

Keeping the Tap on For Builders

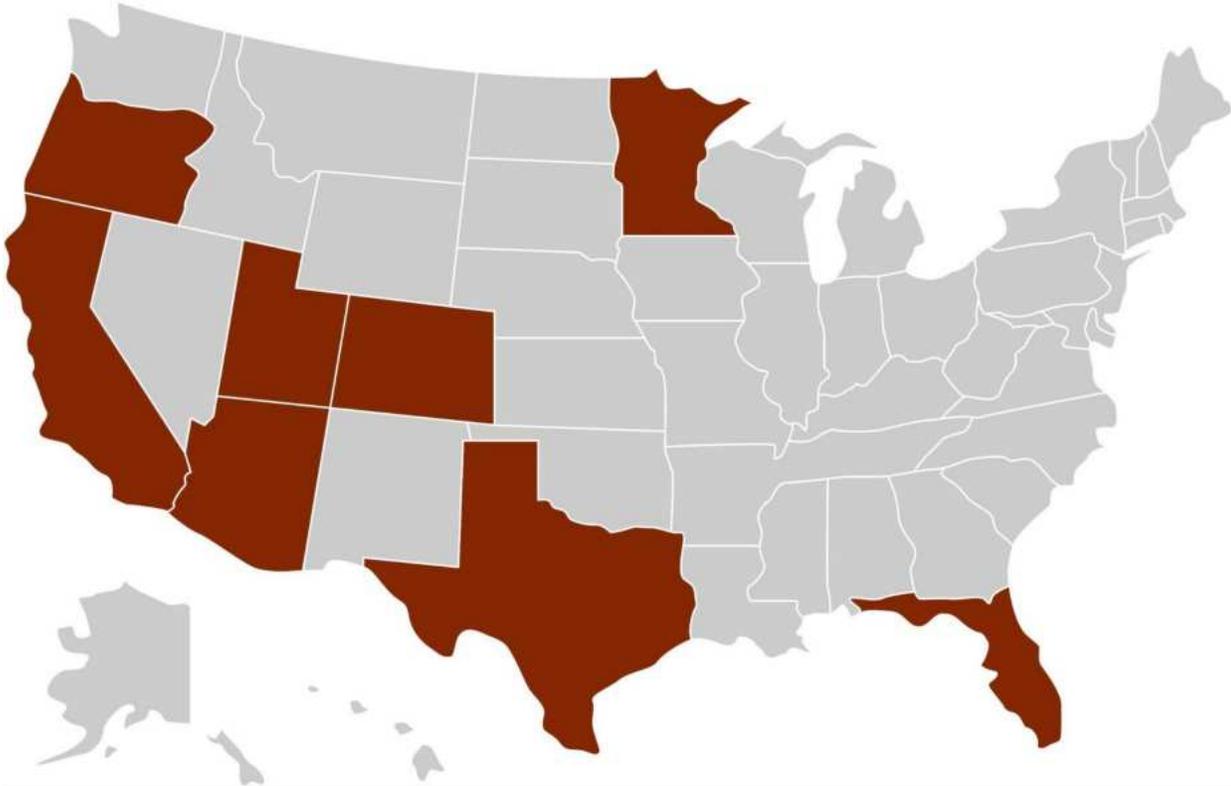
Adam DeHeer, LeapFrog Design
Mike Collignon, Green Builder[®] Coalition

What word stops a builder in their tracks?

Moratorium

Water Scarcity Halts Building

States where building moratoriums have been imposed due to water restrictions.



Water Scarcity Halts Building

The New York Times

Arizona Limits Construction Around Phoenix as Its Water Supply Dwindles

In what could be a glimpse of the future as climate change batters the West, officials ruled there's not enough groundwater for projects already approved.

 Give this article    1686



The Salt Lake Tribune

As water wanes, two Utah towns stop building

The towns of Oakley and Henefer have prohibited building approvals requiring new hookups to city water.



