

This presentation premiered at WaterSmart Innovations

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Graywater Treatment & Reuse Systems

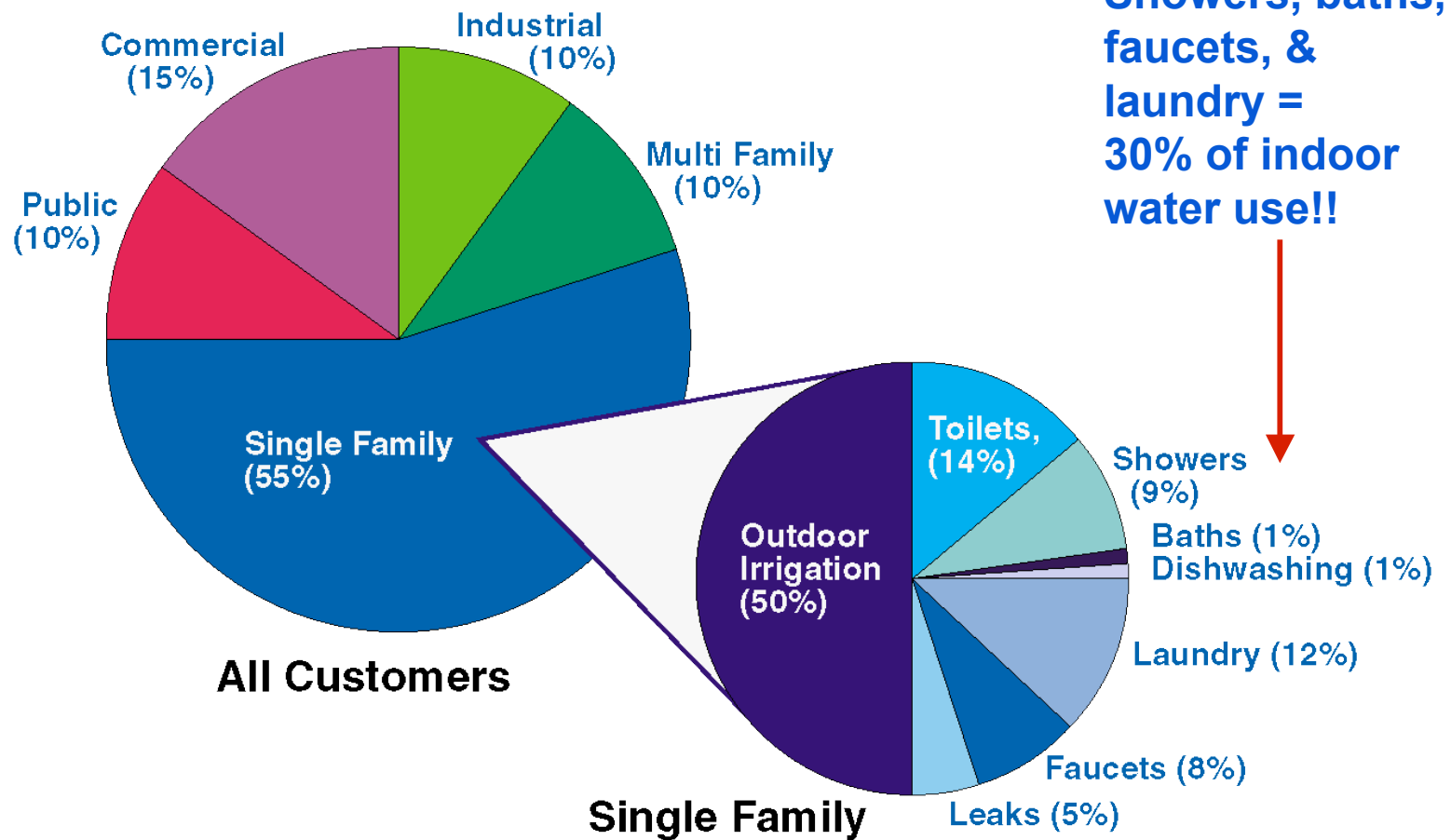
John Koeller, P.E.
Koeller and Company
Yorba Linda, Calif

watersmart'09™
INNOVATIONS

Las Vegas, October 2009



Urban Water Uses



Reusing the 30%: Package Graywater Treatment Systems



Graywater - what is it?

