

# ONSITE *journal*

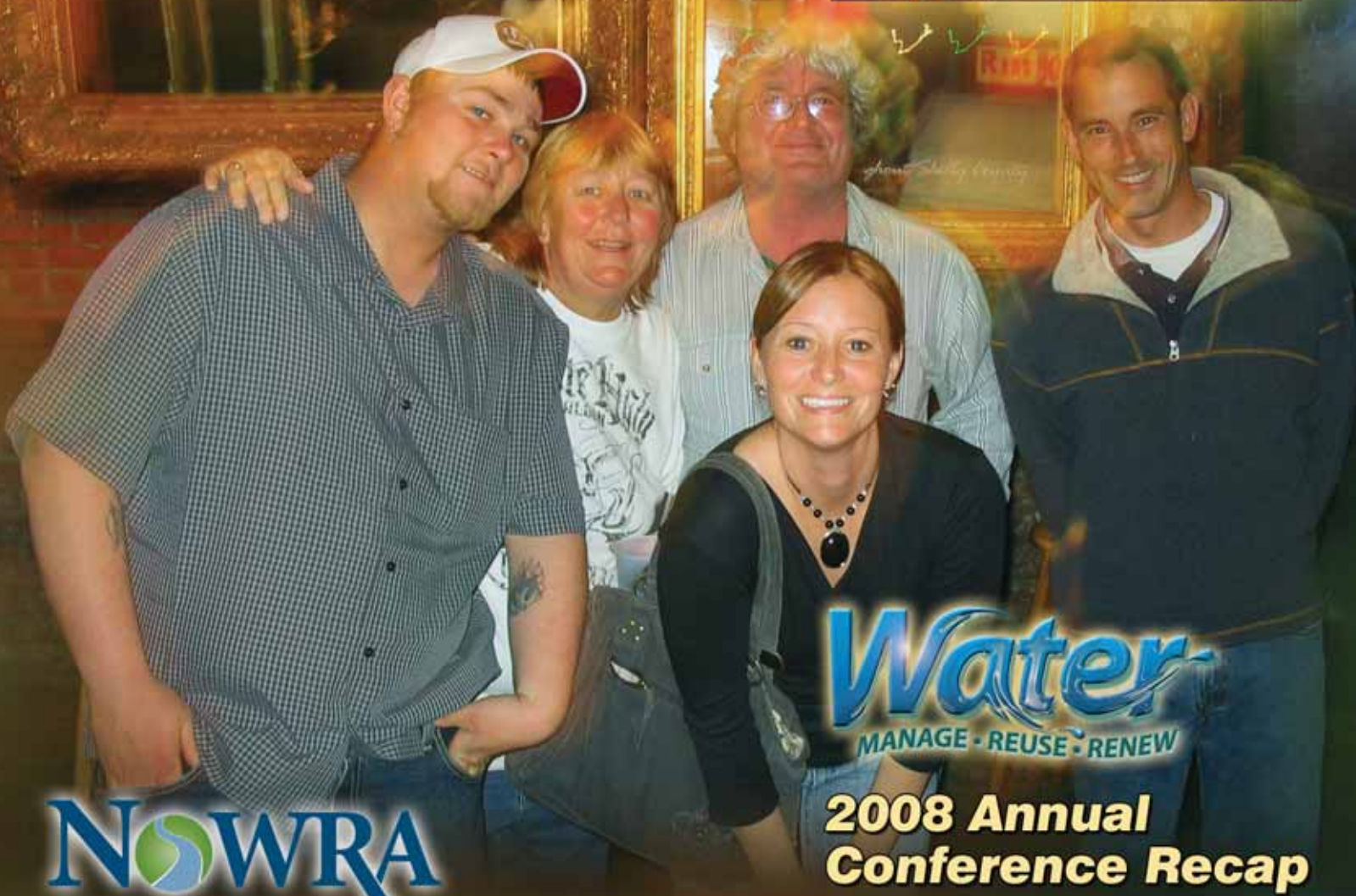
Spring 2008

NEWS FOR THE DECENTRALIZED WASTEWATER INDUSTRY

Vol. 17 No. 2

## Featuring this Month:

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# NEWS

from NOWRA HEADQUARTERS

By Alan Gale, Executive Director

On June 4, 1896, in Detroit, Michigan, Henry Ford made his first successful test run with his horseless carriage. It was the culmination of years of hard work, innovation, change, and thinking “outside the box.” I am not sure that Henry Ford really knew the impact on society that his automobile would have. He ushered in a new era and created a new industry. Now it’s our turn to turn obstacles into innovations.

In the eight months since NOWRA selected BTF Enterprises to manage its headquarters, we have been working closely with the NOWRA Board of Directors and with the committees that are hard at work on many projects: the 2008 Installer Academy, the 2009 Board of Directors elections, strategic planning, preparing testimony for national legislation, annual membership reporting, insurance coverage for local affiliates, administrative policies and procedures, website enhancements, and more.

Major accomplishments have occurred over the past few months that I would like to share with the membership. The Education Committee and Conference Committee put on a successful program at the Annual Conference in Memphis, Tennessee, in April. New relationships were built and ideas about the future of NOWRA were exchanged among the membership.

Government Relations Committee Chair Mark Hooks has been working with EPA and the U.S. Senate Committee on Environment and Public Works. NOWRA recently submitted to that committee its testimony entitled “Pharmaceuticals in the Nation’s Water: Assessing Potential Risks and Actions to Address the Issue.” Look for the related article on page 17.

There are many other projects in the works. Under the guidance of the Bylaws Committee and its Chair, Al Schnitkey, the Board recently adopted a policy manual that will guide decision making for Board members and management. We are working on enhancing our insurance options, implementing the marketing plan, finalizing the elections process (see [www.nowra.org](http://www.nowra.org) for more information), and interacting with our industry partners, and more.

One of the recent enhancements to the administration of NOWRA is newly purchased software—Internet for Associations (I4A). Once the transition to using the software is complete, members will find a more interactive NOWRA website—a member-driven bulletin board, robust members-only section full of association-specific information, on-line conference registration, on-line membership renewals, and

more. Our on-line presence will increase significantly, all in an effort to supply Local Affiliate Groups and members with more benefits. NOWRA wants to provide an industry-leading information exchange portal for you.

There are many irons in the fire right now, and now is a good time to start delivering. We thank you for your patience, and we are grateful for your continued support as NOWRA builds toward the future. NOWRA’s Board of Directors, committee chairs, and Affiliate Group liaisons will be meeting in late August for a strategic planning meeting. At that meeting, we will discuss NOWRA, Affiliate Groups, conferences, partnerships, organizational structure, the industry, and more. Do you have any input? I would like to hear from you. Please contact me at [executivedirector@nowra.org](mailto:executivedirector@nowra.org) or 800-966-2942.

I am pleased to announce that Dick Otis has been elected President-Elect for a one-year term in 2009 and Brian McQuestion has been elected as Secretary/Treasury for a two-year term in 2009–2010.

Lastly, I would like to take this opportunity to thank the NOWRA Board, committee members, Affiliate Groups, and various members for their continued support throughout the management transition. Also, I would like to thank especially Ron Suchecki for the continuing support and training he has provided BTF Enterprises over the last eight months. His technology and business acumen and conference knowledge have proven to be a key part of our transition strategy. ■



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The **2007 Report to Membership**  
is now posted on the NOWRA website at  
[www.nowra.org/meetings\\_reports.html](http://www.nowra.org/meetings_reports.html)

# ONSITE journal

Spring 2008

NEWS FOR THE DECENTRALIZED WASTEWATER INDUSTRY

National Onsite Wastewater Recycling Association, Inc.

Vol. 17, No. 2



## EXECUTIVE COMMITTEE

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(Terms Expire December 2009)

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 Supplier/Vendor—Albert Schnitkey

### 2008–2010 Directors

(Terms Expire December 2010)

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**Cover Photo:** Hilary Moore, Local Affiliate Leader, poses with fellow NOWRA revelers in Memphis at NOWRA’s 17th Annual Conference and Expo.

