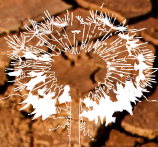


ADVOCATING A LIVING FUTURE

ADVOCACY RESOURCES:
WATER REGULATION
FOR RESILIENCY

THE KRESGE FOUNDATION



INTERNATIONAL
LIVING FUTURE
INSTITUTESM

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Photo: BRJ INC

WATER REGULATION FOR RESILIENCY

Global water assessments confirm that we are using more water than supplies can match. We can no longer assume an abundance of water.

Through education, innovation and advocacy Living Building Challenge and Living Community Challenge project teams around the globe are demonstrating how to achieve net positive water. Despite these precedent-setting projects, the regulatory norm continues to hinder, if not outright block, adoption of resilient water systems. Regulator inexperience with such restorative techniques slows the progress toward achieving net positive water on a massive scale.

We invite you to join our network and inspire a new, restorative era of water regulation. This document is a critical new resource within the Institute's Collaborative toolkit. The purpose of this policy guide is to aid you and your fellow Living Future advocates in your water policy efforts. (See Advocacy Steps One, Two and Three in the Collaborative Advocacy guidance document.)

This and our suite of advocacy tools have been designed to aid local volunteers, Congress members, project teams, policy makers and others working toward a Living Future that is socially just, culturally rich and ecologically restorative. We encourage you to share feedback with Institute staff on best practices and lessons learned.

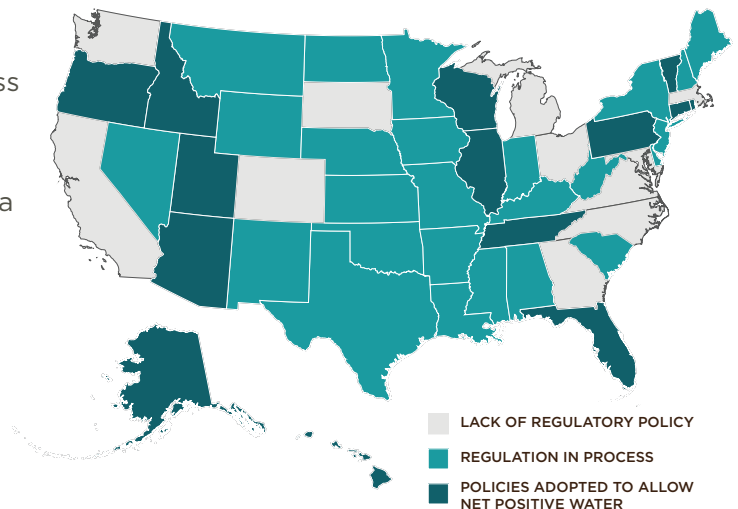


Together we can support replication and inspiration across a global advocacy movement. Email: advocacy@living-future.org

REPLACING AN OUTDATED MODEL

Surveys of project teams that are pursuing the Living Building Challenge indicate how water regulations pose a common challenge regardless of geographic location. The Institute recently held a water forum of expert practitioners that confirmed that while cultural resistance can be a problem, the overwhelming barriers are related to a lack of policy leadership.

Over the past year we have assessed hundreds of policies from across the United States to understand our current policy landscape. The results show that few states have adopted regulations that allow, let alone encourage, the use of net positive water systems.



