

Rainwater and Stormwater Capture/Use					
Size	Single Family Residential or small business	Commercial Development to Comply w/COT Water Harvesting Ordinance		Sub-regional	
		New Construction (convenience store)	Retrofit (convenience store)	New Construction	Retrofit (Kino)
<b>Technology</b>	Cistern for roof and perimeter berm to retain water on-site	Collection and diversion system for common area irrigation	Collection and diversion system for common area irrigation	Collection, storage ponds and pumping system for park and turf irrigation (includes filtration and chlorination/de-chlorination)	Collection, storage ponds and pumping system for park and turf irrigation (includes filtration and chlorination/de-chlorination)
<b>Water Collection System</b>	Earthworks (inexp) Storage \$1/gal-\$3.50/gal Gutters & Dist  \$2000 (typical)	Earthworks (inexp) Storage \$1/gal-\$3.50/gal + Gutters & Dist  \$5000 (typical)	Earthworks (inexp) Storage \$1/gal-\$3.50/gal + Gutters & Dist  \$8000 (typical)		\$11mil (multi-use project) for ~371 ac-ft/yr stormwater
<b>Water Delivery/Irrigation System</b>	Gravity System (\$600 mats + labor) Pressurized System (\$1500-\$4400)  \$2000 (typical)	\$5000 (typical)	\$8000 (typical)		
<b>Water Quality Issues</b>	Low TDS, possibility of metals, fecal coliform, algal buildup  Req minor filtration if used with pump, potable filtration if used inside build	Low TDS, possibility of metals, algal buildup  Req minor filtration if used with pump, potable filtration if used inside building	Req minor filtration if used with pump, potable filtration if used inside building		Mixture of Surface and Reclaimed issues
<b>Permits Needed</b>	General County/City Zoning & Engin. only if under 5,000gal	County/City Building	County/City Building		AZPDES, Surface Water Right, Floodplain APP
<b>Financing Options</b>	Cash Loans	Bonds Cash Grants/Loans	Bonds Cash Grants/Loans		\$12 M Total: Bonds, Cash and Federal Grants

<b>Potential Barriers</b>	HOA's economic feasibility			Surface Water Rights	Surface Water Rights
<b>Potential Incentives</b>	Tax Credits	Tax Credits Tucson Ordinance Requirements	Tax Credits		COE
<b>Technical Feasibility</b>	Yes	Yes	Yes		
<b>Economic Feasibility</b>	At current water rates, long ROI	At current water rates, long ROI	At current water rates, long ROI		

Gray-Water Collection and Reuse						
Size	Single Family Residential		Commercial or Apartment Complex		Business (no actual data)	
	New construction	Retrofit	New Construction (Inn Suites Laundry 2,000-3000 gpd)	Retrofit (Apt Complex Laundry)	New Construction (TFS guess)	Retrofit (TFS guess)
<b>Technology</b>	Sink, Laundry, Shower Collection	Laundry (common), Shower, Sink less Common	Commercial Laundry Pressurized irrigation system	Coin Laundry Pressurized irrigation system	Gravity feed irrigation system	Pressurized, filtered greywater irrigation system
<b>Water Collection System</b>	Piping all (\$300 to \$700 addit)	Piping Laundry (\$300 to \$400)	\$10,000	\$10,000	\$600	\$2,000
<b>Water Delivery/Irrigation System</b>	Gravity System (\$600) Pressurized System (\$1500-\$4400) \$700 (typical)	Gravity System (\$600) Pressurized System (\$1500-\$4400) \$700 (typical)	\$10,000 (~1/2 ac landscaping)	\$30,000 (~3/4 ac landscaping)	\$1,000	\$2,000
<b>Water Quality Issues</b>	Must follow ADEQ Guidelines Need 'black' line for diapers, bleach etc	Must follow ADEQ Guidelines Need 'black' line for diapers, bleach etc	Must follow ADEQ guidelines, Highly controlled laundry practices	Must follow ADEQ guidelines, lack of control of what residents put in laundry	Must follow ADEQ guidelines	Must follow ADEQ guidelines, need major pre-pump filtration
<b>Permits Needed</b>	Internal - Building per UPC or IPC Code Outside ADEQ (General-Type1)	General Type I Gray water	General Type III Gray water (\$2000-\$6000) PC/COT Bldg Permit	General Type III Gray water (\$2000-\$6000) PC/COT Bldg Permit		
<b>Financing Options</b>						

<b>Potential Barriers</b>	Loss of Reclaimed	Difficulty modifying plumbing Sewer Flow Problems, Loss of Reclaimed	9 month review times, ADEQ may not permit subsurface drip for grass	Difficulty of modifying existing plumbing, long review times, may not be able to irrigate grass	Lack of awareness only	Difficulty of modifying existing plumbing
<b>Potential Incentives</b>	COT Rebate Tax Credit	COT Rebate Tax Credit COT Rebate	State Tax Credit No potable meter fee, reduced sewer fee	State Tax Credit No potable meter fee, reduced sewer fee	State Tax Credit	State Tax Credit
<b>Technical Feasibility</b>	Yes	Yes	Highly feasible	Moderately feasible		
<b>Economic Feasibility</b>	CCTF – highly cost effective	CCTF – moderately cost effective	< 5 yr ROI	< 5 yr ROI		
<b>Other?</b>			Overflow can go to sewer or leach field, cost favors leach field	Overflow can go to sewer or leach field, cost favors leach field		

