Joe Ducharme, General Manager
Clivus New England, Inc.

Joe Ducharme has been with the Clivus companies for over 26 years. Throughout this time he has designed and installed composting and greywater systems that have efficiently and economically provided waste treatment on environmentally sensitive sites and for US Green Building Council projects. He also was a member of the 1994/1995 Title-5 review committee for Composting and Greywater systems regulations that are now in use.

Systems range in size from residential applications to public and commercial facilities which receive thousands of visitors daily, and are demographically diverse throughout North America. His wide-ranging experience and "outside the box" approach have allowed him to provide solutions for difficult projects.

Composting waste treatment systems used with the Nepon 3-oz. Foam-Flush Toilet rely on natural decomposition, conserve both clean water and energy, and reduce dependency on centralized water treatment facilities.

LEED projects with Clivus systems accredited to date by Joe include

- University of Vermont - University Heights Residential Learning Center
- Vermont Law School - South Royalton, VT
- Massachusetts Audubon Society Wellfleet Wildlife Sanctuary - Cape Cod
- NH Audubon Society McLane Center at Silk Farm - Concord, NH
- Society for the Protection of New Hampshire Forests - Concord, NH
- Trustees of Reservations Doyle Conservation Center - Leominster, MA
- Green Woodlands - Dorchester, NH
- US Forest Service Administrative Complex – Campton, NH

P.O. Box 127 × North Andover × MA × 01845
tel 978-794-9400 × fax 978-794-9444
jducharme@clivusne.com

Composting Waste Treatment Systems Then & Now

Creative Approach

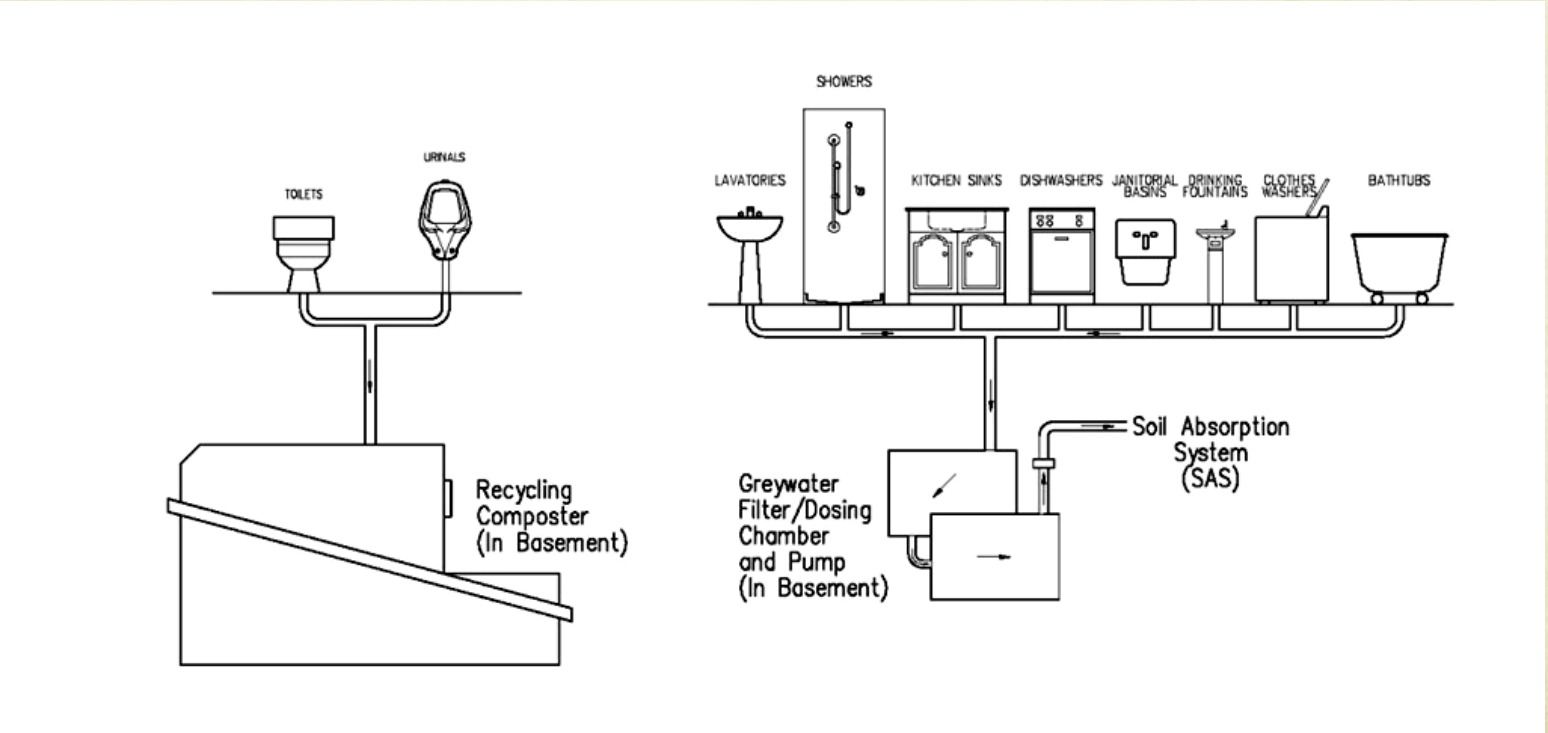
ü Take the blinders off

ü Think outside the box

- Designs
- Engineering
- Consulting
- Permitting
- Installation
- Project Management
- 24-Hour Service
- Performance Monitoring

Splitting the waste stream

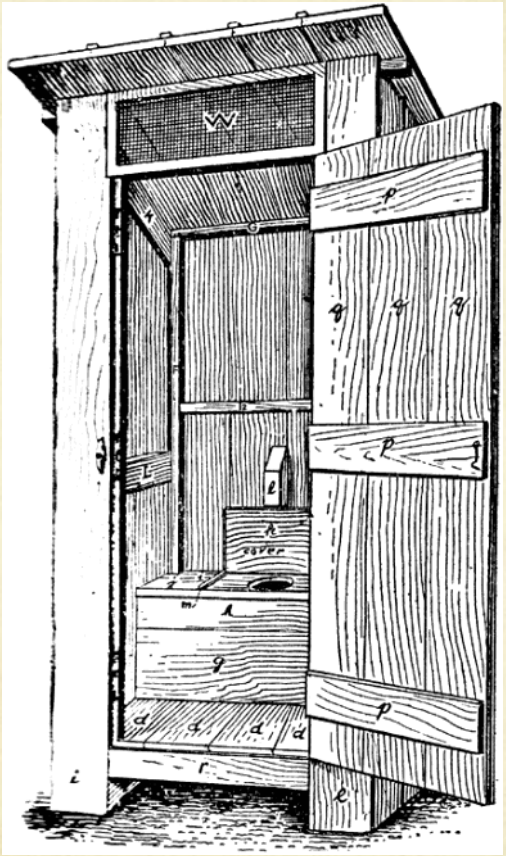
Blackwater & Greywater



What is Blackwater?