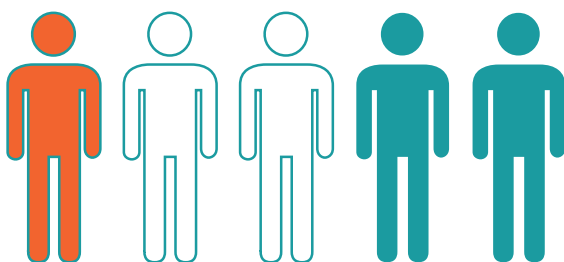
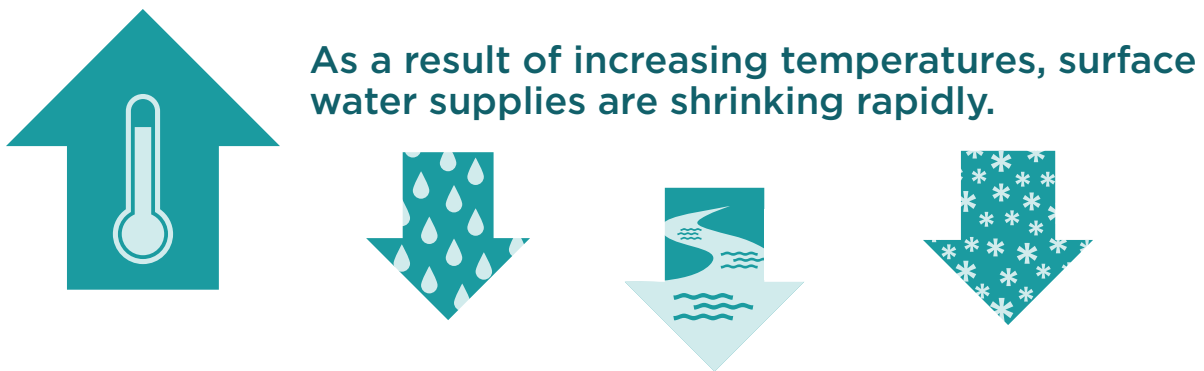
NET POSITIVE WATER ASSESSMENT

Conventional water policies are based on outdated historical health concerns about disease from primitive waste systems. They continue to support a centralized system that is wasteful, failing to keep pace with a growing population, energy intensive, based on historic projections of water supply and vulnerable to a host of catastrophic events, such as flooding (as in Hurricane Sandy), drought (as in California) and power outages (everywhere). (The Institute has completed valuable research on these issues—available on our website: living-future.org)

We can no longer rely on this conventional model. Our water policies must adapt quickly so as to inspire bold innovation and ensure a future of truly resilient communities.

OUR CURRENT PERILOUS PATH

355 billion gallons of water are used daily in the United States.



By 2025, at least three out of five people will be living under water stress. 22% of the world's population will be living in countries or regions with absolute water scarcity.

Source: http://www.unwater.org/fileadmin/user_upload/unwater_new/docs/Publications/waterscarcity.pdf

SWITCHING TO NET POSITIVE WATER

Our continued reliance on centralized systems does not ready us for a future of shrinking water supplies, population growth, aging and costly infrastructure, extreme weather events, floods and destructive stormwater pollution. Fortunately, progressive practitioners are showing us a path forward.

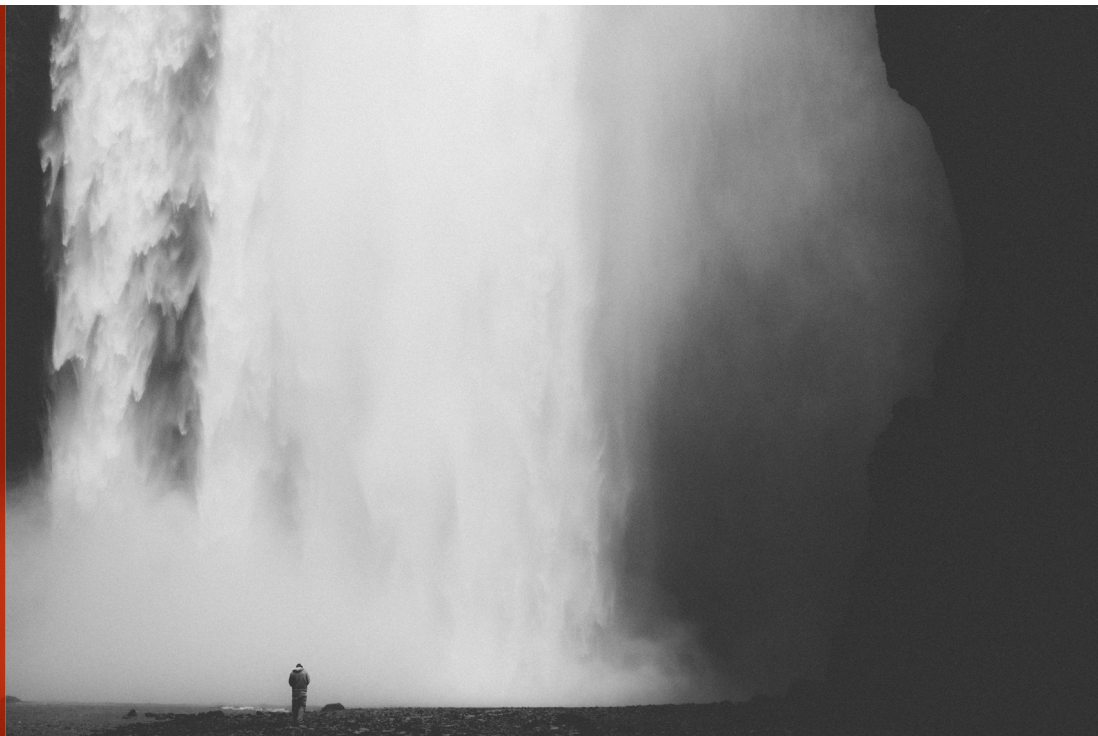
With over 300 projects now pursuing the Living Building Challenge, we are seeing a sea change in policy support. Each Living Building project team has worked tirelessly to advocate for policies that support an integrated water management approach. See a few project examples below.