**Cover Inset Photo:** (Left to right) Exhibitors Scott Hetrick and Greg Graves of Norweco and Justin Setser of Polylok.

NOWRA's Board of Directors has decided that it is time to re-evaluate and update the organization's strategic and business plan that was written in 2005. The industry is moving forward at a rapid rate, and some of our affiliate groups have moved beyond the basic needs that NOWRA provides. Yes, we still have affiliate groups that need the basics, but now we need to examine NOWRA's relationship with the well established constituents and how we can work with them to keep moving the industry forward.

The strategic planning meeting is scheduled to be held on August 21–23, 2008, in Memphis, Tennessee. The Board of Directors, Committee Chairpersons, and Affiliate Group leaders will be present.

The NOWRA Board of Directors realizes that the whole general membership cannot be at the strategic

planning meeting, but it is very important that the Board gets as much feedback as possible from the general membership. A summary of the 2005 strategy and business plan is presented for your review on page 5. **You may review the plan in its entirety at [www.nowra.org/strategic\\_plan.html](http://www.nowra.org/strategic_plan.html).** Send your ideas for change or just general comments by August 15, 2008, to:

NOWRA Headquarters  
BTF Enterprises, Inc.  
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# Member Input Needed for NOWRA's Strategic Plan

The NOWRA Board, committee chairs, and Affiliate Group Liaisons will be meeting August 21-23 to discuss strategic planning for the organization, and input from members is being sought. Please read the following Summary of NOWRA's 2005–2006 Strategy and Business Plan and send any comments or suggestions to NOWRA, 3540 Soquel Ave, Ste A, Santa Cruz, CA 95062 or e-mail [info@nowra.org](mailto:info@nowra.org).

## Summary of NOWRA's 2005–2006 Strategy and Business Plan\*

### NOWRA's Mission and Vision

In 2005, NOWRA's Board of Directors formulated and adopted a new and expanded mission for the organization: *To advance and grow the onsite and decentralized wastewater management industry by promoting sustainable wastewater recycling on a watershed basis through education and outreach.*

NOWRA's Board also adopted a new vision, or stretch goal: *To be the "go to" organization on the subject of decentralized wastewater recycling.* Achieving this vision will require NOWRA to extend its reach to create a broader network of members—academics, planners, installers, businesses, regulators and other associations, while simultaneously being the hub of that network.

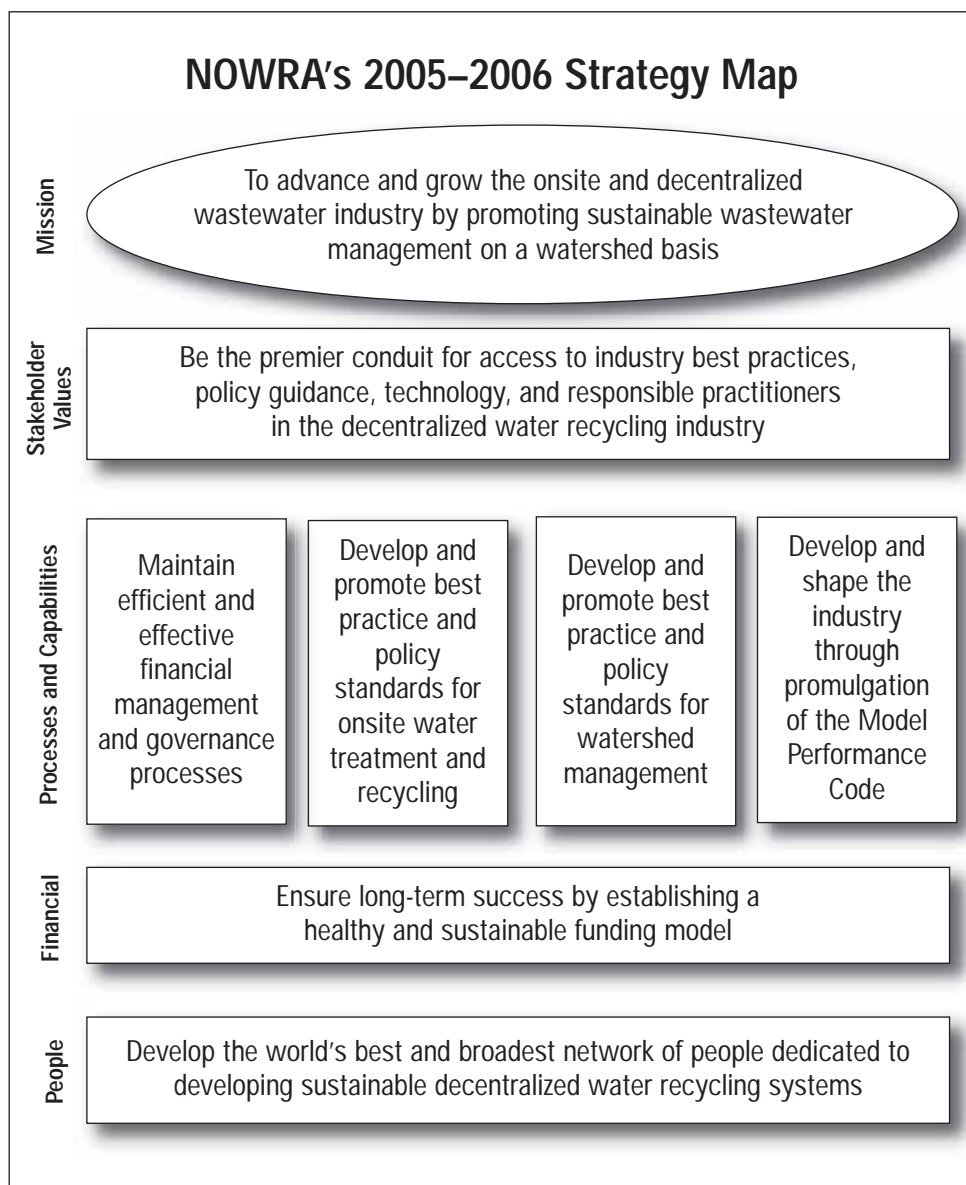
### Current State of the Organization

#### Key Strategic Issues Facing the Organization

Seven key strategic issues to be addressed by NOWRA's 2005–2006 Strategy and Business Plan:

1. The NOWRA mission is too narrowly focused on Onsite systems.
2. To succeed in its mission, how will NOWRA attract and retain the best mind trust in the industry?
3. What is the best way to leverage NOWRA's Model Performance Code?
4. There is a critical need to identify and clearly communicate NOWRA's value to the most influential of its constituencies.
5. NOWRA needs to build partnerships and alliances with organizations that share elements of its mission and vision instead of competing with them.
6. NOWRA must clearly communicate its agenda, execute on that agenda, and demonstrate absolute fiscal responsibility and accountability in the process.
7. NOWRA must develop a robust funding model to drive achievement of its mission.

\*To read the full document, go to [www.nowra.org/strategic\\_plan.html](http://www.nowra.org/strategic_plan.html)



# Three Perspectives on the Use of Soil in Wastewater Treatment

## 1 The Power of Soil: Using it to Our Advantage

By Judith Sims and Richard Otis, Ph.D., P.E., DEE

The soil environment is the most effective water-treatment system on earth! For millions of years, it has protected the earth's pristine groundwater resources from pollutants that collect in water percolating from the surface. It sustains the quality of our ground water; it permits us to use ground water as our drinking water without additional treatment.

In our industry, we depend on the soil environment's purification power to sustain groundwater quality as onsite and cluster systems return "used" water safely to the groundwater for recycling and reuse. However, the purification power of soil has limitations that vary from location to location. Without having a good understanding of those limitations and without knowing how to identify and accommodate them when we site and design drainfields, we run the risk of overloading the soil's purification power at the expense of the quality of our groundwater resources.