Tucson Water Benefit-Cost Results					
Mean Avoided Costs					
		Program	Utility	TRC	Participant
<b>Single-Family Existing</b>					
2	SF	ULFT Retrofit on Resale	5.99	0.55	2.76
1c	SF	Targeted ULF Rebate	1.23	0.67	6.73
6	SF	Greywater Incentive	1.10	0.36	2.97
5	SF	Hot Water Recirc ROR	0.77	0.02	0.12
3	SF	ULFT CBO	0.78	0.78	N/A
1a	SF	ULFT Rebate	0.72	0.45	5.35
1b	SF	HET Rebate	0.52	0.39	7.25
7	SF	Water Harvest Incentive	0.34	0.12	0.75
4	SF	Hot Water Recirc Rebate	0.14	0.02	0.14
<b>Single-Family New</b>					
8	SF	Hot Water Recirc Ord	14.01	0.03	0.15
10	SF	Greywater Ord	14.63	0.23	0.71
9	SF	Landscape Design Ord	7.14	0.52	1.67
<b>Multi-Family Existing</b>					
20	MF	Submetering Ordinance	68.08	0.40	1.82
21	MF	Irrig System ROR	30.35	2.30	7.42
17	MF	Hot Water Recirc ROR	18.24	0.07	0.28
14	MF	ULFT Retrofit on Resale	12.07	1.11	4.73
22	MF	Irrig Sys Upgrade Rebate	7.49	2.88	13.92
15	MF	Clotheswasher Rebate	3.27	0.52	4.28
11b	MF	HET Rebate	1.83	0.85	6.09
13	MF	ULFT Community-Based	1.72	1.72	N/A
11a	MF	ULFT Rebate	1.46	0.90	9.16
19	MF	Submetering Rebate	1.41	0.40	2.55
12	MF	ULF Vendor-Driven	1.26	1.26	N/A
18	MF	Mist System Restrictions	1.24	0.13	0.24
16	MF	Hot Water Recirc Rebate	0.20	0.07	0.42
<b>Multi-Family New</b>					
23	MF	Clotheswasher Ordinance	59.96	0.49	3.88
25	MF	Submetering Ordinance	17.08	0.71	3.45
28	MF	Wtr Harv & Greywater Ord	5.91	0.05	0.14
26	MF	Irrigation Design Ordinance	9.09	1.94	7.52
27	MF	Rev Landscp Des Stds	1.81	0.26	1.00
24	MF	Hot Water Recirc Ord	0.76	0.02	0.11
<b>CII Existing</b>					
34	CI	Car Wash Oper Stds 1	14.06	0.74	3.44
36	CI	Irrig System ROR	12.32	2.66	13.77
35	CI	Submetering Reqmt	3.52	0.72	3.84
37	CI	Water Harvest ROR	2.96	0.69	3.27
29b	CI	ULFT Rebate Targeted	1.95	0.67	5.59
38	CI	Pre-Rinse Rebate	1.94	1.11	16.33
39	CI	Pre-Rinse Direct Install 2	1.38	1.38	N/A
29a	CI	ULFT Rebate Untargeted	1.33	0.49	4.24
30	CI	Urinal Rebate	1.15	0.39	3.30
31	CI	Vendor-Driven Toile & Urinal	0.52	0.52	N/A
32	CI	Valve Replacement	0.39	0.18	2.19
33	CI	Hot Water Recirc Rebate	0.17	0.07	0.61
<b>CII New</b>					
42	CI	Food Handling Ordinance 1	30.24	2.94	20.37
40	CI	Clotheswasher Ordinance	24.67	0.30	1.54
44	CI	Wtr Harv & Greywater Ord 1	1.78	0.69	4.09
41	CI	Cooling Tower Ops Ord	0.65	0.65	N/A
43	CI	Hot Water Recirc Ord	0.67	0.25	2.12