Despite these successes, an overhaul of our regulatory system is needed to encourage more projects to step forward and pursue resilient water systems.

Below are the three key policies needed to make the shift to net positive water.

- 1. RAINWATER HARVESTING POLICY**
Allow rainwater catchment and collection for potable and non-potable uses (with non-chemical on-site treatment).
- 2. ON-SITE GREYWATER REUSE POLICY**
Allow on-site reuse of greywater (or graywater) for a diversity of uses.
- 3. ON-SITE BLACKWATER TREATMENT POLICY**
Allow on-site treatment of blackwater.

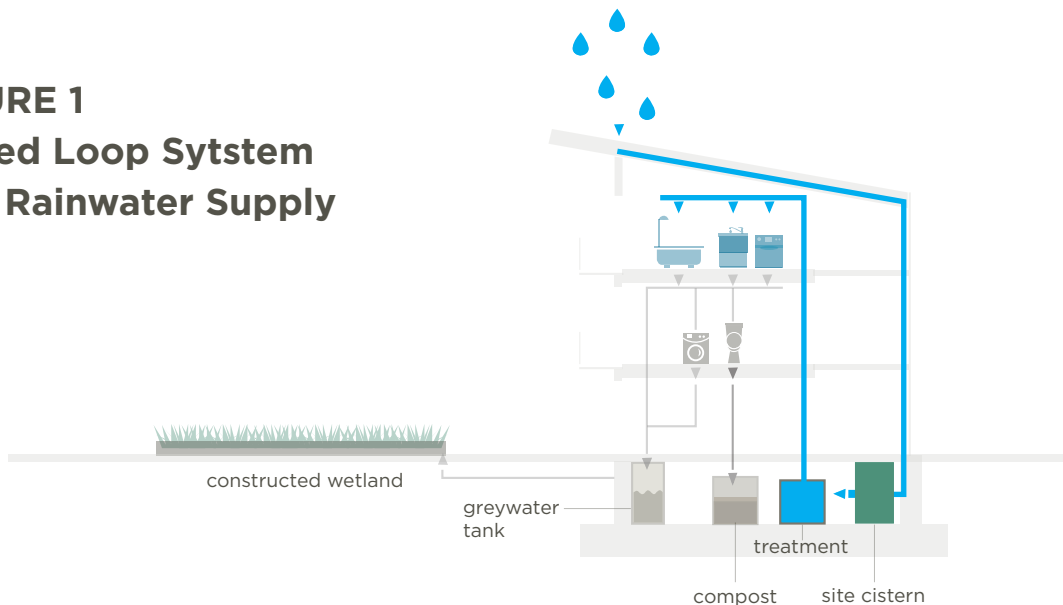
The International Living Future Institute is grateful for the financial support of the Kresge Foundation in making this document a reality. As the policy world is continually changing, we hope to develop future iterations sharing the latest regulatory innovations in the United States and beyond to share and inspire best practice water policies across Canada, Europe, the South Pacific and elsewhere.