The soil environment provides a variety of physical, chemical, and biological treatment processes. Among them are sedimentation, filtration, adsorption, precipitation, ion exchange, hydrolysis, biodegradation, nitrification, denitrification, and predation. The effectiveness of each of those processes will vary from soil to soil, so to use the treatment capability of the soil to its maximum extent, a system's pretreatment processes must be selected to complement the treatment capability of the soil. Understanding the relationship between the soil's characteristics and its treatment capability also can be used in modifying the soil characteristics to create favorable conditions for desired treatment capabilities. This requires that a thorough site and soil evaluation be conducted to estimate not only the soil's capacity to accept and disperse the wastewater's hydraulic load but also to treat the wastewater by retaining, transforming, and/or removing pollutants of concern. Such an

evaluation requires that we consider the soil as a treatment component that can provide various treatment processes depending on its characteristics and conditions.

The most important soil characteristics and conditions to observe during the site evaluation are:

- Permeability
- Moisture potential
- Unsaturated depth
- Mineralogy

**Permeability.** The permeability of the soil is not only important in the water's ability to disperse into the receiving environment and ultimately percolate to the water table but also in allowing air to diffuse into the soil, which is necessary to support aerobic treatment processes in the soil. The soil's permeability is a function of the size distribution and continuity of the pores in the soil. Soils with mostly fine pores will provide greater treatment potential than those with coarse pores, but they will hinder the rate at which water can percolate through the soil and disperse into the receiving environment. Thus, treatment and dispersal are competing objectives where soil permeability is high or space is limited.

Soil characteristics that determine soil permeability are the soil's texture and structure. Also, soil color is a good indicator of how well a soil allows water to move.

The **texture** of a soil is defined by the relative proportions at which the soil particulates—sand, silt, and clay—occur within the soil. Some common soil-texture classifications—in order of large to small particulates—are sand, sandy loam, loam (primarily silt), silt loam, clay loam, and clay. The various sizes of the individual particulates in a soil and their arrangement, or "packing," create a variety of pore sizes that impact permeability. Water flows between the particles, and, in most cases, the larger the particles, as with sand, the more quickly the water moves through the soil. Soil with a mixture of the various particulate classes, such as sandy loam, will have fewer large pores and is more effective in filtering out bacteria, viruses, and other potential pathogens from the applied wastewater.

A soil's **structure**, which is the combination or arrangement of individual soil particulates into aggregates or peds, affects how well the soil can absorb and move water. The structure will often impact soil permeability to a greater extent than does the texture. Also, macro pores, such as channels created by

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**About the Authors:** Judith Sims is the coordinator of the Utah On-Site Wastewater Treatment Training Program at Utah State University as well as a faculty member in both the Utah Water Research Laboratory and the Department of Biological and Irrigation Engineering at Utah State University. She is currently a NOWRA Board member.

Richard Otis, Ph.D., P.E., DEE, is a former senior associate with Ayres Associate and has been involved in research and demonstration of wastewater collection, treatment, and disposal alternatives since 1970. He is a past NOWRA Board member and newly elected NOWRA VP/President-Elect.



worms or by decayed roots, are common in structured soils. Well structured soils with large spaces between the aggregates transmit water more quickly than soils of the same texture with little or no structure. Water percolates very slowly through fine-textured (“massive”) soils with little structure, while fine-textured soils with strong structure can provide rapid water movement.

The **color** and color patterns of soil can be used to estimate the soil’s moisture regime. The colors of soils that are seasonally “wet” or permanently saturated differ from the colors of well drained soils. Soils that experience extended wet periods often exhibit redoximorphic features including mottling or “gleying.” Mottling within the soil matrix appears as spots of different shades of color resulting from the alternating periods of reduction and oxidation that accompany seasonal cycles of saturation and dryness. Gleyed soil usually is a uniform grey color that is the result of extended periods of intense reduction indicative of permanently saturated soil. Bright yellow or red soils indicate a good drainage environment.

**Moisture Potential.** The energy status of water in soil may be described in terms of a “moisture potential” index. When the soil is saturated (all the soil pores are filled with water), the moisture-potential index is zero (at atmospheric pressure) or greater than zero (under positive pressure). When the soil is not saturated, the larger pores are devoid of water while the smaller pores hold water under tension by capillary action—the moisture-potential index is less than zero.

As more water leaves the soil, higher moisture tension ensues, only the smallest pores hold water, and the moisture-potential index becomes more negative. That situation has two beneficial effects for treatment: 1) The larger pores remain open allowing air to diffuse into the soil where oxygen can support aerobic biochemical reactions to meet the oxygen demand of the percolating wastewater, and 2) water is forced to flow in the smaller pores, improving filtration, and slowing percolation. Concurrently, the residence time of the water in the soil increases, allowing ample time for biochemical reactions and more contact with the soil matrix where chemical adsorption reactions can occur.

Soils with shallow water tables and low areas that can receive storm water runoff should be avoided. However, in any soil, the moisture-potential index will vary with the applied water, but high moisture tensions can be achieved by controlling the rate of wastewater application to the soil. High moisture tensions are necessary to ensure good removal of the biochemical oxygen demand (BOD), filtration of suspended solids and bacteria, and ammonia removal via nitrification,

**Unsaturated Depth.** A depth of soil that will remain unsaturated and provide active aerobic treatment sufficient to ensure good removal of BOD and fecal coliform must be present during wastewater applications. Studies have shown that 18 to 24 inches of unsaturated soil with a texture of at least fine sand or with a moisture-potential index maintained at a large

negative value is adequate to achieve good removal of those pollutants. However, the specific depth of suitable soil is usually dictated by regulatory codes that require a minimum of 3 to 4 feet of unsaturated soil. Those minimums were established to ensure acceptable pathogen removal and to provide an ample factor of safety, but such depths will prevent the formation of soil conditions that can support biological denitrification, which is often required.

Movement of nitrogen in soil is becoming an increasing concern with onsite wastewater treatment. As nitrogen moves through an onsite treatment system, biological processes (primarily in the septic tank) convert it from organic nitrogen to ammonia nitrogen. Then, below the drainfield biomat in the underlying unsaturated soil, the ammonia nitrogen is adsorbed to soil particles and then biologically converted to a soluble and mobile form of nitrogen—nitrate. Nitrate, which is associated with the “blue baby” syndrome and vilified as an aquatic plant nutrient in marine waters, can move with percolating water through the soil to ground water. Without a zone of saturated soil with organic matter present to provide a source of carbon and an anoxic environment, nitrate will not be removed.

**Mineralogy.** The soil’s mineralogy is important in controlling the pH of soil water, removing cations through ion exchange, and offering adsorption sites for various pollutant ions. Of these reactions, the removal of phosphorus through adsorption and precipitation reactions is of the most interest in onsite treatment near surface waters, because phosphorus is a limiting nutrient in aquatic plant growth. To maximize removal of phosphorus, the volume of soil contacted by the percolating water is important. Attaining adequate contact can be achieved best by locating systems away from lake shores and extending the application of wastewater along the site contours.

In the process of determining what system design would be appropriate for a proposed building site, the local regulatory authority, which is often a health or planning and zoning department or district, usually specifies procedures and policies to be followed when site and soil conditions are evaluated. The results of the evaluation should be sufficient to enable the system designer to select the most appropriate system design for the site. To ensure that the evaluations are performed correctly, they should be conducted by soil scientists, environmental health scientists, or other appropriately trained and licensed professionals.

The objective of the site evaluation is to determine the site’s capacity to hydraulically accept and adequately treat the wastewater to be applied. The scale and detail of the site evaluation will depend on the raw wastewater characteristics (quantity and quality) and the environmental sensitivity of the site. A thorough site evaluation includes the following steps:

- **Wastewater Characterization and Treatment Requirements.** The site evaluation process begins with obtaining a reasonably accurate estimate of the daily volume of wastewater to be treated, its constituent concentrations, and the stipulated treatment goals. From this information, the site

*continued on page 8*

evaluation focuses on delineating a sufficient area for the treatment site, an estimate of the soil required to retain, transform, and/or remove constituents of concern, and whatever additional pretreatment, if any, is needed to meet the stipulated treatment goals.