- Toilets
- Urinals

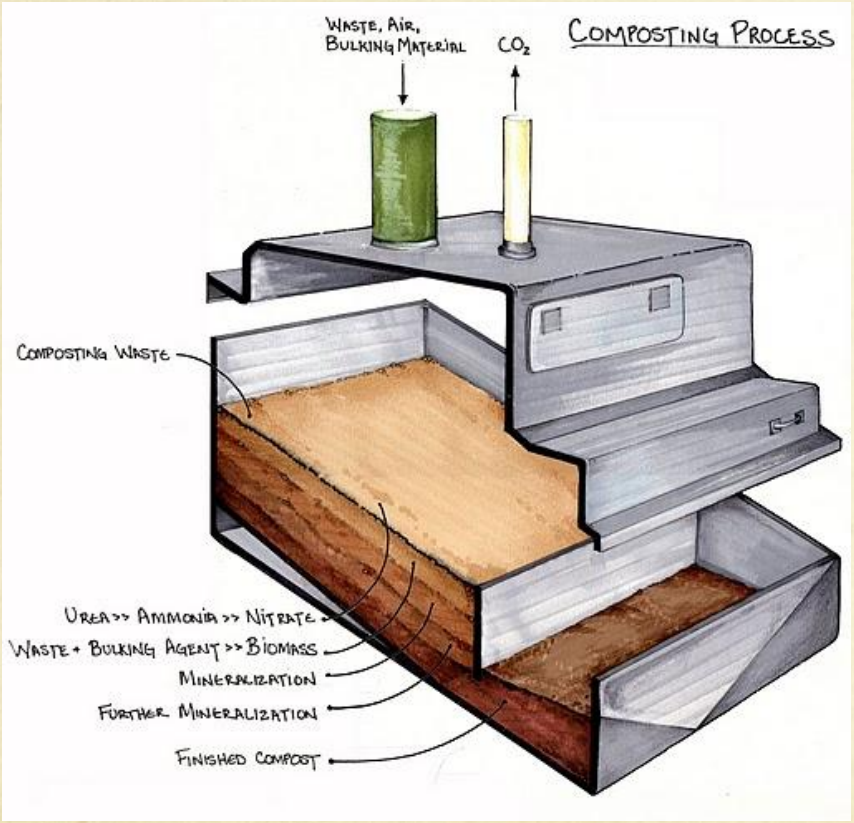
Perception is not always reality



Alternative Technology Toilet Systems

Natural Process

Humus/Composting Toilets



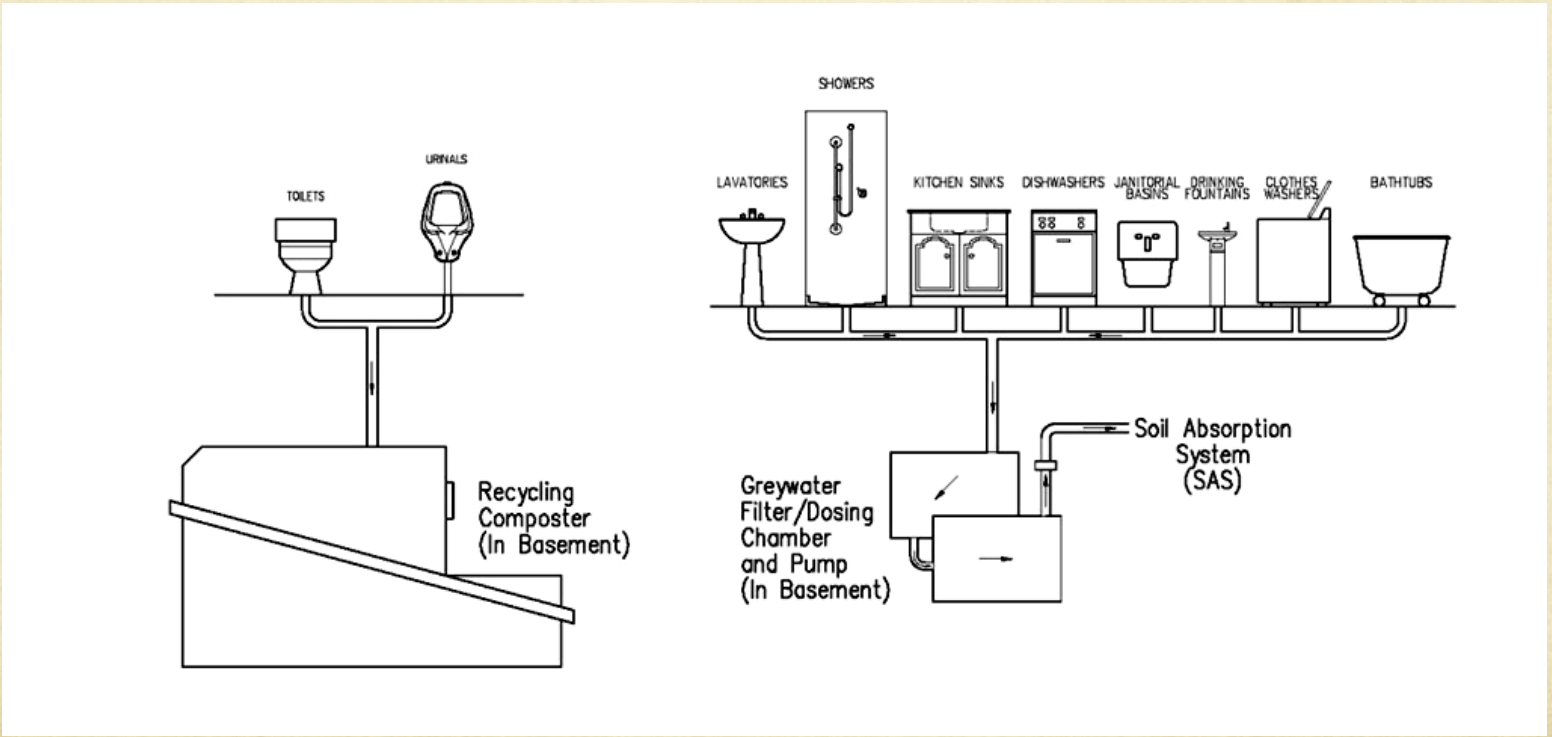
- Aerobic process
- Bacteria & Mold
- Low maintenance
- Self-contained