RAINWATER HARVESTING POLICY

Rainwater capture is an essential component of resilient systems that ensure we make use of all sources of water and prepare for drought conditions and reduced water supply. While innovation has ensured that we have the correct technology for safe potable uses, our regulations continue to lag behind. We must employ policy to support our buildings and communities as they seek to use every available drop of our precious water.

FIGURE 1
Closed Loop System
with Rainwater Supply



POLICY PRECEDENTS

Oregon has shown policy leadership in allowing rainwater capture for both potable and non-potable uses (see below). We particularly applaud the adoption of the alternate code for potable uses on a statewide level and the broad range of uses allowed for non-potable uses. However, we would encourage that both codes allow for residential and commercial applications.

Oregon OPSC 08-01—Rainwater Harvesting Systems for Residential Potable Uses As A Statewide Alternative Method

“Rainwater recycling systems have been installed in the state as alternate methods under local approval. Previously, no consistent installation standard had been established for rainwater plumbing systems throughout the state. This ruling will provide a consistent standard for installation of rainwater harvesting on a statewide basis....This ruling applies to all rainwater harvesting systems statewide as an alternate method to that addressed in the state building code.”

Source: http://www.cbs.state.or.us/bcd/programs/plumbing/alt_methods/Rainwater_Harvesting_Potable.pdf

Oregon OPSC 08-03—Approval of Rainwater Harvesting Systems as a Statewide Alternate Method of Providing Water for Non-Potable Uses

“Based on numerous conversations with industry and developers, the division has created a proposed supplemental statewide alternate method to address typical non-potable uses for rainwater. These include irrigation/garden, hose bibs, toilets, urinals, clothes washing and heating, ventilation, and air conditioning (HVAC) make-up water supplies. These uses require less treatment and limited or no disinfection. This alternate method addresses uses applicable to residential and commercial installations.”

Source: http://www.cbs.state.or.us/bcd/programs/plumbing/alt_methods/Rainwater_Harvesting_Non-potable.pdf

Other policy examples include:

Alaska 18 AAC 80.310—Routine Sampling and Analysis

Allows “a public water system with a primary water source that is a rain catchment system”. It provides details of monitoring requirements for a community water system, non-transient non-community water system and transient non-community water system as well as a community water system or non-transient non-community water system that serves a resident population of less than 10,000 individuals”.

Source: <http://www.legis.state.ak.us/basis/aac.asp#18.80.310>

Ohio Revised Code 3701.344-.347

“Private water systems are potable water wells, ponds, springs, cisterns and hauled water storage tanks that provide drinking water to fewer than 25 people, less than sixty days out of the year, or have less than 15 service connections. Includes single water supplies that serve homes, small businesses, small churches, small mobile home parks or communities with fewer than 25 residents.”

Source: <http://www.odh.ohio.gov/odhprograms/eh/water/PrivateWaterSystems/PWSRules.aspx>

The Chesapeake Bay Foundation's Brock Environmental Center offers its occupants a resilient closed-loop system, including a permitted rainwater capture system for potable use. A Living Future policy story is in development.