- **Site Screening and Reconnaissance.** Screening of potential treatment sites should begin with a review of soil and topographic maps prior to the site visit. When first at the site, the topography, landscape position, vegetation, and cultural features should be identified to locate the most promising areas for a treatment site.
- **Detailed Site Investigation.** At a minimum, a good site evaluation should include topographic mapping and detailed morphologic soil-profile descriptions. In sensitive environments, it might be necessary to consider deep borings, soil permeability measurements, groundwater mounding analyses, or other tests. This investigation should establish the size of the drainfield and its bottom elevation with respect to an established benchmark.

- **Preliminary System Layout.** Finally, a preliminary layout of the system with elevations should be sketched. It should consider any required setback distances from property lines, surface waters, wells, and other features to ensure that the selected system design will fit on the selected treatment site.

A site and soil evaluation is the first step toward installing an appropriate onsite wastewater treatment and dispersal system. The evaluations determine the characteristics of the building site and the ability of the soils present at the site to treat and dispose of wastewater. When conducted well, it provides enough information about the area to select the correct onsite system from the possible options available. ■

For more information and guidance on site and soil evaluations, consult NOWRA's *Guidance for Estimating the Treatment and Dispersal Capacity of the Unconfined Soil Treatment Component*, which is a supplement to NOWRA's *Model Code Framework for Decentralized Wastewater Infrastructure*, to be published in 2008.

## 2 Soil Treatment: Model Code Tools-to-Come

By Anthony Smithson, R.S.  
Model Code Committee Chair

I will start with four confessions: (1) I am a regulator—a Director of Environmental Health in a relatively urbanized county of suburban Chicago—with a career-long fascination with soil as a wastewater-treatment medium. (2) My personal inclinations, my education, and my training provide just about enough knowledge to make me dangerous if I did not have good friends and good staff who help me. (3) It is important to me that things make sense; I want to know “why” and in regulating onsite wastewater I often ask myself “why not.” (4) I do not hesitate to stir-the-pot; I will challenge regulatory issues and decisions (including my own), and I do not mind making my fellow regulators uncomfortable.

Our prescriptive onsite wastewater regulatory codes can have a huge impact on our citizens. Notwithstanding the historical benefits to public health and environmental protection that “regulating” onsite systems have had, we can deprive citizens reasonable uses of their property, interfere with the business practices of other professionals and manufacturers, and cost everyone involved significant resources—all as a result of one or another requirements of our respective codes. I have calculated, for instance, that Illinois’ prescriptive requirement for a design flow of 200 gpd/bedroom costs Illinois’ citizens

\$7.3 million per year, although other states consider a 120 gpd/bedroom flow to be perfectly satisfactory. That \$7.3 million gets divided among thousands of installations, of course, so apparently it goes unnoticed by an unsuspecting public. We believe, probably sincerely, that we are only being appropriately conservative.

It is our tendency as regulators and code writers to be “conservative” without asking, or demanding to know, what is “too conservative.” This attracted me to participate in NOWRA’s Model Performance Code project in the first place. A diverse group of participants challenged and debated these kinds of prescriptive requirements over a period of several years. In the end, NOWRA has produced some extraordinary documents that can guide us, if we are so moved, toward more “reasonable” regulation of decentralized wastewater systems. (See [www.modelcode.org](http://www.modelcode.org).)

However, the resolution of issues relating to soil, even the simple ones like horizontal/vertical setbacks and system sizing), has become elusive. A “soil” subcommittee of preminent “soil minds” dug deeply (no pun intended) into the various treatment capabilities of soil, looking at the constituents designated by the Model Code Committee—BOD, TSS, fecal indicator organisms, nitrogen, and phosphorous. While some marvelous information resulted (unpublished to date), the level of complexity, the limitations of supporting data, the extent of extrapolation, and the scope of some implications proved to be too much to swallow. Still, the “Soil Guidance Appendix” to the

---

**About the Author:** Anthony Smithson, M.S., R.S., is the Director of Environmental Health for the Lake County Health Department in Illinois. He served two terms on the NOWRA Board and is the former onsite section Chairperson for NEHA.

Model Code Framework is purported to be, by most interested parties, a much anticipated and welcomed achievement. So, a role for the simple minded (me) has surfaced.

As current Chair of the NOWRA Model Code Committee, I have been attempting to find a way to complete this project. It seems to me that, among those who have been intimately invested in this effort, the main disagreements tend to be at the margins—we do not have enough perfect information to develop perfect solutions. Meanwhile, we regulators, who hold the key to promoting rational, performance-based regulation, continue to impose soil-related prescriptions that we cherish as gospel, often by virtue of nothing other than their historical perpetuation from generation to generation. We assume there is solid scientific support for our prescription, and pretend not to notice the vast differences in the prescriptions from one jurisdiction to another. We tend to resist considering what our requirements cost others. I wonder how many of us actually understand that soil is, or can be, a predictable wastewater *treatment* component capable of being effectively manipulated.

Ultimately, for NOWRA's Soil Guidance to be of benefit to the decentralized community, regulators must challenge, reevaluate, and realign their views of soil as a component of wastewater systems. Regulators have said to NOWRA that they want better tools for evaluating the role of soil, but they must be prepared to give something in return—a dedication to participation and contribution of their own thinking on the subject. Are regulators in fact willing to think of soil as a dynamic treatment component, or are they expecting only a “better set of tables”? Are they dedicated to evaluating and monitoring successful and unsuccessful applications of our current knowledge to extend our understanding?

What I have learned while participating in this process is that soil has inherent and definable (to a significant extent) capacities and limitations with respect to treatment and transport. Every other aspect of a wastewater system (sourcewater, flow volume, pretreatment, distribution methods, construction practices, O&M, etc.) enhances or restricts the ability to access treatment and transport capacity and sustain the “system” as required by the receiving environment and the long range plans for the site.

New understandings and new technologies make almost anything possible. But, it is *NOT* possible to establish a setback, a separation, a size reduction, or a set of “unsuitable” characteristics that apply to a soil/site without taking into account the unique characteristics and design options for that soil/site. Let's be clear: When it comes to soil, it is not possible to do legitimately what we, as regulators and code writers, have always done. Setbacks cannot apply to all soils on all slopes; loading rates cannot be reduced by the same factor for all soil textures with effluent quality improvements; vertical separation does not accomplish the same thing for different distribution methods; some soil conditions heretofore considered miserable can be desirable.

The Onsite/Decentralized community has many opportunities ahead. The advantages of soil-based options will eventually gain more and more favor. While progress has been slow (and will likely continue to be slow), NOWRA will produce a Soil Guidance tool by drawing on the knowledge of superb scientists who continue to investigate that fascinating natural resource—soil. There will be gaps in the knowledge, and those gaps will be acknowledged and targeted for future investigation. It remains to be seen whether we, as regulators, will continue to pretend that there are not gaping holes in the processes we currently embrace or whether we will welcome the opportunity to harness the benefit that soil as a treatment medium can offer society. I hope the latter is the case. I do not want the regulatory community to have to admit someday that (with due attribution to Walt Kelly and Pogo) “we have met the enemy, and he is us.” ■

## 3 Soil: Part of a Decentralized Solution

By Jerry Stonebridge, NOWRA President

All the components of a decentralized wastewater treatment system are integral to the success of the system's meeting its performance goals—each component in the treatment train must meet or exceed its design expectations for the whole to operate as intended.

In most cases, a component can be tested easily—though sometimes at considerable cost—at its flow-output point to determine how well it is performing. The data collected can be analyzed and the O&M service provider can tweak the parameters affecting the in-flow and out-flow to advantageously alter the outcome.