3-oz Foam Flush

Integrated Building Design

Splitting the waste stream

Blackwater & Greywater



What is Greywater

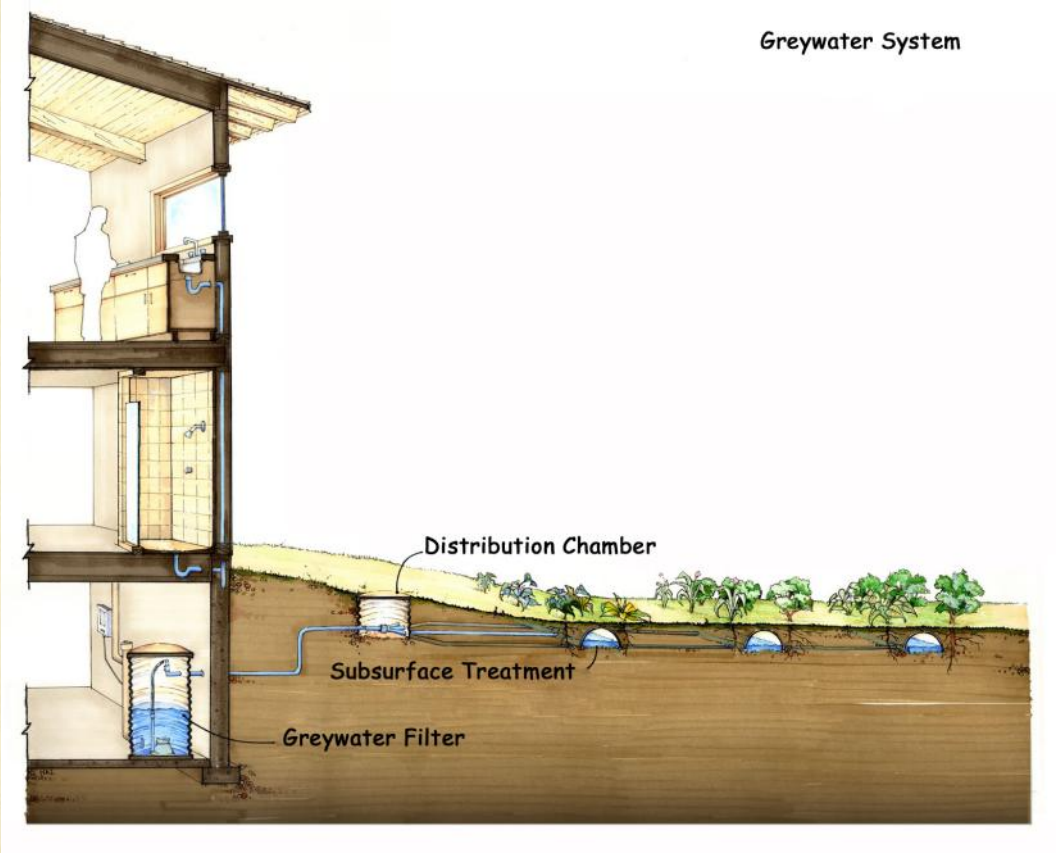
A Form of Wastewater

- Lavatories
- Showers
- Kitchen Sinks
- Dishwashers
- Janitorial Sinks
- Drinking fountains
- Clothes Washers
- Bathtubs

