

Water Efficiency (WE) Credit 2 - Innovative Wastewater Technologies

From LEED-NC Version 2.2

"Requirement:

OPTION 1 - 1 Point

Reduce potable water use for building sewage conveyance by 50% through the use of water-conservation fixtures (water closets, urinals) or non-potable water (captured rainwater, recycled grey water, and on-site or municipally treated wastewater)."

Case 1 - Residential property with 4 occupants

DESIGN CASE BUILDING SEWAGE CONVEYANCE					
FLUSH FIXTURES	Daily use/ Occupant	Flow Rate (GPF)	Duration (Flush)	Occupants	Water use (Gallons/day)
Toilet	5	1.6	1	4	32
Flow Fixtures	Daily use/ Occupant	Flow Rate (GPM)	Duration (Seconds)	Occupants	Water use (Gallons/day)
Conventional Lavatory	5	2.5	15	4	12.5
Kitchen Sink	4 (Total)	2.5	60	N/A	10
Shower	1	2.5	300	4	50
Total Daily Volume (gal)					104.5
Annual Days					365
Annual Volume (gal)					38,142.5
Recycled Lavatory Water (Grey Water)					(4,562.5)
TOTAL ANNUAL VOLUME (gal)					33,580.0

BASELINE CASE BUILDING SEWAGE CONVEYANCE					
FLUSH FIXTURES	Daily use/ Occupant	Flow Rate (GPF)	Duration (Flush)	Occupants	Water use (Gallons/day)
Toilet	5	1.6	1	4	32
Flow Fixtures	Daily use/ Occupant	Flow Rate (GPM)	Duration (Seconds)	Occupants	Water use (Gallons/day)
Conventional Lavatory	5	2.5	15	4	12.5
Kitchen Sink	4 (Total)	2.5	60	N/A	10
Shower	1	2.5	300	4	50
Total Daily Volume (gal)					104.5
Annual Days					365
TOTAL ANNUAL VOLUME (gal)					38,142.5

$$\% \text{ WASTE WATER REDUCTION} = \frac{(38,142.5 \text{ Gallons} - 33,580 \text{ Gallons}) \times 100\%}{38,142.5 \text{ Gallons}}$$

$$= \boxed{12\%}$$

Water Efficiency (WE) Credit 2 - Innovative Wastewater Technologies (Cont.)

Case 2 - Small office with 8 full time occupants (No urinals)

DESIGN CASE BUILDING SEWAGE CONVEYANCE					
FLUSH FIXTURES	Daily use/ Occupant	Flow Rate (GPF)	Duration (Flush)	Occupants	Water use (Gallons/day)
Toilet	3	1.6	1	8	38.4
Flow Fixtures	Daily use/ Occupant	Flow Rate (GPM)	Duration (Seconds)	Occupants	Water use (Gallons/day)
Conventional Lavatory	3	2.5	15	8	15
Kitchen Sink	1	2.5	15	8	5
Total Daily Volume (gal)					58.4
Annual Days					260
Annual Volume (gal)					15,184.0
Recycled Lavatory Water (Grey Water)					(3,900.0)
TOTAL ANNUAL VOLUME (gal)					11,284.0

DESIGN CASE BUILDING SEWAGE CONVEYANCE					
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Toilet	3	1.6	1	8	38.4
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Total Daily Volume (gal)					58.4
Annual Days					260
TOTAL ANNUAL VOLUME (gal)					15,184.0

$$\% \text{ WASTE WATER REDUCTION} = \frac{(15,184.0 \text{ Gallons} - 11,284 \text{ Gallons}) \times 100\%}{15,184 \text{ Gallons}}$$

$$= \boxed{26\%}$$

Water Efficiency (WE) Credit 3 - Water Use Reduction

From LEED-NC Version 2.2 - 1 point for 20% reduction, and 1 additional point for a 30% reduction

"Requirements:

Employ strategies that in aggregate use 20% less water than the water use baseline calculated for the building (not including irrigation) after meeting the Energy Policy Act of 1992 fixture performance requirements. Calculations are based on estimated occupant usage and shall include the following fixtures (as applicable to the building): water closets, urinals, lavatory faucets, showers and kitchen sinks.

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Annual Days					365
TOTAL ANNUAL VOLUME (gal)					38,142.5

$$\text{% REDUCTION IN WATER USE} = \frac{(38,142.5 \text{ Gallons} - 33,580 \text{ Gallons}) \times 100\%}{38,142.5 \text{ Gallons}}$$

$$= \boxed{12\%}$$

Water Efficiency (WE) Credit 3 - Water Use Reduction (cont.)

Case 2 - Small office with 8 full time occupants (No urinals)

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% REDUCTION IN WATER USE =
$$\frac{(15,184.0 \text{ Gallons} - 11,284 \text{ Gallons}) \times 100\%}{15,184 \text{ Gallons}}$$

= **26%**