However, the extent to which the soil component is upholding its piece of the design performance criteria has always been open to question. There needs to be a standardized method for confidently measuring the performance of the soil, the final component in the treatment train before the flow is dispersed into the environment.

The industry (i.e., everyone involved with the onsite decentralized/distributed wastewater field) needs to participate in establishing and then comprehensively applying a Standard for measuring the performance of the soil as it relates to its design purpose, i.e., to influence the quality of the effluent as it reaches the ground water or whatever other intended dispersal point.

I believe that with the collective wisdom of the wastewater field and NOWRA's leadership, we can develop a simple, inexpensive method for validating the soil component. ■

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**About the Author:** Jerry Stonebridge, Ph.D., is the President of NOWRA, a co-founder of the Washington On-Site Sewage Association (WOSSA), and owner of Stonebridge Environmental Services Company in Freeland, WA.

# NDWRCDP Research Program: Yesterday, Today, and Tomorrow

By Mary Strawn

Water Environment Research Foundation

In 1997, the U.S. Environmental Protection Agency (EPA) affirmed in its “Response to Congress on Use of Decentralized Wastewater Treatment Systems” that decentralized treatment systems are a permanent part of the nation’s wastewater treatment infrastructure, protecting human health and water quality in unsewered areas when appropriately managed. About 25 percent of existing construction and a greater proportion of new developments are served by decentralized systems, demonstrating the critical need for peer-reviewed research in an area that has not received adequate attention or support from the water quality industry in the past.

In 1997, the five organizations listed below cooperated in developing a research agenda for decentralized systems, forming in the process the National Decentralized Water Resources Capacity Development Project (NDWRCDP):

- Water Environment Research Foundation (WERF)
- Coalition of Alternative Wastewater Treatment (CAWT)
- Consortium of Institutes for Decentralized Wastewater Treatment (CIDWT)
- Electric Power Research Institute (EPRI)
- National Rural Electric Cooperative Association (NRECA).

The mission of NDWRCDP is to “improve the capacity of electric utilities, water and wastewater utilities, municipalities, engineers, contractors, regulators and other public and private entities to respond to the increasing complexities of, and expanding need for decentralized wastewater and stormwater systems.” Funding for the research became available from EPA in 1997, and in 2003 WERF assumed administration responsibility for the EPA grant. The research agenda was refined in 2002 and divided into four areas deemed most critical to advancing the science associated with decentralized systems:

1. Environmental Science and Engineering,
2. Management and Economics,
3. Regulatory Reform
4. Training and Education.

To assist in defining the research needs and the allocation of funds, WERF created two advisory groups. One is the Decentralized Systems Advisory Committee (DSAC), which consists of the five organizations listed above along with the National Onsite Wastewater Recycling Association (NOWRA).

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**About the Author:** Mary Strawn is a Program Manager at the Water Environment Research Foundation. She is responsible for the overall management of WERF’s \$7.7 million decentralized grant from EPA.

It is tasked with evaluating national needs and allocating research funds to the four areas identified above. DSAC members may receive a portion of the funds through sub-grants to conduct research in Management and Economics, Regulatory Reform, and Training and Education. The efforts of WERF itself have focused primarily on the Environmental Science and Engineering area; it has formed the Decentralized Research Advisory Council (DRAC) to provide assistance in determining the specific annual research projects to be conducted in that area. Individual members of DRAC provide support to the peer-review groups, referred to as Project Subcommittees (PSCs) that are developed for each WERF project.

To date, close to \$15 million have been allocated to research in the four areas, which has included not only wastewater-treatment research but, as the NDWRCDP mission encompasses, some research in projects related to stormwater. Final reports from all completed projects are available to the public and can be downloaded from the NDWRCDP website [www.ndwrcdp.org](http://www.ndwrcdp.org).

At NOWRA’s 2007 Conference in Baltimore, several national and international speakers discussed the future of the decentralized wastewater field. They indicated that change was coming to the water quality industry and new paradigms were emerging. Wastewater treatment solutions were beginning to coalesce as a continuum of options rather than being tagged as either “decentralized” or “centralized” solutions. Consultants are discovering that replacing the infrastructure for centralized facilities that are reaching the ends of their lives is an expensive proposition; they are realizing that more cost-effective alternatives must be created. Simultaneously, triple bottom-line accounting, which considers economic, environmental, and social factors, is being discussed as an important tool for selecting the appropriate technologies for a given community. Ten years after EPA’s Response to Congress, it is clear that the broad water-quality community is beginning to recognize decentralized and distributed systems as being viable alternatives to traditional centralized systems.

At the Baltimore Conference, WERF held a 2-day workshop with invitees from across the globe who were well-known in the field of decentralized approaches to stormwater and wastewater treatment. A summary report was developed that charts a research agenda in support of an integrated, sustainable, decentralized water infrastructure. Workshop attendees also formulated a consensus vision called the Baltimore Charter; they signed that document as a commitment to design new water systems that mimic and work with nature. The research agenda developed will be shared with federal agencies and others as the decentralized program moves forward in

*continued on page 18*

## Determining the Effect of Water Softeners on the Performance of Septic Tanks

By Nancy Deal, MS, REHS

Researchers from North Carolina funded and performed a pilot survey of septic tanks with and without associated water treatment devices in an effort to develop a basic protocol for future research. Representatives of water and wastewater treatment professional associations were present as observers. Persons who assisted with or observed the study included:

- Tom Konsler and Albert Mills (Orange County [NC] Health Department)
- David Lindbo, Roland Coburn, and the author (NC State University)
- Joseph Harrison (Water Quality Association [WQA])
- Barbara Grimes (NC Division of Environmental Health)
- Bruce Lesikar (Texas A&M University)
- John Buchanan (University of Tennessee)
- Matthew Byers (National Onsite Wastewater Recycling Association)
- Jim Frankenfield (Culligan of the Triangle and WQA)
- Ray Wilson (Triangle Water Services and WQA).

Samples were collected and observations were made at 13 residences in a subdivision in Orange County, N.C. Source water was analyzed for inorganic constituents, and source-water treatment devices were evaluated for resin bed size and regeneration configuration. Settings for backwash duration, salt volume, and calendar override on demand-initiated regeneration units (where appropriate) were documented. Samples for chemical and biological analyses were collected from the scum, clear zone, and sludge layer of each septic tank compartment. Those samples were analyzed for sodium, potassium, magnesium, calcium, TKN, ammonia-N, chloride, TSS, TDS, and BOD.

On-site measurements were taken in the three layers in the tank as well as in the source water and regeneration water. The measurements included pH, dissolved oxygen, temperature, conductivity, and density. Tank profiles were documented and a flow-through test was conducted to evaluate the nature of effluent screen performance.

A unique feature of this study was the use of a refined version of a detailed homeowner survey originally used in the Operation and Maintenance Service Provider program of the Consortium of Institutes for Decentralized Wastewater Treat-

ment (CIDWT). It was used to interview the system users regarding their water-use habits and input to the system. The homeowner survey instrument is a unique feature that allows evaluation of sampling results in the light of specific user inputs. Variables such as potential abuse and other important characteristics of use can be identified and controlled as the data are analyzed.

Results from this small sample group were used to test the sampling protocol in the field and to determine the number of sites needed to provide a reasonable level of confidence in a broader study. The data reveal interesting observations at individual sites, but essentially tremendous variability. This is not surprising with such a small sample population—the results were often skewed by a single observation. Researchers will return to the original 13 sites this summer to re-sample tanks and observe tank profiles. The flow-through test will be repeated to observe conditions after one year of operation with a clean effluent screen in place. Those results will be used to finalize the protocol. Additionally, a protocol for sampling and assessing microbial demographics and activity will be evaluated.

Efforts are underway to identify a larger number of sites in and around Orange County. The current plan is to evaluate and sample those sites in the fall of 2008. Financial support from multiple industry sectors (including manufacturers of advanced treatment units and effluent screens) is anticipated and welcomed.