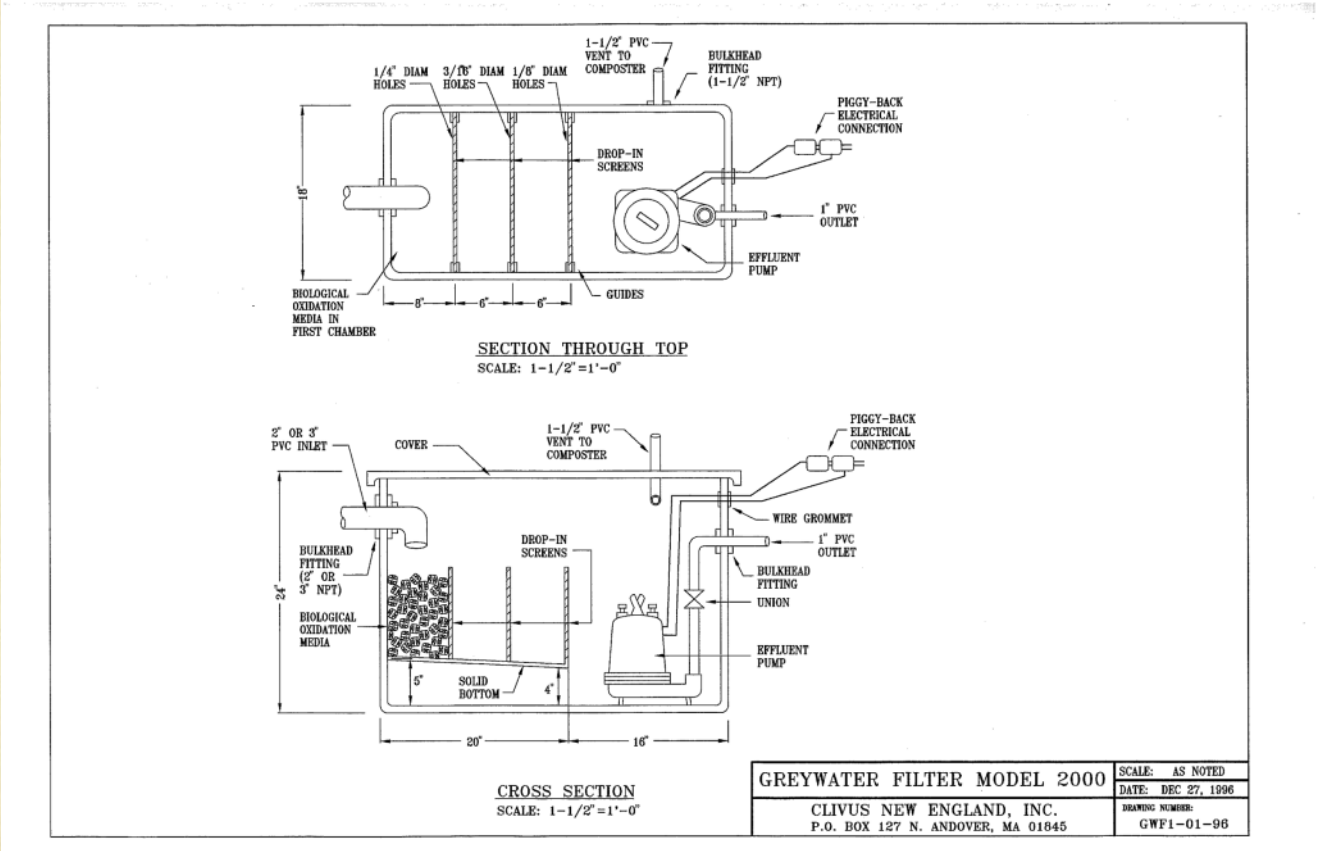
G=RF + HQE

Greywater = reduced flow + higher quality effluent for reuse

Greywater Filtering System



Typical System Plan



Greywater Filtering System

Recycling Greywater System Model 2000 (P3-0309-370)

Massachusetts Audubon

Wellfleet, MA

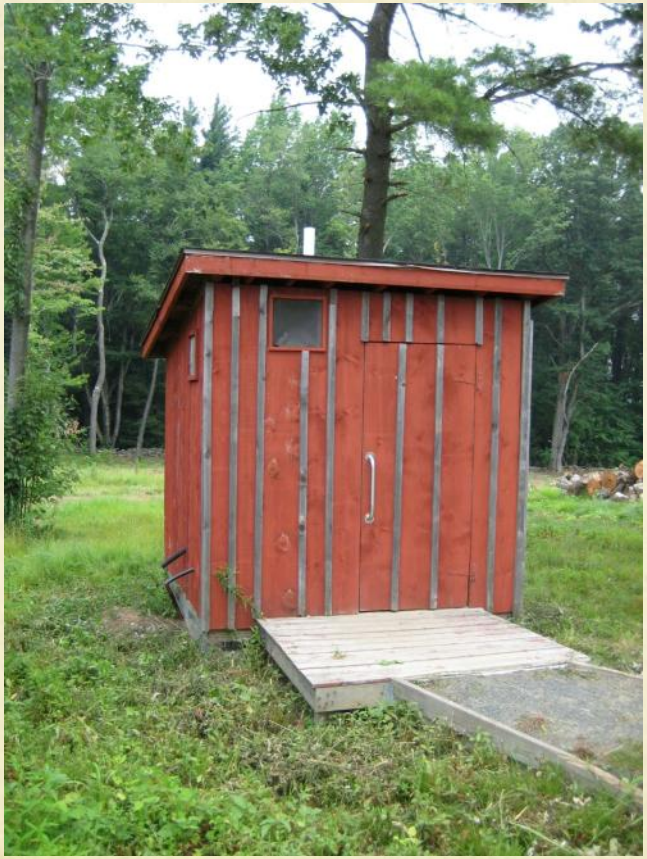
Massachusetts Audubon

Wellfleet, MA

U.S. Green Building Council Awarded LEED Platinum

Subsurface Greywater Reuse

AMC Noble View



April 24, 2012

AMC Noble View

April 24, 2012

Hermit Island

April 24, 2012

Wastewater Treatment

Hermit Island, Bath, ME

Residential Solution

Nantucket, MA

Greywater Only Discharge

Public Library

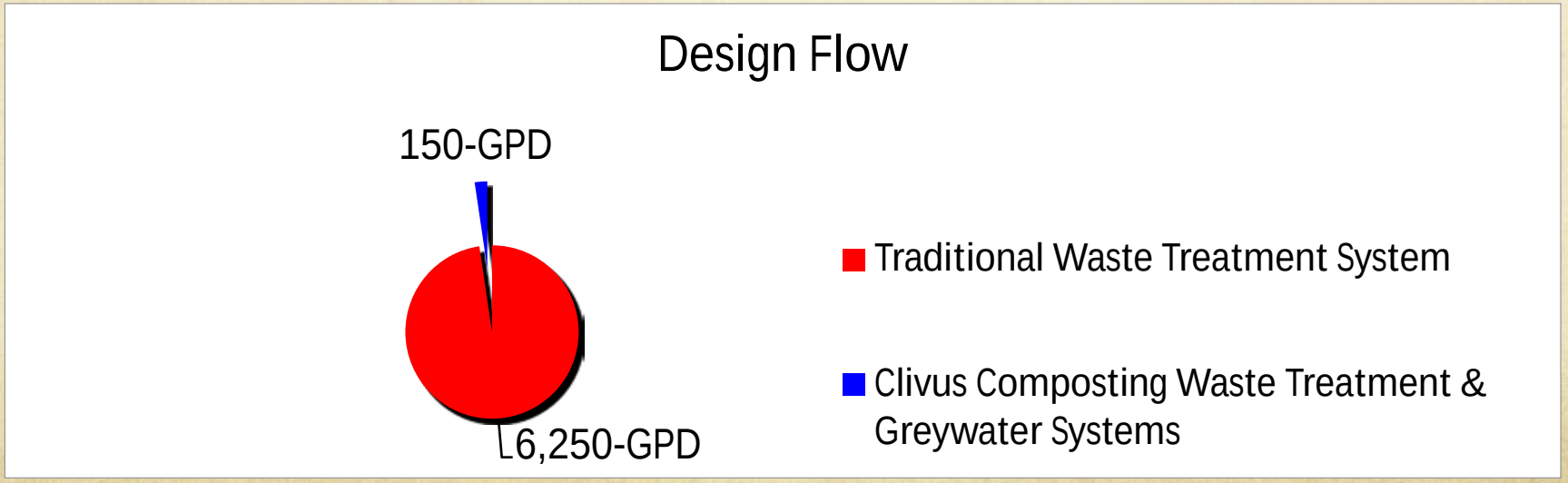
Little Compton, RI

Greywater Only Discharge Saves Land

Roadside Rest Area/Visitor Center

Traditional Title 5 Flows

- 5-Gallons Person
- Total traffic = 1250
- 1250 people X 5-Gallons each



Roadside Rest Area/Visitor Center

Site Specific Design Flow

Greywater-Producing Fixtures

- 2 ADA lavatories with flow-restricted faucets
- 2 lavatories with flow-restricted faucets
- 1 Janitorial basin
- 1 Drinking fountain

All Lavatories Will Use:

- Flow-restricted faucets rated at .5 GPM, set at a standard 10 seconds per push (wash)
- 6 washes per minute
- 12 washes per gallon (WPG)

Greywater Peak Day Use

4 Lavatories:

5 Staff X 3 handwashing +

1235 Visitors X 1 handwashing ÷ 12 WPG

= 105 gallons

1 Janitorial basin = 25 gallons

1 Drinking fountain = 20 gallons

Total Greywater Peak Day Use

= 150 gallons

Massachusetts Highways

Lancaster Visitor Center (Route 2)

Save Land

Reduced Cost

Misquamicut State Beach

Westerly, RI

- 10,000 peak day
- 2,700-car parking
- Greywater only discharge
- No more water bans

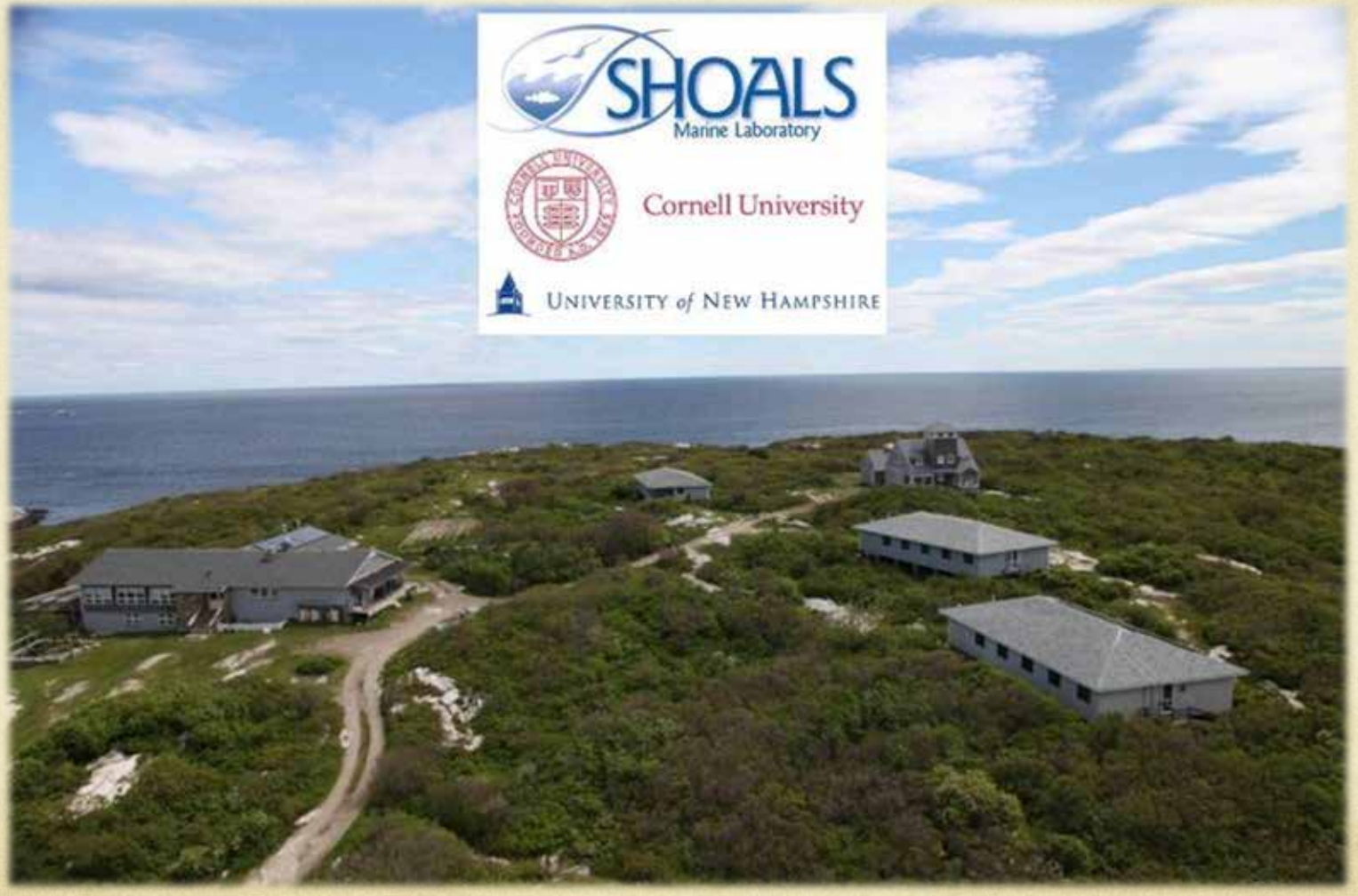
Dramatic water conservation

Misquamicut Beach

High traffic use area

Misquamicut Beach

Sustainable Island Solution



McDonald's-Mobil-On The Run

Windham, NH

Reduced flows and increased quality of discharge extends S.A.S lifespan

Commercial

Island Terrace Nursing Home

Lakeville, MA

Discharging Greywater Only

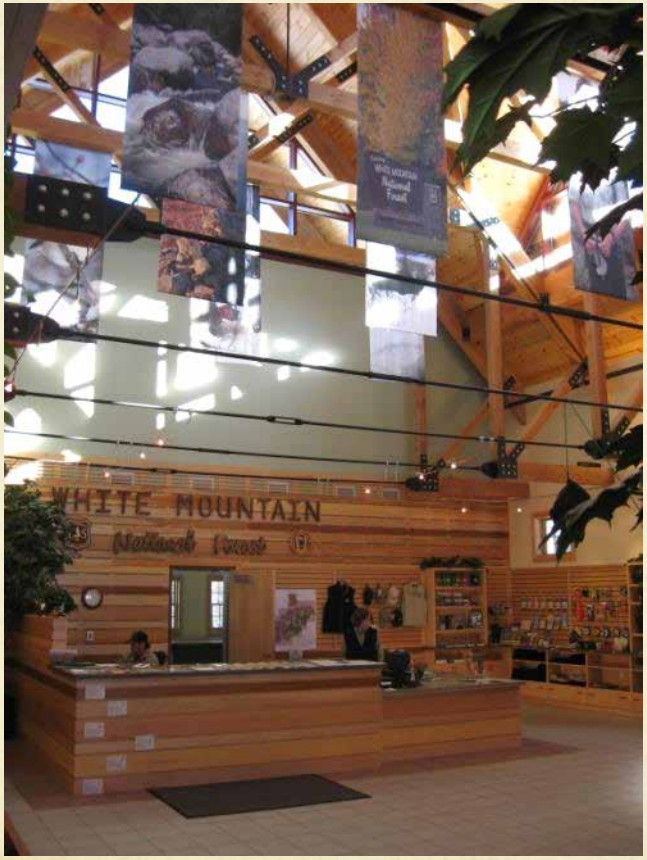
US Forest Service

Campton, NH

White Mountain Administration Complex

Visitor Information Center

White Mountain Administration Complex



Greywater Reuse
Indoor Planters

White Mountain Administration Complex

Nepon 3-ounce Foam Flush

White Mountain Administration Complex

What's in the basement

White Mountain Administration Complex