Photo: Courigan Construction

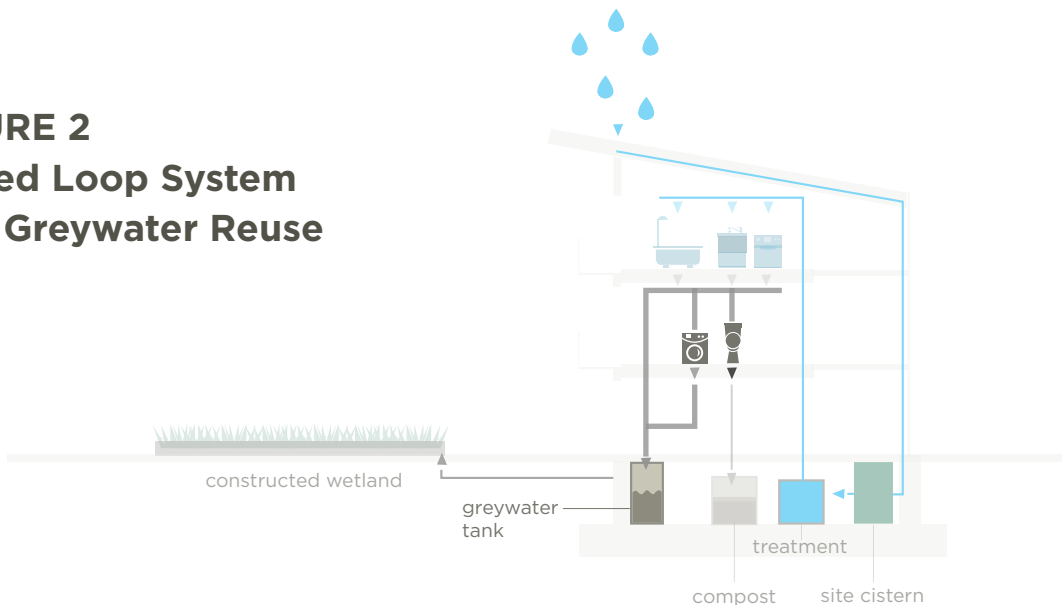


ON-SITE GREYWATER REUSE POLICY

Allow on-site reuse of greywater (or graywater) for a diversity of uses.

In this age of record droughts and increasing water supply shortages, why do we demand that we use pristine drinking water to flush our toilets? What if we collect the soapy water from certain drains, filter it and use that to flush toilets? Some states currently allow this reuse, called greywater, for very limited uses, such as (seasonal) sub-surface irrigation. Not permitting greywater use fails to value all water as a resource—one that we must use and reuse as much as we safely can. Living Buildings have demonstrated how greywater can be treated and reused on premises without risk to public health. We strongly encourage more states and municipalities to not only permit, but also encourage on-site greywater reuse.

FIGURE 2
Closed Loop System
with Greywater Reuse



POLICY PRECEDENTS

The evolution of San Francisco’s water reuse program (see below) highlights the power of leadership and cooperation across agencies in successfully transitioning the market to adopt resilient, on-site reuse systems at both the building and community scale. What makes this policy stand out is its emphasis on a variety of “non-potable applications”, rather than limiting on-site water reuse to a single use or only to uses inside the building, as do policies in other jurisdictions. The San Francisco policy focuses on the end result of potable water savings and pushes project teams to be innovative.

City and County of San Francisco Ordinance No. 195-12—Onsite Water Reuse for Commercial, Multi-family, and Mixed Use Development

In 2012, added Article 12C to the San Francisco Health Code, allowing for the collection, treatment, and use of alternate water sources for non-potable applications. Subsequently amended (2013) to allow district-scale water systems consisting of two or more buildings sharing non-potable water. In 2015, Ordinance 109-15 amended the ruling again to “require that new buildings of 250,000 square feet or more of gross floor area be constructed, operated, and maintained using available alternate water sources for toilet flushing and irrigation; that new buildings of 40,000 square feet or more of gross floor area prepare water budget calculations...”

Source: <http://sfwater.org/index.aspx?page=686>

Other policy examples include:

Ohio 3701-29-17—Gray Water Recycling Systems and Alternative Toilets

“Gray water recycling systems shall include type 1, type 2, type 3 and type 4 systems...and may receive gray water generated from a building or dwelling...The source of gray water may include water from bathing, showering, washing clothes or laundry sinks. A type 4 GWRS may be used for surface and subsurface irrigation of gardens, lawns and landscape plants, food crops, green roofs and living walls during the normal growing season in Ohio or as applicable for the irrigation application...”