Both water industries and wastewater industries will benefit as this research protocol is used more widely. Continued research using the fully-developed protocol should reveal trends that will guide future management of system components used for water and wastewater treatment. Additionally, the cooperative effort of the water and wastewater treatment industries is a positive outcome that can only be beneficial to both groups and to the consumer. ■

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**About the Author:** Nancy Deal is an Extension Associate at the North Carolina State University Soil Science Cooperative Extension. For more information, contact the author at [nancy\\_deal@ncsu.edu](mailto:nancy_deal@ncsu.edu).



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**For more information, call NOWRA at 1-800-966-2942**

# PROMOTIONAL OPPORTUNITIES

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#### Level 3 Options - \$1000.00 Contribution

- Breakfast
- AM Break
- Convention at A Glance Sign
- PM Break

*Please call to discuss co-sponsorship opportunities.*

Living up to its reputation as the industry leader in education and training, NOWRA brought the 17th Annual Technical Conference and Expo to over 400 attendees in Memphis, Tennessee, over the four days of April 7–10, 2008.

Opening the event, NOWRA President Jerry Stonebridge encouraged attendees to be innovative in their application of new technologies. He exhorted them to apply the theories of reclaiming, reusing, and recycling water across all sectors of water resource management. Mark Hooks, of Infiltrator Systems and Chair of NOWRA's Government Relations Committee, challenged the attendees to drive the adoption of effective polices by educating politicians—give them the data and explain the data, he urged.

Providing a local perspective, Brian Waldron of the University of Memphis' Ground Water Institute summarized a countywide ground-water survey of two of the three primary aquifers beneath Shelby County (the shallow and the Memphis aquifers) to assess the overuse and contamination that are threatening those regional resources. The partners in the project are prompting elected officials, community leaders, and the public to invest in the long-term sustainability and quality of our precious ground-water resources.

The Conference's rich education program offered several education tracks, including Decentralized Systems A to Z, Cluster System Design and Application; Performance and System Evaluation; Standards, Regulations and Policy; Treatment Process Evaluations; Innovative Technologies and Solutions; and WERF Projects Updates.

The Nitrogen Symposium, held the day before the start of the Conference, was marked by standing-room-only attendance. Among the topics covered by experts in the field were nitrogen fate and dissipation; environmental chemistry; watershed export and scale modeling; sources and loads; and nitrogen standards. The presentations are available online at [www.nowra.org/2008nitrogen\\_symposium.htm](http://www.nowra.org/2008nitrogen_symposium.htm).

At the Expo, held Tuesday evening through Wednesday afternoon, exhibitors representing leading companies in the industry offered opportunities for networking and for education on new products and services. NOWRA thanks exhibitors for their participation!



▲ Scott Robinson demonstrates the RH<sub>2</sub>O product with his colleagues.

## NOWRA's 17th Annual Confer



▲ Sure, picking on the Red Sox fan seems fun now, but rumor has it that NOWRA conference goers might find themselves in Boston country in 2011.



▲ Premier Tech's inviting exhibit featured a scale model of a residential treatment system.



NOWRA members enjoyed a night out characterized by laughter and great music at Silky O'Sullivan's on Beale Street. The opportunity to relax drew great enthusiasm and requests that similar events be arranged at future conferences.



Jerry Stonebridge and wife Suzy enjoy the night out on Beale Street with Dave Potts, YOWA Board member.



Ron Suchecki, Conference Chair, relaxes with some buddies at the Silky's party after a job well done.



# Conference and Expo Delivers the Message — Manage, Renew, Reuse



Mark Hooks and Trapper Davis discuss the latest in government regulations at the Board of Directors' meeting.



John Buchanan carbo loads with a warm pretzel to prepare for his demanding role as tour guide of wastewater treatment sites in the local Memphis area.



Thomas Kallenbach spends some one-on-one time educating an expo visitor about Eliminate, Inc.

# Call for Nominations for 2009/2011 Board of Directors' Positions



Members are encouraged to recommend candidates, and individuals are encouraged to apply. There are five (5) positions on the NOWRA Board of Directors to be filled in the September elections. The position categories include:

- Regulator
- Service Provider
- Academic
- Engineer/Designer
- Manufacturer/Supplier

Directors and officers who serve in these positions do so on a voluntary basis, and are not financially compensated for this work. Newly elected BOD members' terms of office will begin December 1, 2008. Board members will need to attend the Board meeting on December 7, 2008, at the Installer Academy in Las Vegas.

## Expectations/Roles & Responsibilities of NOWRA Board Members

- Participate in face-to-face meetings (3 per year), that may include a 2-day strategic planning session. (Two of the meetings are held at the NOWRA conferences.) Also participate in monthly Board teleconference calls, read and review all distributed materials.
- Serve as an active liaison and mentor with state groups on topics, and participate as NOWRA's official representative at meetings when requested.
- Contribute time in a leadership or participatory role on committees and special task groups when requested.
- Provide guidance and direction to the NOWRA Board and staff on the issues representing your industry sector or organizations positions and policies.
- Review the Governance section of the NOWRA Bylaws, please visit [www.nowra.org/bylaws.html](http://www.nowra.org/bylaws.html).

## Application Process and Format

Potential candidates should prepare a letter to the NOWRA Nominations Committee, c/o Executive Director. The letter should include:

- A statement of your desire to be considered for one of the positions within a specific category and understanding of the commitment to fulfill the

expectations, roles, and responsibilities as a member of the Board of Directors.

- Your current employment, professional title, and position.
- Number of years of work or affiliation within the onsite industry and relevant expertise and/or credentials for the specific Board category.

In addition, please prepare a statement responding to the following questions:

- What specific area of interest do you desire to work with the NOWRA Board on industry issues and how you will make a contribution?
- **Why you are willing to serve on NOWRA's Board as a leader in the onsite industry?**
- What is your perspective(s) on the directions that NOWRA as an organization should consider in order to increase its leadership role in the industry?
- What are the critical issues that NOWRA's Board should be addressing on behalf of its members?

\* \* \*

Please limit your application to two pages and send by August 15, 2008, to NOWRA's Executive Director, Alan Gale, by mail 3540 Soquel Avenue, Ste. A, Santa Cruz, CA 95062 or email: [alan@btfenterprises.com](mailto:alan@btfenterprises.com).

***Ballot and candidate profiles will be posted on the NOWRA website by Sept. 1, 2008.***



## NOWRA Becomes a Voting Member of DSAC

Phase-One funding for decentralized wastewater research was provided by EPA's office of Research and Development and was administered by Washington University at St. Louis. The recipient of the funds was the National Decentralized Water Resources Capacity Development Project (NDWRCDP), which was created to address the need for cost-effective water resource management in rural and suburban areas. The project steering committee (NOWRA was not a member) developed several research projects for the NDWRCDP. The projects fell within four areas of interest:

1. Environmental Science and Engineering
2. Management and Economics
3. Regulatory Reform
4. Training and Education

Phase-Two funding is being administered by the Water Environmental Research Foundation (WERF). A Decentralized Systems Advisory Committee (DSAC) has been formed to help evaluate national needs and provide guidance relative to funding priorities. Additionally, DSAC members may receive

portions of the funds through sub-grants to conduct research and to advance the missions of their organizations.

The DSAC partners are:

- Water Environment Research Foundation (WERF)
- National Rural Electric Cooperative Association (NRECA)
- Coalition of Alternative Wastewater Treatment (CAWI)
- Electric Power Research Institute (EPRI)
- Consortium of Institutes for Decentralized Wastewater Treatment (CIDWT)
- National Onsite Wastewater Recycling Association (NOWRA)

WERF also created the Decentralized Research Advisory Council (DRAC) to determine the annual research projects and priorities in the Environmental Science and Engineering area of interest. The other three areas of interest have been the focus of the DSAC partners.

