as blackwater, is diverted to blackwater holding tanks and pumped out. Based on this, water use should be adjusted downward by 24% to account for water used by toilets. The SPU calculation for indoor residential water use without toilet use would be 47 gallons per person per day less 24%, or 35.72 gallons per person per day.

Because residents of FOWRs and house barges live over the water, data about graywater production on vessels are also relevant. US Coast Guard guidance documents provide standard calculations for graywater production by crew and passengers aboard vessels based on duration of occupancy. This includes graywater from galleys, showers, and sinks. The water usage calculated by the Coast Guard is slightly less per person than the usage calculated by SPU for indoor residential water use. A large vessel may have per-person economies of scale for water-using activities such as cooking or cleaning that are not possible with smaller groups. It may also be that living on or over the water can prompt water conservation. The Coast Guard graywater standard for 24-hour occupancy is 113.6 liters or 30 gallons per person per day.

SDCI assumes that FOWR and house barge residents use best practices and use less water per day than an on-land resident. Therefore, SDCI will employ the USCG graywater standard for calculating required graywater containment for FOWRs and house barges that expand by more than 120 square feet.

#### Number of Residents per floating residence.

Although FOWRs and house barges can accommodate different numbers of residents, SDCI must have rules that can be applied consistently and that are able to accommodate changing circumstances. Rather than try to estimate how many people will live now and in the future on a floating residence that has expanded, SDCI will set the graywater containment standard based on two residents per expanded FOWR or house barge, except when the expanded FOWR or house barge has three or more bedrooms. In that case, a third resident will be assumed when calculating graywater containment requirements.

#### Rule

When a FOWR or house barge applies to expand by more than 120 square feet and the applicant chooses not to hook up to the City waste-water disposal system, the expansion must include graywater storage capacity sufficient for at least two people for two weeks, or 840 gallons of graywater storage.

If an expanded FOWR or house barge has three or more bedrooms, an additional 420 gallons of graywater holding capacity will be required.