Source: <http://codes.ohio.gov/oac/3701-29-17>

North Carolina Session Law 2009-243, House Bill 749—Use of Cisterns in Construction/ Renovation

“An Act to authorize the State Building Code to permit the use of cisterns to provide water for flushing toilets and for outdoor irrigation in the construction or renovation of residential or commercial buildings or structures and to prohibit any State, county, or local building code or regulation from prohibiting the use of cisterns for these uses...”

Source: <http://www.ncleg.net/EnactedLegislation/SessionLaws/HTML/2009-2010/SL2009-243.html>

Oregon OPSC 08-02 and 08-04—Approval of [Residential] / Commercial and Industrial Wastewater Conservation Systems As A Statewide Alternate Method of Providing Water For Flushing Toilets and Urinals

Two Oregon codes allow water conservation systems for residential use / commercial and industrial installations for the use of flushing toilets and urinals. These alternate methods limit “used water from bathtubs, showers, bathroom wash basins, clothes-washers, and laundry tubs. It does not include wastewater from toilets, urinals, kitchen sinks or dishwashers. The system shall have no [direct] connection to any potable water system. The proper system design, maintenance, and use are the responsibility of the building owner...”

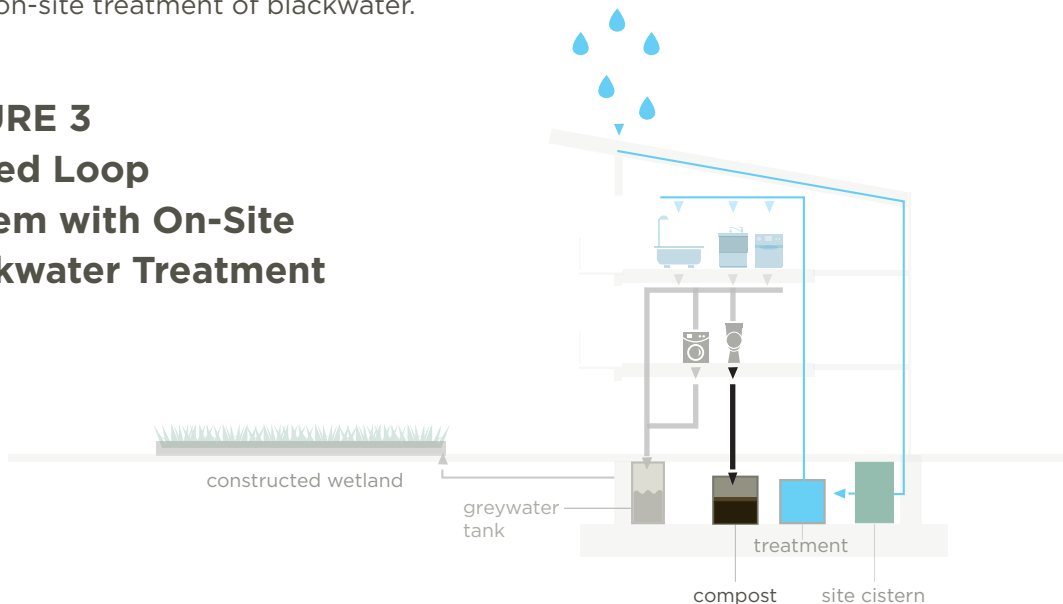
Sources: http://www.cbs.state.or.us/bcd/programs/plumbing/alt_methods/Wastewater_Conservation_Systems.pdf

http://www.bcd.oregon.gov/programs/plumbing/alt_methods/08-04_Commercial_Industrial_Wastewater_061710.pdf

ON-SITE BLACKWATER TREATMENT POLICY

Allow on-site treatment of blackwater.

FIGURE 3
Closed Loop
System with On-Site
Blackwater Treatment



POLICY PRECEDENTS

Through the efforts of Living Building Challenge project teams, regulatory precedents have been achieved for on-site treatment of blackwater (also known as toilet water discharge). However, these examples have been determined on a case-by-case basis, and exemplary leadership in support of decentralized blackwater treatment continues to be rare. What we find are code examples that provide some form of regulatory pathway for projects wanting to pursue on-site treatment, a critical step toward net positive water. Nonetheless, while some guidance is better than none, we need to see states and municipalities adopt proactive measures that send a market signal that on-site systems are encouraged. As an example, we applaud King County, Washington for its proactive leadership in providing practical support for on-site treatment systems.