By becoming a voting member of DSAC, NOWRA has been able to participate in guiding the future research projects in the decentralized/distributed water resource field. ■

## NOWRA Provides Testimony to Senate Committee Concerning Pharmaceuticals in the Nation's Water

On April 25, 2008, NOWRA's President Jerry Stonebridge submitted written testimony for the record to the Honorable Barbara Boxer, Chair, U.S. Senate Committee Environment and Public Works. The testimony was submitted for consideration at the hearing entitled *Pharmaceuticals in the Nation's Water: Assessing Potential Risks and Actions to Address the Issue* conducted by the Subcommittee on Transportation Safety, Infrastructure Security, and Water Quality. Thanks are due to Mark Hook for taking the lead in writing the testimony and to the several NOWRA leaders who contributed their expertise. The full text of the testimony is presented below. To learn more, go to <http://epw.senate.gov/public/index.cfm?FuseAction=Hearings.Home>

### **Written Testimony submitted by NOWRA on April 25, 2008**

I am writing on behalf the National Onsite Wastewater Recycling Association (NOWRA) to submit testimony regarding the topic of pharmaceuticals in drinking water. Our association includes engineers, soil scientists, research scientists, academia, regulators, contractors and manufacturing representatives with the common mission of making onsite wastewater systems (including septic systems) a viable part of the nations wastewater treatment infrastructure. We applaud your efforts to protect our nation's water supplies. Protecting water quality and quantity is a common goal we share. Having clean water in adequate quantity is vital to the public's health, protecting the environment and sustaining our economy.

Onsite septic systems and other forms of decentralized wastewater treatment provide approximately one fourth of the nation's wastewater treatment infrastructure. These systems have been relied on for many decades as an effective means of environ-

mental and public health protection when properly sited, constructed and maintained. They enhance natural treatment processes that purify the wastewater before it is returned to the environment. As with any wastewater treatment facility, the water discharged is returned to the environment where it has the potential to impact our potable water supplies. This is particularly true in areas that use groundwater as their primary source.

Decentralized or "onsite" systems are largely contrasted from centralized systems because pretreated wastewater is commonly dispersed into the soil for final treatment, on the site of the building being served. Prior to soil dispersal, onsite system pretreatment processes include septic tanks, secondary treatment processes, and some tertiary treatment processes.

These various treatment processes include a number of opportunities for removal or attenuation of pharmaceuticals. They offer treatment methods that show promise for reducing the risk of pharmaceuticals in our water supplies. These

*continued on page 18*

## Senate Testimony Concerning Pharmaceuticals in Nation's Water *(continued from page 17)*

include attenuation through absorption, adsorption and degradation. After these processes comes the dispersal in soil by the drainfield which has been found to have the capacity to remove pharmaceutical compounds. This was demonstrated by a recent U.S. Geological study in Lapine Oregon (Report 2005-5055). In the drainfield, pretreated water must pass through the drainfield 'biomat' as it moves downward into the water table. This biomat is a rich organic layer of intense microbial activity. The biomat and the underlying soils were found to have removed the pharmaceuticals.

While existing research has shown promising results, we do not have a complete understanding of the fate and transport of pharmaceuticals from onsite systems. The U.S. Geological Survey has been a leader in developing the limited body of knowledge available. They have been particularly successful in identifying the levels of contaminants in surface and groundwaters. Additional research is needed to fully understand the removal variability of pretreatment technologies and soil. *We encourage Congress to provide funding and staff resources to the U.S. Geological Survey and the U.S. Environmental Protection Agency to further this body of knowledge.*

For the last two years NOWRA has been following the debate about the human health and the adverse environmental impacts of pharmaceuticals and other emerging contaminants in wastewater. While it has been stated that many of the pharmaceuticals are well below effective doses, there appears to be particular concern about the group of compounds classified as endocrine disruptors. *We encourage Congress to provide adequate funding and staff resources to the Agency for Toxic Substances and Disease Registry within the Department of Health and Human Services to determine the risks to the*

*public of levels of endocrine disruptors being found in treated wastewater, and in potable water supplies.*

A number of studies have also found adverse pharmaceutical impacts to the aquatic life in our nation's rivers, lakes and streams. Various aquatic organisms have been found to have reproductive system abnormalities attributed to endocrine disruptors. *Therefore, we also encourage Congress to provide adequate funding and staff resources to the U.S. Environmental Protection Agency to determine the adverse impacts to the natural environment.*

NOWRA has taken an active role in educating the public about how to protect the environment through proper system use. Pollution problems of all types can be addressed in the most cost effective way through prevention programs. Therefore, we have actively promoted programs that teach homeowners not to flush medications down the drain. *Congress could assist in this endeavor by encouraging the U.S. Food and Drug Administration and the U.S. Environmental Protection Agency in developing "take back" programs, where unused medications are returned to pharmacies or other collection centers for proper disposal.* These agencies could partner with state public health programs to assist with implementation.

These combined actions will enable our industry to move in a direction that maximizes both the protection of our nation's drinking water resources and the protection of aquatic ecosystems. Our organization has been a leader in the wastewater field for some time now and we offer our assistance and expertise in developing a strategy to gather the science and to develop sound water supply protection policies. Please let us know if we can assist in any way.

Sincerely,

JERRY STONEBRIDGE, *President, NOWRA*

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## NDWRCDP Research Program *(continued from page 10)*

2008 and 2009. (Editors note: The Winter 2008 issue of *Onsite Journal* featured an article on the Baltimore Charter.)

While the workshop provided a roadmap for future work and demonstrated a strong need for additional research, the funding for NDWRCDP's research on decentralized systems was discontinued by Congress. Some research is taking place elsewhere, but there appears to be only limited federal or state support for research on decentralized systems after the NDWRCDP program is completed in 2010.

A majority of WERF's non-federal funding comes from subscribers who collectively develop WERF's research agenda. Through participation at an annual meeting and/or a subscriber survey, research priorities for the organization are established. As new organizations with an interest in research on decentralized systems join the subscriber base, this topic will gain an increasingly higher priority and WERF will be able to conduct more work in the area. Further, as existing

WERF subscribers, such as consulting firms and wastewater utilities, become more educated on decentralized issues and more responsible for work on these types of systems, the call for additional WERF-supported research may grow and help support ongoing needs in the absence of future federal funding.

While the efforts of NDWRCDP during the past ten years have resulted in many advances in the field of decentralized wastewater and stormwater treatment, much work remains to be done. The support of stakeholders throughout the decentralized community will ensure that the research needs developed during the Baltimore Workshop will be realized. This in turn will further the appropriate use of decentralized and distributed management systems.

For more information on WERF's decentralized wastewater and stormwater program, please contact Jeff Moeller at 703-684-2461 or [jmoeller@werf.org](mailto:jmoeller@werf.org). ■

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## MARKETING & COMMUNICATIONS COMMITTEE

*Chair: Karen Borgeson*

The primary purpose of the NOWRA Marketing and Communications Committee is to develop effective communications and promotional strategies with external partners and other interests. Those strategies promote greater public awareness of NOWRA's programs and work on behalf of the overall onsite industry. The committee works with the Executive Director to identify and implement strategies that showcase the achievements of NOWRA and its members. To those ends, it produces the Association's publications, marketing materials, website, and homeowner-education materials, which promulgate information on NOWRA's national leadership in water-quality protection.

### Committee Membership

*Chairperson:* Karen Borgeson, SJE-Rhombus, Inc.

*Vice-Chairperson:* Mike Stoll, Netafim

Mary Clark, PremierTech & BOD Liaison

Myra Eldred, Ring Industrial

Darryl Cloud, Concrete Sealants

Jeff Coomer, Consolidated Treatment (Ad-hoc)

### Project Activity During 2007

The committee:

- Completed the Septic Locator on-line database
- Developed/updated:
  - Corporate Capabilities Brochure
  - Target Audience Brochures
  - Homeowner Brochure
- Supported the marketing efforts of the Conference Committee and the Website Committees.