DEVELOPMENT HOUSTON

Red Hill greenlighted for 550 homes in Magnolia when moratorium ends

Must wait to embark on 95-acre project due to water shortage

Arizona

- In June of 2023, Gov. Katie Hobbs announced a moratorium on building additional subdivisions in Valley communities that relied solely on one source of water (groundwater), saying that they could not prove they had a 100-year water supply.
- The Home Builders Association of Central Arizona (HBACA) warned that the moratorium will hurt the state's economy severely.

“From an economic perspective, the sudden and drastic measures announcing no new certifications of assured water supply from groundwater created uncertainty and risk, an effective deterrent to potential investors in our state's economy.”

Florida



COMMUNICATION BUILDS OUR COMMUNITY



Water Use Permits issued by the Southwest Florida Water Management District provide the once-sleepy community with only 917,500 gallons of water per day, with current consumption reaching more than 800,000 gallons.

Against that tight supply background, **more than 5,700 new houses and apartments** are in the permitting process in the town. They are expected to more than double the demand for water.

Town of Dundee Facing Building Moratorium Due to Water Shortage

The Construction Halt Would Be the First in the Area

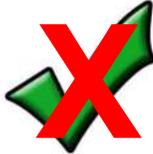
Robert Connors | Last updated Aug 01, 2024 8:22am 

Share

Skyrocketing development pressures are colliding with dwindling supplies of water across Florida. Those same forces are now causing angst for elected officials along the Ridge, who are wrestling with increased costs and possible building moratoriums, even as the collapse of the citrus industry along the Ridge in eastern Polk has caused many former citrus growers to offer their huge tracts of land to developers.



Florida's Solution?

- Efficiency? 
- Limit outdoor irrigation? 
- Buy more expensive water? 

Alternative Solutions

- Prescriptive codes – Yes/No, Pass/Fail
- Performance-based codes – Water ratings are on-site analyses of single-family & multifamily properties that subsequently forecast future water usage.
 - Ratings do not mandate anything; they simply assess the design & materials used for the project.
 - When used in codes, they typically set the required level of efficiency.
- WaterSense for Homes – Blended Approach

Bottom Line

Builders need to be proactive

- Search the market for existing solutions.
- Provide options to home buyers.
- Advocate with local and state decisionmakers.
 - City Council
 - Water Conservation Office
 - Municipal Water Utility
 - State Water Board

What keeps the tap on for builders?

**Water conservation policies
and onsite water reuse**

Greywater Reuse: Where is it Legal?