King County Title 28.84.050—Sewage Disposal Rules and Regulations

Allows a value of zero for capacity charges for systems that are “engineered to function without discharging into the metropolitan sewage facilities”. Should a “zero discharge system” experience three discharge events to the metropolitan sewage facilities during any 15-year period, “the structure shall then be immediately converted to a conventional capacity charge calculation” and “assessed the full 15-year capacity charge rate applicable during the year of the third discharge event”.

Source: http://www.kingcounty.gov/council/legislation/kc_code/38_Title_28.aspx

Other policy examples include:

New Jersey Administrative Code 7:9A—Standards For Individual Subsurface Sewage Disposal Systems

“7:9A-3.11 Experimental systems: The Department encourages the development and use of new technologies which may improve the treatment of sanitary sewage prior to discharge or allow environmentally safe disposal of sanitary sewage in areas where standard sewage disposal systems might not function adequately...Separate systems may be designed to receive only greywater, or only blackwater, as allowed in N.J.A.C. 7:9A-7.5...”

Source: <http://www.state.nj.us/dep/dwq/pdf/njac79a.pdf>

Florida Department of Health Chapter 64E-6, Florida Administrative Code—Standards For Onsite Sewage Treatment and Disposal Systems

“No residence or establishment served by a performance-based treatment system shall be occupied until form DH 4081, “Application for Onsite Sewage Treatment and Disposal System Operating Permit” has been received and approved by the Department. Where a performance-based treatment system is used, only one operating permit shall be required for the system.”

Source: http://www.floridahealth.gov/environmental-health/onsite-sewage/forms-publications/_documents/64e-6.pdf

BEST PRACTICE COMPONENTS

Our assessment of water policies across the United States highlights several common characteristics found within leading policies. We encourage policy makers to use this list as a roadmap in developing their own net positive water policies:

- Clear terminology: definitions of all key terms to avoid confusion.
- Clarity of responsible parties: information on which agencies or departments are responsible for respective aspects of the policy.
- Brevity and support: concise, approachable policy language with weblinks for additional information.
- Flexibility in methods and technologies: statement of desired result with focus on innovation and avoidance of overly prescriptive language and prohibition on prohibitions.
- Incentives: offer of regulatory ‘carrots’ that aid market transformation.
- Encouragement of experimental systems: opportunity to learn alongside practitioners while ensuring public health is protected.
- Guidelines and manuals: design assistance and best practice information with minimum performance criteria.
- Statement of purpose: clarity of goal to be achieved by the policy.



The “wastewater treatment facility” of the Omega Center for Sustainable Living is so beautiful that it doubles as a yoga studio.

*Photograph © Assassi
Courtesy BNIM*

IT'S TIME FOR POLICY LEADERSHIP

We encourage our global advocacy network to use this guidance document as they engage water policy makers. Discuss these case studies in relationship to existing local and state water regulations where you are. Urge your policy partners to share their water goals with you and work together to identify how net positive water can help them meet these objectives.

TIP: Where you find exemplary policies that support net positive water, share them through our online policy form: <https://living-future.org/policy-leadership>



It is likely that you will discover that policy changes are needed to support rainwater capture for potable use, grey water reuse and black water treatment on site. In planning your advocacy initiative, you may find it helpful to refer to the Collaborative Advocacy guidance document and suite of resources in order to deliver effective engagement.

Our work so far has shown that it will take passionate, relentless and visionary advocacy to create widespread adoption of net positive water and achieve community resiliency. As we have seen through Living Building Challenge and Living Community Challenge projects, we have the tools and creativity—we simply need the policies in place. Thank you for your advocacy, and good luck!

If you have any questions about advocating for net positive water, contact the Institute: advocacy@living-future.org

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