**NOTE:**  
Highlighted programs meet following criteria:

-- Utility BC Ratio > 1

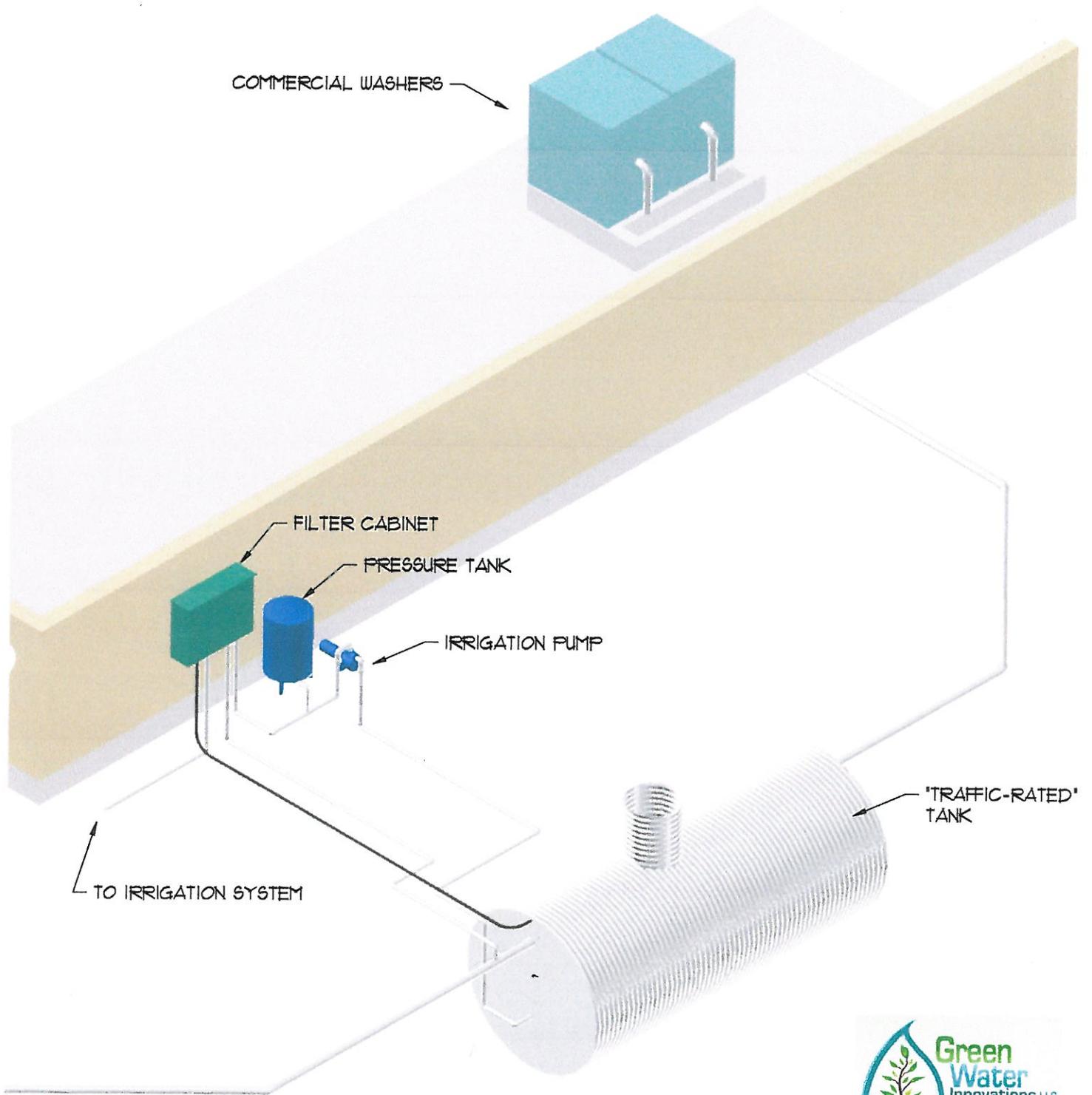
--TRC BC Ratio > 0.6

--Participant BC Ratio > 1

--Savings not negligible

--Does not conflict with other selected program(s).

1. Program excluded because of negligible savings.
2. Program conflicts with another selected program.



COMMERCIAL WASHERS

FILTER CABINET

PRESSURE TANK

IRRIGATION PUMP

'TRAFFIC-RATED'  
TANK

TO IRRIGATION SYSTEM

TO 'OVER-FLOW' DISPOSAL  
(SEWER OR ON-SITE DISPOSAL)

PRELIMINARY  
NOT FOR CONSTRUCTION



**LAUNDRY GREYWATER**  
 "3d System Over-view"  
 8/11/09 Sit. X1.0a



530 W. Watson Rd Tucson, Az 85705  
 phone: (520)632-4440  
 fax: (520)632-4441

New Construction

COT

Increased Internal Plumbing at Construction

Ordinance Stakeholder \$400  
SAHBA \$700

Outside pressurized System

Sunnside Pointe \$4,400 (~2500 for Materials)  
Watersavers.com \$1,500 (~1000 for Materials, guess \$500 for plumber & labor)  
Water Wise Group \$3,500 (~2500 for Materials)

Outside gravity feed

Al Nichols \$1,000 (\$600 materials + plumbing & labor)

Existing Construction

WMG Estimates

Plumbing

\$300      \$400

Plumber

Gravity System

\$100      \$200

\$400      \$400

Materials

Labor (\$20/hr x 20 hr)

\$500      \$600

Total

\$800      \$1,000