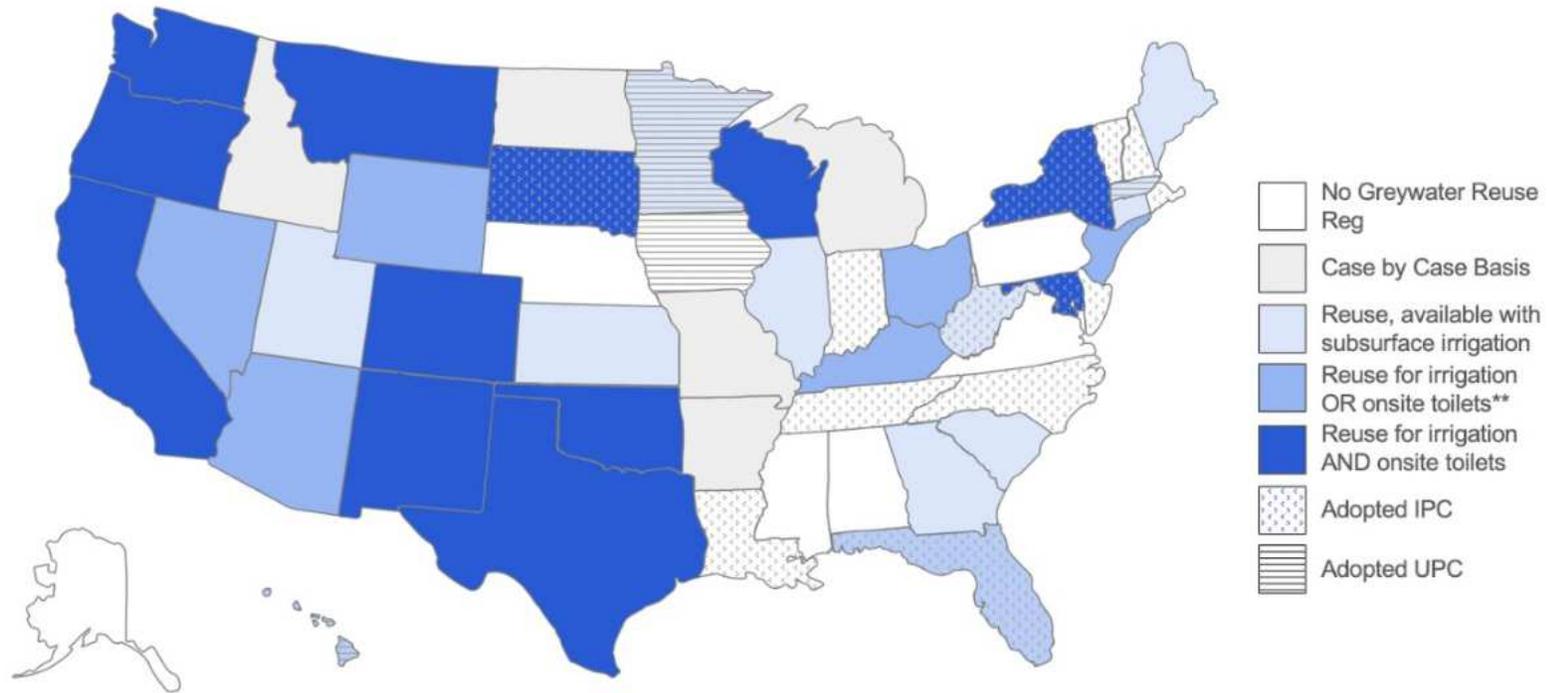
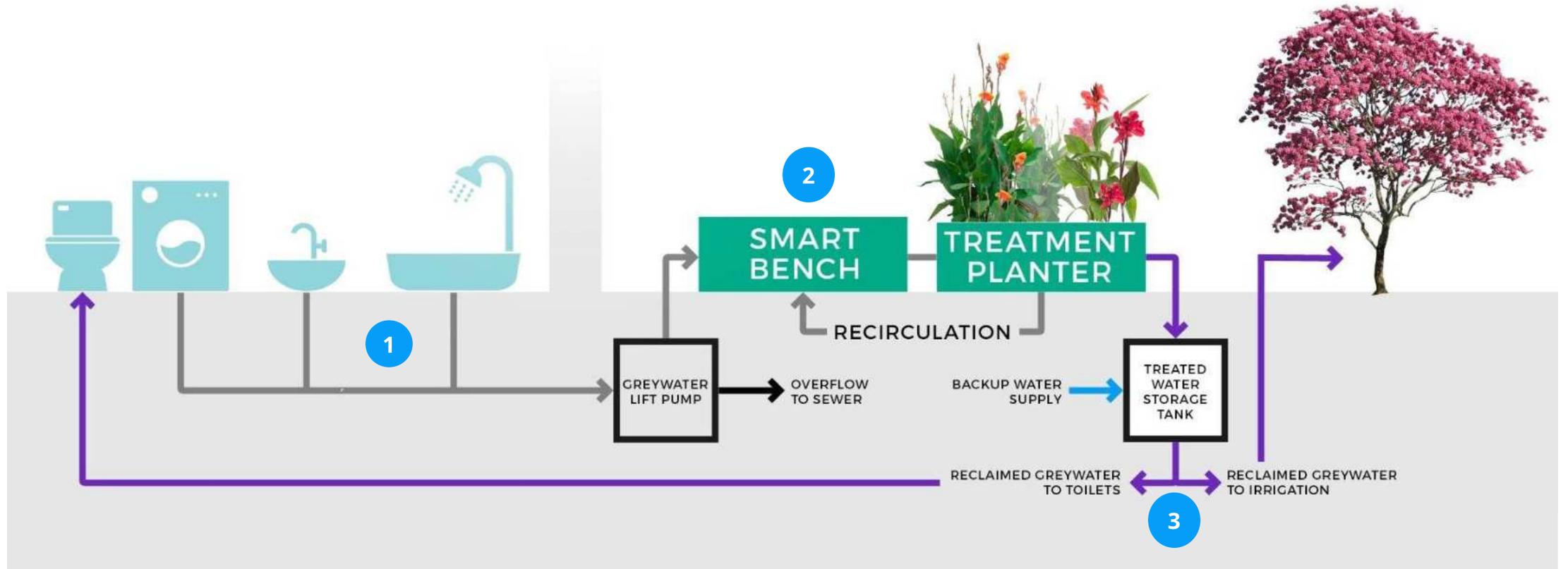