Greywater Equipment

Composting Equipment

Doyle Conservation Center

Leominster, MA

U.S. Green Building Council Awarded LEED Silver

Spectacle Island

Boston Harbor

Department of Conservation & Recreation
Interpretive Visitor Center

What's in the basement

Spectacle Island

Boston Harbor

Greywater Only Discharge

Maine Huts & Trails

Poplar Stream Falls Lodge, Kingfield, ME

Clivus New England, Inc.

Providing Economic Solutions Through Recycling

Joseph A. Ducharme

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North Andover, MA 01845

Phone: (978) 794-9400
Fax: (978) 794-9444
E-Mail: JDucharme@clivusne.com

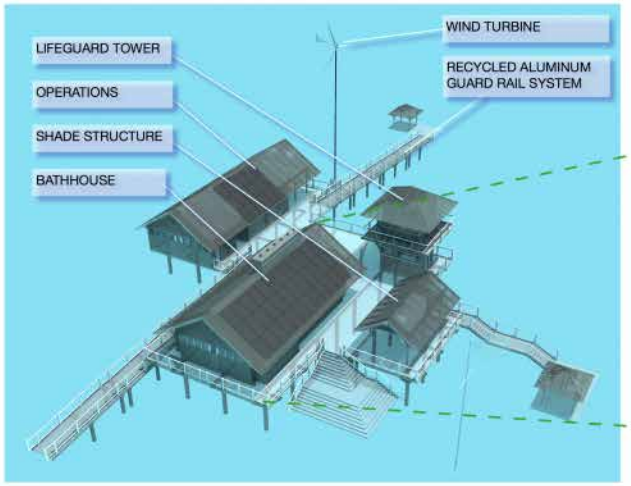
East Matunuck Beach

Opening Spring of 2012

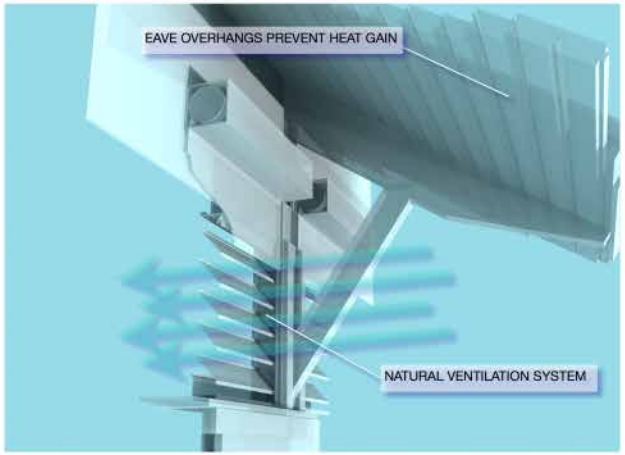
EAST MATUNUCK BEACH PAVILION

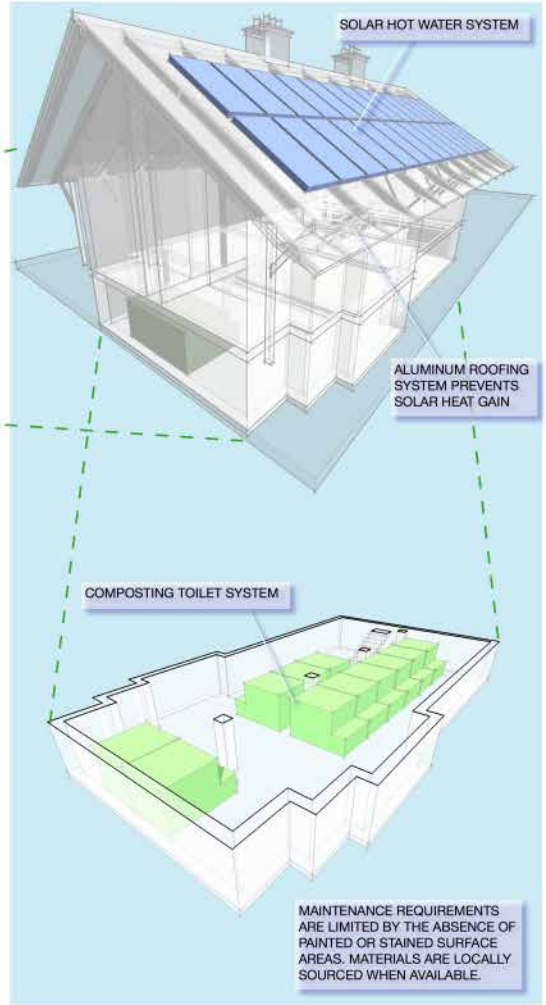
BURGIN LAMBERT ARCHITECTS
150 BELLEVUE AVENUE NEWPORT RI 02840
BURGINLAMBERT.COM 401-847-3339

- Re-used building materials will make up a minimum of 5% of the overall materials budget.
- Recycled building materials will make up a minimum of 30% of the overall materials budget.
- Regional building materials will make up a minimum of 30% of the overall materials budget.



- 50% of wood based building products will meet FSC certification.
- The use of low emitting materials will be used throughout.