- Graywater comes from...
 - ✓ Showers & baths
 - ✓ Bathroom lavatory sinks
 - ✓ Clothes washers
- It is NOT from...
 - ✓ Toilets & urinals
 - ✓ Kitchen sinks
 - ✓ Dishwashers



Huge Potential Savings

- Many systems attempting to penetrate marketplace BUT...
 - ✓ Not usually cost-effective (today)
 - toilet flushing costs only \$25 - \$50/yr, maintenance costs
 - ✓ Declining graywater volumes
 - fixtures and appliances are becoming more efficient
 - ✓ “System impacts” upon drainlines and sewers
 - drain systems designed for high flows of yester-year
 - ✓ Public health & safety
 - patchwork of codes, regulations, official interpretations



Graywater Treatment & Reuse

- Engineered Systems
 - ✓ Project-specific design - tailored to need
 - ✓ Large projects
- Package Systems
 - ✓ “Off the shelf” systems
 - ✓ Wide application - not project-specific
 - ✓ Small and large projects

Emerging Products: Graywater Treatment - Package Systems (for water reuse)

- Sloan® AQUUS® system

- ✓ U.S. developer-WaterSaver Technologies
- ✓ Many U.S. field trials
- ✓ Now in production & marketing
- ✓ Sloan-WaterSaver partnership for research, development, marketing
- ✓ About \$400 plus installation
- ✓ New trials completed in Calif to measure water savings
(sponsored by MWDSC)
- ✓ Compliant with IAPMO IGC 207-2009
- ✓ www.sloanvalve.com/index_AQUS_Greywater_System_ENU_HTML.htm
- ✓ www.watersavertech.com/AQUS-System.html



AQUS[®] system



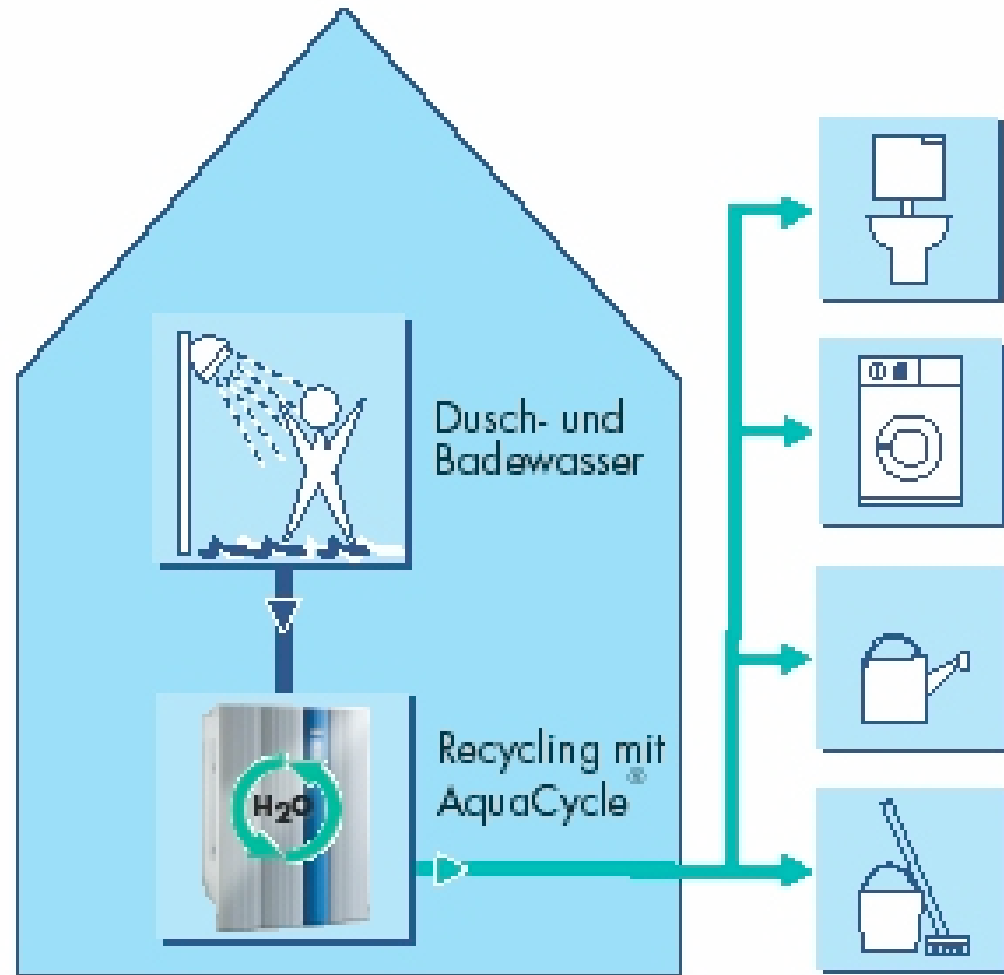


Emerging Products: Graywater Treatment - Package Systems (for water reuse)