Figure 2. Map of Reuse Regulations Made by LIXIL

***More commonly utilized for irrigation. Three states, Florida, Georgia, and New Jersey, allow treated greywater for toilet flushing only and not irrigation.*

Greywater Reuse: How It Works



Engineering and Nature-based Technology

Plants



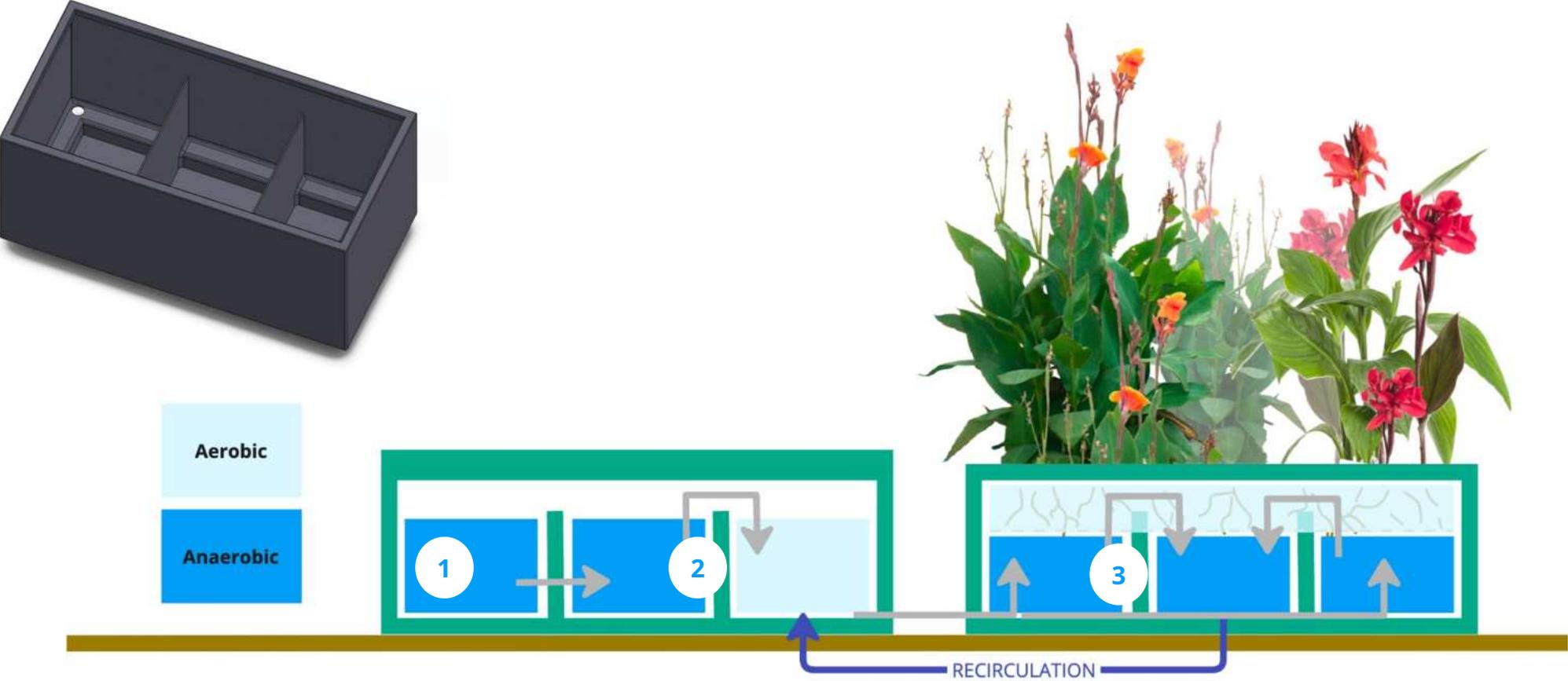
Control, Monitoring, Data



Filtration Media



Treatment Process Creates High Quality Water



ROI Calculator

		All Houses	New homes meet WaterSense 1.0
Household Water Consumption			
Average Daily Indoor Water Use (SELECT SOURCE)	REU	117.2	IF REU, use C22 value. IF USGS, use per capita for state multiplied by size of household
Outdoor Daily Use	gphd	117.2	REU2016 50/50 indoor/outdoor
Swimming Pool Daily Evap (0%=N, 100%=Y)	0.0%	0	Year round average evaporation for 400 square foot pool in arid climate
Household Water Consumption TOTAL	gphd	234	gallons per household per day
	CCF per month	9.53	
Greywater (recyclable)			
Shower	21.4%	25	REU2016 all households, adjusted for lower Leaks + Other in newer homes (reduce 13+3 to 5.2%)
Bath	4.4%	5	REU2016 all households
Faucet (exclude kitchen)	11.4%	13	REU2016 all households
Clothes washer	17.4%	20	REU2016 all households
Greywater TOTAL	54.6%	64	
Blackwater and non recyclable			
Toilet	25.4%	30	REU2016 all households
Faucet (kitchen)	11.4%	13	REU2016 all households
Dishwasher	3.4%	4	REU2016 all households
Leaks and Other	5.2%	6	REU2016 all households adjusted down by 9.8% (other categories adjusted up by 1.4%)
Blackwater TOTAL	45.4%	53	0.098
System loss	3%	1.9	gphd
Recycled greywater saved with Greywater Reuse	gphd	62	gphd
Indoor reuse for laundry (0%=N, 100%=Y)	0.0%	0	gphd
Indoor reuse for toilet flushing (0%=N, 100%=Y)	100.0%	30	gphd