Coastal velocity zone

Compost liquid storage tanks

What's in the basement

7-P's

Composting Equipment

Horseneck State Beach

Westport, MA

Over a million gallons of sewage eliminated annually

Located in a coastal velocity zone

Greywater only discharge

Outdoor Rinse Stations

Outdoor rinse stations add no increase to greywater flows

Dedicated access for servicing composting systems

External collection ports for collecting the compost liquid

Compost liquid storage tanks

Camp Wonderland

Sharon, MA

Camp renovations required waste treatment system expansion

Camper cabins

Renovation incorporated strategic planning for composter location

Staff cabins

Staff cabins

Direct access to composting systems

Camper cabins

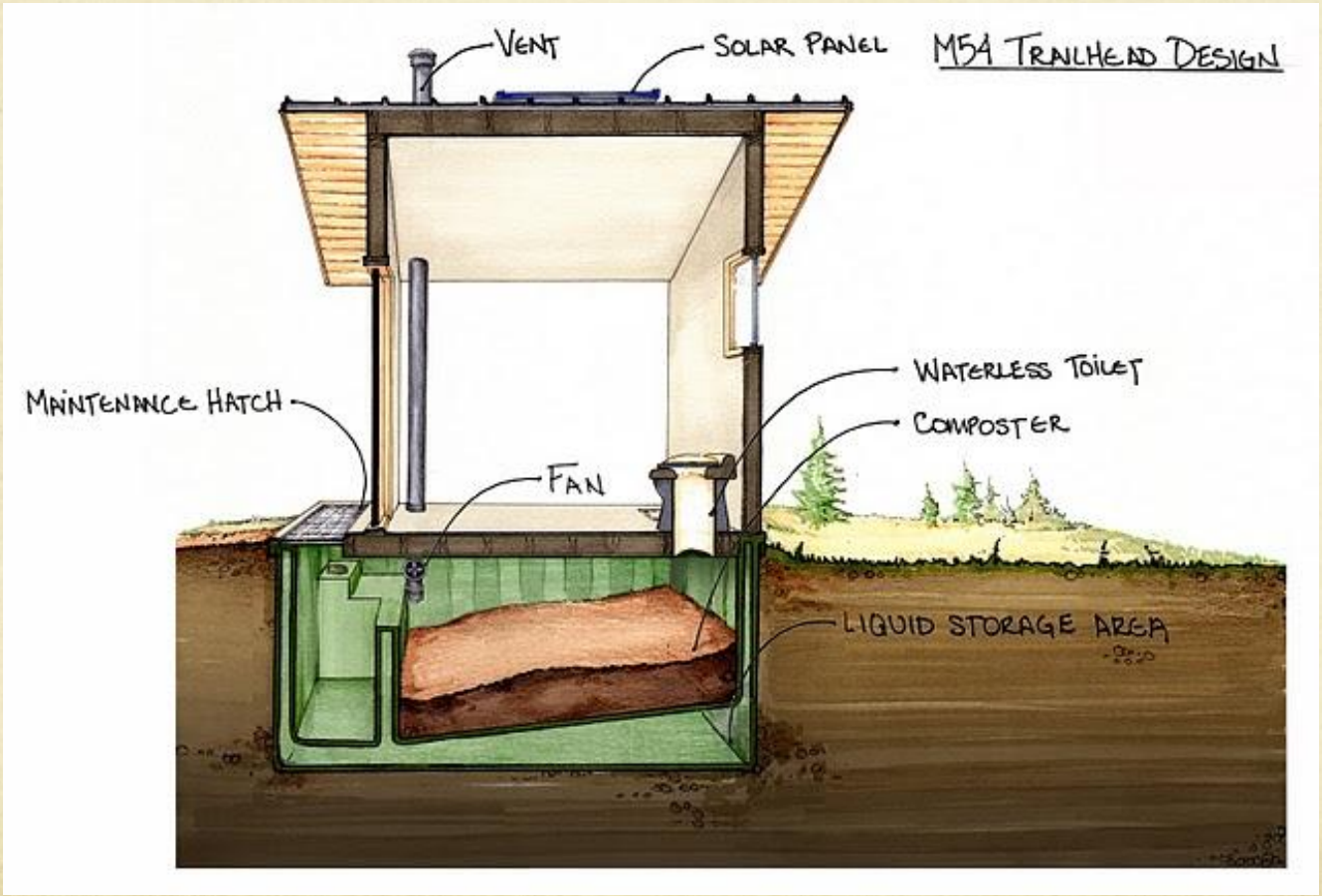
Utility vault access

Wastewater Treatment

Secure outside access to composting systems

Transportable Trailhead

C-11 Prefabricated Building



Charlestown Breachway

Charlestown, RI

Beavertail State Park

Jamestown, RI

Vermont Law School

U.S. Green Building Council Awarded LEED Silver

University of Vermont

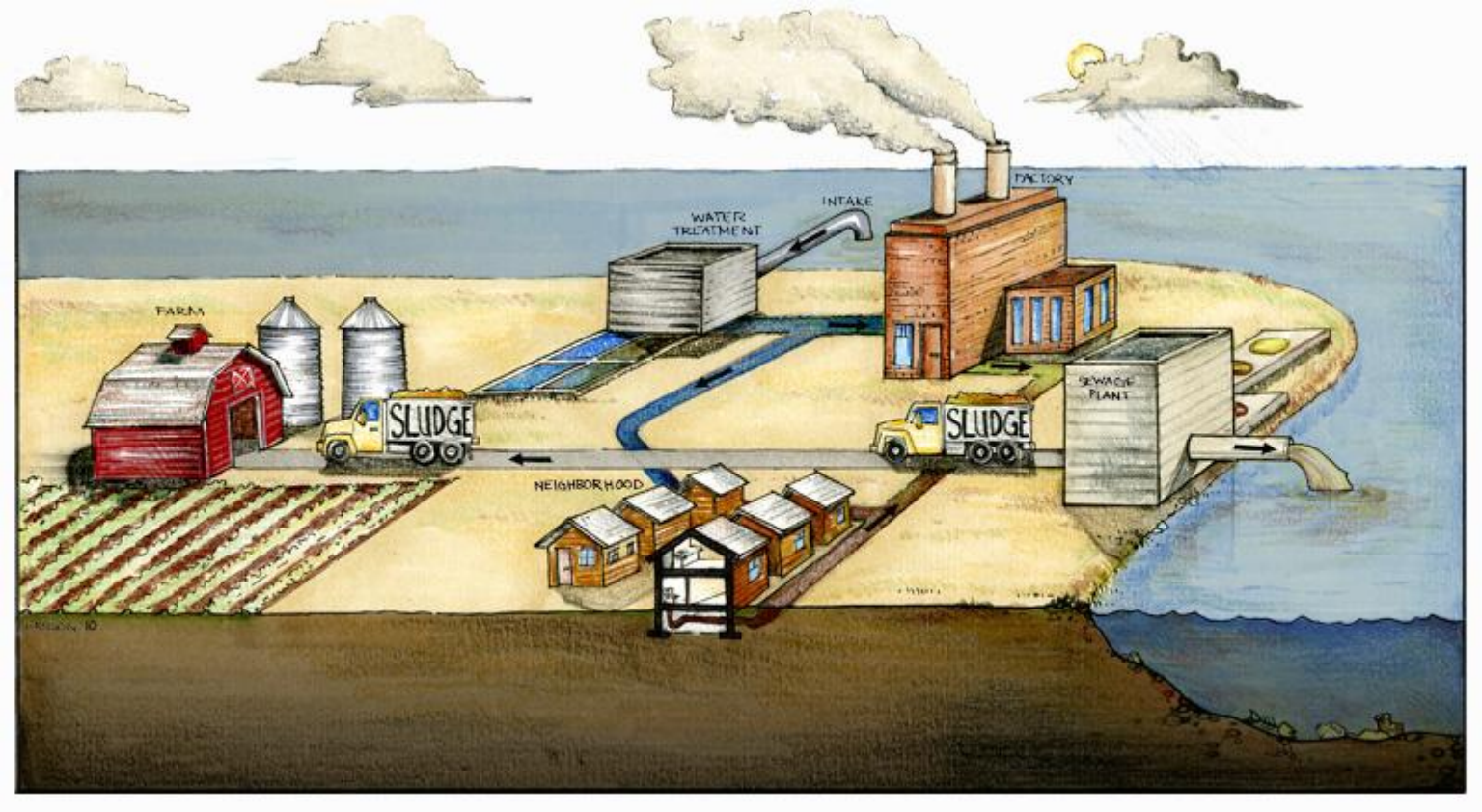
University Heights North Complex

U.S. Green Building Council Awarded LEED Gold

Drinking water

Traditional Flushing Toilets

Traditional Wastewater Flows