- Pontos AquaCycle® system by Hansgrohe (Germany)
 - ✓ Hansgrohe a Masco company -
 - Owns dozens of companies in the construction-related marketplace
 - Wide exposure to designers, specifiers & builders
 - ✓ Pontos® installed in numerous applications in Europe
 - ✓ One trial installation in Omaha Concept Home
 - ✓ To undergo trials in California & Canadian installations - 2010
 - ✓ German manufacture - cost??
 - ✓ www.pontos-aquacycle.com/pontos/en/company/pontos.html

....OR just GOOGLE "pontos"

Pontos AquaCycle® System



Hotel Annex
12 rooms →
(water FROM showers in 8
rooms TO toilets and urinals)



Single Family Home
(water FROM shower,
bathtub, washbasin TO
toilet)



Residence Hall
40 apartments
(water FROM 16
showers TO 40 toilets)



Conference Hotel
54 rooms
(water FROM showers and
washbasins TO toilets)



**Vocational School →
750 students
(water FROM 16 gym showers
TO 8 toilets & 4 urinals)**



← MF Housing

**45 apartments
(water FROM showers, tubs, &
washbasins TO toilets)**



Emerging Products: Graywater Treatment - Package Systems (for water reuse)

- Brac system (Canada)
 - ✓ Being sold and installed in U.S. & Canada
 - ✓ Approved & permitted in some jurisdictions
 - ✓ Collect & filters graywater from shower & clothes washer
 - ✓ Filtered graywater used to flush toilet or irrigate landscape
 - ✓ Compliant with IAPMO IGC 207-2006b and CSA B128-2006
 - ✓ www.bracsystems.com/home.html

Brac System





Emerging Products: Graywater Treatment - Package Systems (for water reuse)

- Rewater Systems (U.S.)
 - ✓ Long history in the West
 - ✓ Captures, filters, & reuses water from clothes washer, shower, tub, & lavatory sink
 - ✓ Differences in codes affect application:
 - ✓ California: drip irrigate (subsurface only)
 - ✓ Arizona: drip irrigate (above ground permitted)
 - ✓ Elsewhere???
 - ✓ www.rewater.com/



Emerging Products: Graywater Treatment - Package Systems (for water reuse)

- Perpetual Water (Australia)

- ✓ Perpetual Water-Home[®]

- ✓ Captures & treats water from lavatory sink, clothes washer, shower, & tub
 - ✓ Treated water used for toilet flushing, irrigation, car washing & general cleaning
 - ✓ Not yet available in the U.S.

- ✓ Garden Angel

- ✓ Water source: clothes washer
 - ✓ Captures, filters, & treats (phosphate removal, pH adjustment, disinfection, salt balance)
 - ✓ Delivers treated water to landscape - suited to drip systems

- ✓ www.perpetualwater.com.au/

Perpetual Water's "Garden Angel"

(clothes washer rinse water to landscape)



Emerging Products: Graywater Treatment - Package Systems (for water reuse)

- Water Legacy (Colorado)
 - ✓ Bath & shower water captured, filtered, & disinfected
 - Treated water sent to the toilet for flushing
 - ✓ UV and hydrogen peroxide used for disinfection
 - No chlorine - no odors
 - ✓ Compliant with IAPMO IGC 207-2009
 - ✓ <http://waterlegacy.com/index.htm>





Package Graywater Treatment Systems: the “to do” list

- Much potential, BUT....
 - Must complete more field tests of the systems in “real world” applications...
 - Pontos AquaCycle® system in various locations
 - Brac system in Washington
 - Perpetual Water system in California....in order to answer “savings”, performance, maintenance & economic questions
 - Must resolve health code & equipment standards issues
 - NSF International Standard
 - IAPMO Standard



Internet Resources

- www.oasisdesign.net
- www.allianceforwaterefficiency.org
- www.cuwcc.org/resource-center/resource-center.aspx
- www.epa.gov/watersense/ (WaterSense)
- www.watersavertech.com/AQUS-System.html
- www.perpetualwater.com.au/Home/perpetualwater-Home.aspx
- www.bracsystems.com/home.html
- www.pontos-aquacycle.com/pontos/en/company/pontos.html
- waterlegacy.com/index.htm
- www.rewater.com/

Thank you...

**John Koeller, P.E.
Koeller & Company
Yorba Linda, California**

**Tel. (714) 777-2744
koeller@earthlink.net**