Water available for irrigation or topping up pool		32	gphd

ROI Calculator

Water Conservation

Daily Water Purchase Reduction in gallons	62 gallons per household per day
Monthly water savings in gallons	1,888 gallons per month
Monthly water savings in CCF	2.52 CCF per month
Annual water savings in gallons	22,656 gallons per year
Annual water savings in CCF	30.29 CCF per year
Annual water savings in Acre Feet	0.0695 AF per year
Daily Sewage Reduction in gallons	64 gallons per day
Monthly Sewage Reduction in CCF	2.60 CCF per month
Annual Sewage Reduction in gallons	23,357 gallons per year
Annual Sewage Reduction in Acre Feet	0.0717 AF per year

Utility Savings

Monthly Water Bill reduction	\$	25.24	per month
Monthly Sewer Fee reduction	\$	26.02	per month
Annual Savings TOTAL	\$	615.10	per year TOTAL

Greywater Reuse: Real Savings

Over 10 years, a typical household could save:

220k

gallons of water

\$6k

on water costs

10 tons

of CO2 emissions avoided

Onsite Water Reuse Can Help

Help Developers & Builders

- Brand differentiation with high performance products that stand out
- Meet building codes and water conservation regulations
- Monitor water savings to show high performance for code compliance.
- Increase real home value
- Reduce development costs



Florida New Greywater Legislation

Florida Statute 403.892

Florida recently passed a law that provides developers with strong financial incentives for adoption of greywater systems.

- 25% density/intensity bonus if 75% of development will have greywater system
- 35% density/intensity bonus if 100% of development will have greywater system
- Applies in addition to other bonuses
- Developments of ≥ 25 units
- Each unit must have its own greywater system solely dedicated to its use.