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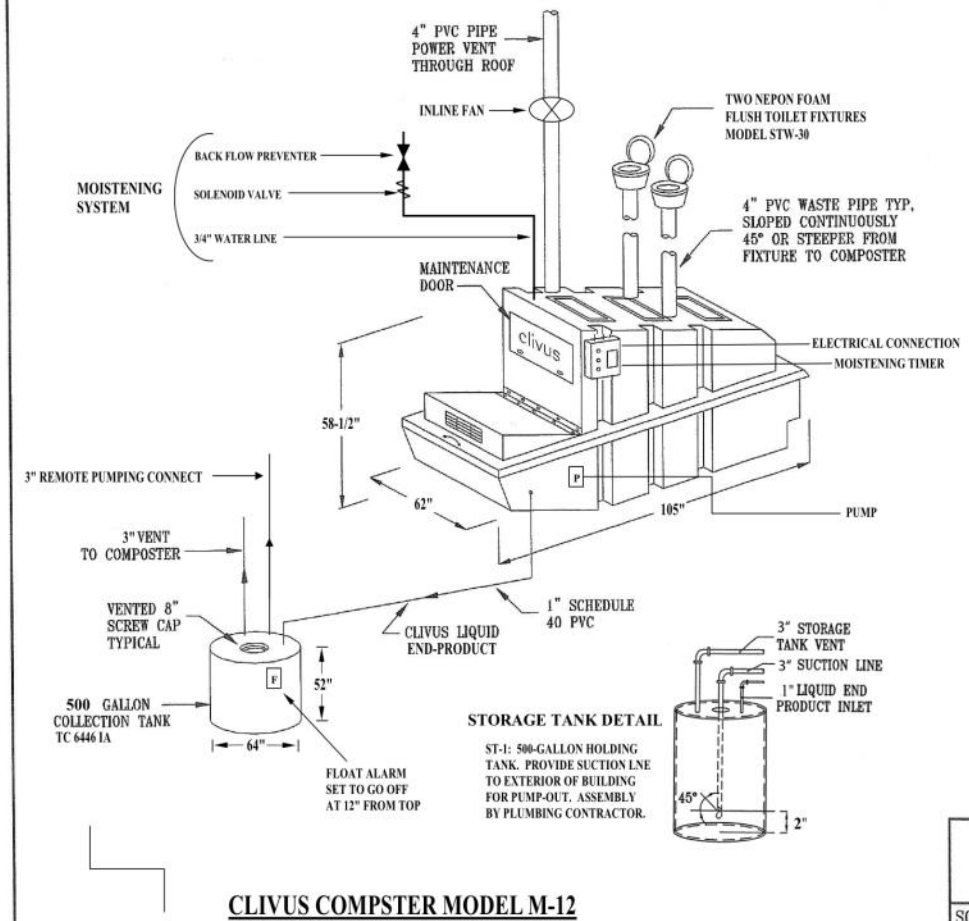

RECYCLING TOILET SYSTEM
GENERAL INFORMATION

EQUIPMENT:

COMPOSTER	ONE MODEL M-12; MA PLUMBING BOARD APPROVAL P3-0209-320
TOILET FIXTURES	TWO NEPON MODEL STW-30 FOAM-FLUSH TOILET FIXTURES; MA PLUMBING BOARD APPROVAL P3-0309-370
STORAGE TANK	ONE 500-GALLON STORAGE TANK, MODEL #TC 6446 1A

NOTES:

1. INSTALLATION TO BE DONE BY A PLUMBER LICENSED IN THE COMMONWEALTH OF MASSACHUSETTS.
2. CLIVUS NEW ENGLAND, INC., IS TO OVERSEE INSTALLATION AND CERTIFY UPON COMPLETION.
3. CLIVUS NEW ENGLAND, INC., IS TO PROVIDE ANNUAL INSPECTION AND REPORT TO THE BOARD OF HEALTH IF NECESSARY.
4. CLIVUS LIQUID END-PRODUCT IS TO BE PUMPED BY A LICENSED SEPTAGE HAULER AND DISPOSED OR USED OFF SITE AGRICULTURALLY AS PROVIDED BY ANY REGULATORY CODE THEN IN FORCE.
5. ALL TOILET FIXTURES POWER VENTED THROUGH COMPOSTERS. THERE IS TO BE NO OTHER POWER EXHAUST IN THE BATHROOM. HVAC DESIGN MUST HAVE ENOUGH MAKEUP AIR IN THE BATHROOM FOR PROPER OPERATION.
6. UNLESS OTHERWISE NOTED, ALL PIPING SHOULD BE SCH 40 DWV PIPE.

THOREAU FARM
341 VIRGINIA AVENUE
CONCORD, MA

SCALE: AS NOTED	COMMERCIAL	DRAWN: LT CHECKED: JD
CLIVUS NEW ENGLAND, INC. P.O. BOX 127 N. ANDOVER, MA 01845		DRAWING NUMBER: M12-500-2FF