Graywater Control
HB 13-1044 & Regulation 86
September 17 and 18, 2014
Water Efficiency Workshop
"Graywater" means that portion of wastewater that, before being treated or combined with other wastewater, is collected from fixtures within residential, commercial, or industrial buildings or institutional facilities for the purpose of being put to beneficial uses authorized by the commission in accordance with Section 25-8-205 (1) (g). Sources of graywater may include discharges from bathroom and laundry room sinks, bathtubs, showers, laundry machines, and other sources authorized by rule. Graywater does not include the wastewater from toilets, urinals, kitchen sinks, dishwashers, or non-laundry utility sinks.

Graywater must be collected in a manner that minimizes household wastes, human excreta, animal or vegetable matter, and chemicals that are hazardous or toxic, as determined by the commission.
Potential Graywater Flows

Indoor Residential Uses - 69 gallons/day/capita

- Toilets: 18.5 gpcd
- Dishwashers: 1.0 gpcd
- Other Domestic: 1.6 gpcd
- Faucets: 10.9 gpcd
- Leaks: 9.5 gpcd
- Graywater: 27.8 gpcd + some faucet flows 30-35 gpcd
- Bath: 1.2 gpcd
- Shower: 11.6 gpcd
- Clothes Washer: 15.0 gpcd

Source: Mayer et. al. 1999. Residential End Uses of Water. AWWA Research Foundation and AWWA
# Indicator Organism Comparison

<table>
<thead>
<tr>
<th>Source</th>
<th>Total Coliform bacteria (MPN/100 mL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drinking Water</td>
<td>Less than 1</td>
</tr>
<tr>
<td>Disinfected Tertiary Recycled Water</td>
<td>Less than 2.2</td>
</tr>
<tr>
<td>Disinfected Secondary Reclaimed Water</td>
<td>Less than 23</td>
</tr>
<tr>
<td><strong>Swim Beach Standard</strong></td>
<td><em>Less than 235 E. Coli to remain open</em></td>
</tr>
<tr>
<td><strong>Colorado Flooding SW sampling</strong></td>
<td><em>0 to 911 E. Coli</em></td>
</tr>
<tr>
<td>Un-disinfected Reclaimed Water</td>
<td>20 to 2000</td>
</tr>
<tr>
<td>Graywater</td>
<td>100 to 100 millions</td>
</tr>
<tr>
<td>Raw Wastewater</td>
<td>Millions to billions</td>
</tr>
</tbody>
</table>
House Bill 13-1044 & other applicable laws, rules, etc.
Colorado House Bill 13-1044

Signed by Governor Hickenlooper on May 15, 2013

- Establishes basic implementation framework
- Defines Graywater
- Specifies or Encourages Actions from Four Governmental Entities
  - Division of Water Resources (Water Rights)
  - Examining Board of Plumbers
  - Water Quality Control Commission
  - Cities, City and Counties, and Counties (Local Implementation - Opt In Program)
City, Local, or State Plumbing Oversight*

County Health Department*

Watershed Control Agency

Water Provider*

Wastewater Provider*

Water Rights

Division of Natural Resources

Water Quality Standards

CDPHE-WQCD

* CDPHE Enforcement Oversight for Graywater Program
Applicable Laws & Regulations

Responsibilities of Other Regulatory Bodies

- Colorado Revised Statutes (House Bill 13-1044)
- Water Rights Law
- Colorado Plumbing Code (IPC based)
- Local Ordinances and other local criteria (e.g., building code)
- Regulation 100 - Water and Wastewater Facility Operators Certification Requirements

Water Quality Control Commission

- Water Quality Control Commission Regulation (Regulation 86 - Graywater Control Regulation)
- Watershed Control Regulations (Phosphorus)
- Regulation 61 - Colorado Discharge Permit System Regulations
- Regulation 41 - Groundwater Standards
Actions of Water Quality Control Commission

- Define Approved Uses
- Describe Requirements, Prohibitions and Standards for the Use
- Encourage the Use of Graywater
- Protect Public Health and the Environment
Regulatory framework... Being developed
# Regulation 86 Goals

<table>
<thead>
<tr>
<th>Protect public health and environment</th>
<th>Encourage the use of graywater</th>
<th>Create an implementable regulation - agency coordination</th>
<th>Limit initial uses to simplify start-up for local implementation - keep it simple</th>
<th>Reduce burden of stakeholder process due to resource constraints</th>
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- Protect public health and environment
- Encourage the use of graywater
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- Limit initial uses to simplify start-up for local implementation - keep it simple
- Reduce burden of stakeholder process due to resource constraints
Basic regulation framework

- Local Graywater Control Program Requirements
- Allowed Graywater Uses
- Control Measures
- Design Criteria

Opt In Program
Local ordinance and resolution

- **OPT IN** program for a City, City and County, or County. Have to have an active graywater ordinance or resolution in place. Local program may be more stringent.

- Legal compliance with other state, federal, local laws and regulations (*including plumbing code*)

- Minimum requirements for ordinance / resolution: tracking mechanism, design submittal, installation verification, O&M manual, legally responsible party identification, etc.
## Potential Graywater Uses

<table>
<thead>
<tr>
<th>Outdoor - Irrigation</th>
<th>Indoor - Toilet Flushing</th>
<th>Fire Protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Family</td>
<td>“Non - Single Family”</td>
<td>Single Family</td>
</tr>
<tr>
<td>Multi-Family</td>
<td></td>
<td>Multi-Family</td>
</tr>
<tr>
<td>Commercial</td>
<td></td>
<td>Commercial</td>
</tr>
<tr>
<td>Institutional</td>
<td></td>
<td>Institutional</td>
</tr>
</tbody>
</table>

### Commercial
- Construction (Concrete Mixing, Soil Compaction)
- Cooling Towers / Closed Loop Cooling, Zoo Operations

### Agricultural
- Crop Irrigation
- Feed Irrigation
- Dust Control
**Proposed Control Measures**

**All users**
- No hazardous chemicals
- No excreta (aka diapers)
- Operate & maintain in accordance w/manufacturer recommendations
- Minimize access and exposure
- Not a public nuisance
- Maximum storage period: 24 hours irrigation / 72 hours indoor use
- No temporary potable connections

**Irrigation**
- No agricultural irrigation (aka food crops)
- Must be applied at agronomic rate

**Toilet / Urinal**
- Residual disinfectant
- Dyed blue or green
Proposed Graywater Uses/Treatment

- Subsurface irrigation less than 2,000 gallons per day: Single family, Non single family
- Indoor toilet and urinal flushing: Single family, Non single family

Minimum treatment (simple version)

Subsurface irrigation: 3 way valve, 60 mesh screen for emitter systems, tank with drain, overflow and vent (except for clothes washing machine only installations)

Indoor toilet flushing: 3 way valve, tank with drain, overflow and vent ANSI/NSF 350, disinfectant, dye, potable water connection with appropriate cross connection control
Overview of project

Kickoff: July 2013, Agree on Minimum Requirements & Strategy

Workgroups: August 2013 - April 2014

Stakeholder efforts: May - July 2014

Get on the stakeholder list or to get a copy of the draft regulation...

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Rainwater collection - not the same as graywater

Regulated by Department of Natural Resources, Division of Water Resources a.k.a. the State Engineer’s office

http://water.state.co.us/DWRIPub/Documents/DWR_RainwaterFlyer.pdf
Plumbing Board Update

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Questions