Florida Value at Scale

Increase Profit by over 30%

Without greywater reuse	75 units
Water impact fees*	(\$3,500)
Average home con \$ **	(\$400,000)
Cost of LF system	(\$0)
Increased sale value / price	\$0
Assumed Profit	20%
Profit	\$6M

With greywater reuse	100 units
Water impact fees*	(\$2500)
Average home con \$ **	(\$400,000)
Cost of LF system	(\$8,000)
Increased sale value / price	\$8000
Assumed Profit	20%
Profit	\$8M

* Water impact fees are ave. for Paco, Collier, and Bay counties. The 40% reduction in fee is based on the 40% lower water use. [Source](#)

**though pinning down an exact number can be difficult, real estate experts say \$12,000-\$24,000 can be added in home value by adding the LeapFrog Design landscaping benefits

*** Based on reduction in impact fees, meter fees, and other plating costs associated with water and sewer utilities.

Santa Fe, NM Residence

	Before	+ Toilet Upgrade	+ Toilet + Greywater
Water usage	81,966	n/a	n/a
Gallons saved per year	n/a	3,504	23,381
WERS	56	53	35



Outdoor Use and Conservation Summary *(Watering Months Only)*

	DAY	WATERING MONTHS	WM / YEAR	CPD	
AVERAGE CONSERVATION BASELINE VS. RATING	GALLONS USED PER:	151	4,522	27,131	38
	GALLONS SAVED PER:	260	7,795	46,772	65
	WITHOUT REUSE CREDITS				
	SAVINGS PER:	\$8.00	\$240.13	\$1,440.76	\$2.00
WITH REUSE CREDITS					
SAVINGS PER:	N/A	N/A	N/A	N/A	

Combined Use and Conservation Summary

	DAY	MONTH	YEAR	CPD	
AVERAGE CONSERVATION BASELINE VS. RATING	GALLONS USED PER:	301	9,091	81,966	75
	GALLONS SAVED PER:	309	9,303	64,862	77
	WITHOUT REUSE CREDITS				
	SAVINGS PER:	\$8.30	\$249.26	\$1,550.39	\$2.08
WITH REUSE CREDITS					
SAVINGS PER:	N/A	N/A	N/A	N/A	

Estimated Costs

	DAY	MONTH	YEAR	CPD	
BASED ON RATING REPORT RESULTS	WITHOUT REUSE CREDITS				
	EST. COSTS PER:	\$3.04	\$91.93	\$828.27	\$0.76
WITH REUSE CREDITS					
EST. COSTS PER:	N/A	N/A	N/A	N/A	

WERS

56

NO REUSE CREDITS

PRELIMINARY

UNCONFIRMED AND UNCERTIFIED

NO REUSE

WITH WATER REUSE CREDITS



The Impact of a Greywater System

Projected Outdoor Water Demand = 3,866 gal/wm

Projected Monthly Greywater Supply = 3,681 gal

Net Difference = 185 gal/wm

*wm = watering month



As Is

	DAY	MONTH	YEAR	CPD
GALLONS USED PER:	150	4,570	54,835	38
GALLONS SAVED PER:	50	1,507	18,090	12
WITHOUT REUSE CREDITS				
SAVINGS PER:	\$0.30	\$9.14	\$109.62	\$0.08
WITH REUSE CREDITS				
SAVINGS PER:	N/A	N/A	N/A	N/A

Toilet Upgrade Only

	DAY	MONTH	YEAR	CPD
GALLONS USED PER:	141	4,278	51,331	35
GALLONS SAVED PER:	59	1,799	21,594	15
WITHOUT REUSE CREDITS				
SAVINGS PER:	\$0.36	\$10.90	\$130.86	\$0.09
WITH REUSE CREDITS				
SAVINGS PER:	N/A	N/A	N/A	N/A

One Home Saves 3,504 gallons/year

Ten Homes Save 35,040 gallons/year

One Hundred Homes Save 350,040 gallons/year

The tools and technologies exist
to build water-efficient homes.

**Builders need municipalities
to see the potential.**

What keeps the tap on for builders?

Proactive Advocacy

for water conservation policies
and onsite water reuse

What Can Builders Do?

- Proactively look for solutions available today.
- Present home buyers with options.
- Advocate with local and state decisionmakers.

Thank you!

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