### Meetings

- Monthly conference calls:
  - 1 to 1½ hours
  - 1st Tuesday of the month at 11:00 EDT
- Other conference calls as required.
- Face-to-face meetings at NOWRA Installer Academy, at the Annual Conference, and at other conferences attended by several members (Pumper Show, WEFTEC, etc.).

### Time Commitment of Members

Committee members are expected to devote a minimum of two hours/month to the committee's work. Some members join as ad-hoc members to assist with special projects.

### 2008 Primary Objectives

- Work with BTF to identify opportunities for generating revenue, including:
  - Model Code
  - Business Benefit Program
  - Improve marketing/promotion for the Installer Academy and Annual Conference.
- Undertake other projects:
  - Complete and implement the State Tool Kit
  - Incorporate the NOWRA look/logo/message into all NOWRA committee materials
  - Identify and implement the top three priorities in support of the state associations
  - Review/edit the *Onsite Journal*

### New Committee Members Needed

We need additional committee members with the following skills/expertise:

- Technical writing
- Website design and optimization
- Advertising/graphic design
- Conference planning and promotion, and/or membership growth

If you are interested in joining our committee, please contact or e-mail: **Karen Borgeson**—(888) 342-5753, Ext. 3426 or [Karen.Borgeson@sjerhombus.com](mailto:Karen.Borgeson@sjerhombus.com); **Mike Stoll**—(585) 615-6440 / [mstoll@netafimusa.com](mailto:mstoll@netafimusa.com)

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## TECHNICAL PRACTICES COMMITTEE

*Chair: Matt Byers*

At the Memphis meeting, the NOWRA Technical Practices Committee (TPC) in association with the Education Committee hosted a symposium dealing with nitrogen and onsite. The symposium was designed to bring in speakers from outside our field who are nitrogen experts. Among them, Stewart Oakley, University of California at Chico, squeezed a 3-hour talk into 45 minutes and enlightened us about nitrogen chemistry and basics. He explained that within waste treatment processes there are limits to what can be achieved in terms of nitrification and denitrification based on water chemistry. Art Gold, professor from University of Rhode Island, spoke on the subject of nitrogen sources and sinks. His message was that the environment processes nitrogen based on local site conditions. Consequently, he explained, we need to

*continued on page 20*

## NOWRA Committee Updates *(continued from page 19)*

understand the environmental conditions around our systems and beyond to understand the impact on the environment. There were other very strong speakers and good interaction from the attendees. Next year, probably there will be a technical symposium on pharmaceuticals and personal care products as they impact onsite—an important emerging issue.

The TPC continues to work with the Water Quality Association (WQA) in dealing with the ongoing “softener issue.” Allison Blodig chairs this important task force from the NOWRA side. At the TPC meeting in Memphis, WQA Technical Director Joe Harrison spoke and thanked the NOWRA group for its desire to seek understanding with WQA on this very important issue. Joe then worked through a few questions that the group had about softeners. The group included some of our strongest onsite personnel, who sought responsive comments on their practical questions. The NOWRA TPC recommends that any onsite professional that has concerns about any softening system should communicate with the local softener people or call the WQA and ask for a local expert that can help to sort out the issue. The WQA phone number is 630-505-0160; the web site is [www.wqa.org](http://www.wqa.org). NOWRA TPC also desires to work with WQA on generating a softener/septic guidance document based on what we know to date.

NOWRA TPC will continue to assist in paper reviews and addressing issues that affect the onsite industry.

**The Water Softener Task Force (WSTF)** is populated by 14 professionals who represent the Water Quality Association (WQA), the National Onsite Wastewater and Recycling Association (NOWRA), and the Consortium of Institutes for Decentralized Wastewater Treatment (CIDWT). The task force is equally represented in regulatory, educational, and manufacturing expertise. Most of what is being done concerns reviewing existing studies and being involved at some level with any new scientific studies that look at the affect of water softeners/conditioning systems on onsite wastewater treatment systems. Currently we are involved with one existing study and are working to organize five more. The task force is seeking funding to further the research. If anyone knows of available monies that could qualify for this effort please contact Allison Blodig at [bloa@premiertech.com](mailto:bloa@premiertech.com), Matt Byers at [matlb@zoeller.com](mailto:matlb@zoeller.com), or Joe Harrison at [joe@mail.wqa.org](mailto:joe@mail.wqa.org).

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### EXTERNAL AFFAIRS COMMITTEE REPORTS ON EPA MOU PARTNERS

*Chair: Mary Clark*

#### Mission Statement

The mission of the committee is summarized in the following description of EPA’s MOU (Memorandum of Understanding) Partnership: Partners creating pathways to integrate onsite/decentralized solutions into today’s water infrastructure.

The partnership project brings together eight public/private sector organizations—including NOWRA—to improve decentralized wastewater management in the U.S. Since its creation in 2005, the partnership project has generated many successes, marked by improved cooperation, collaboration, consultation, and communication among the partner organizations.

The partners included the following organizations working with EPA’s Office of Water:

- Consortium of Institutes for Decentralized Wastewater Treatment (CIDWT) [[www.onsiteconsortium.org](http://www.onsiteconsortium.org)]
- National Association of Towns and Townships (NATaT) [[www.natat.org](http://www.natat.org)]
- National Association of Waste Transporters (NAWT) [[www.nawt.org](http://www.nawt.org)]
- National Environmental Services Center (NESC) [[www.nesc.wvu.edu](http://www.nesc.wvu.edu)]
- National Environmental Health Association (NEHA) [[www.neha.org](http://www.neha.org)]
- Rural Communities Assistance Program (RCAP) [[www.rcap.org](http://www.rcap.org)]
- Water Environment Federation (WEF) [[www.wef.org](http://www.wef.org)]
- National Onsite Wastewater Recycling Association (NOWRA) [[www.nowra.org](http://www.nowra.org)]

#### Highlights

All partners work to provide the means of sharing conference training modules and booth space. The following are some of the successful projects that have been implemented by various partner organizations:

- NAWT’s expanding training program (including inspector, operation and maintenance, and vacuum truck training) held 26 training workshops in 2007 with 1100 participants.
- A joint credentialing program for system installers began in June 2006. It features training, testing, and credentialing by several of the partner groups through a standardized curriculum and test. The installer credentialing program is hosted by NEHA, but involved NAWT, NOWRA, and CIDWT. There are now almost 200 people who have Certified Installers of Onsite Wastewater Treatment Systems (CIOWTS) credentials.
- Model Code workshops are led by NOWRA but supported by all of the other organizations. NOWRA has partnered with NESC during SORA and with other partners to present the model code regulations and process.
- NESC’s SORA conference has continued to see an increase in partner involvement in the agenda and in the attendance of EPA personnel and the partners. Recently, NOWRA held the Regulator Model Code Workshop with SORA and NEHA offered regulators the opportunity take the CIOWTS installer exam during the conference.

- Partner participation in the WEF Small Communities Committee discussions has expanded the awareness of the value of decentralized systems in the overall infrastructure.
- CIDWT's decentralized wastewater treatment glossary project was finalized in 2007 and the glossary is posted on CIDWT's web site.
- The partners established the MOU booth and several materials for display at conferences and training events, including the credential fact sheet and the MOU Power Point presentation. The partners also developed a mission statement and banner for all the partners to display at the various conferences and training events.
- NOWRA has completed the development of an MOU web site that includes a calendar and bulletin board.

### The Future Shines Bright

The future of the MOU partnership shines bright. Due to its success, additional organizations have taken an interest in joining the partnership. A signing ceremony will take place on August 13, 2008, in Washington, DC. A new agreement will be signed by representatives from the existing partner organizations as well as those from four new MOU organizations: the Association of State and Interstate Water Pollution Control Administrators (ASIWPCA), the Ground Water Protection Council (GWPC), the Water Environment Research Foundation (WERF), and the State Onsite Regulators Alliance (SORA). There may be one or two additional partners, all sharing a common goal of water protection. The ceremony will be followed by a strategic planning workshop to direct the group's future endeavors.

Maintaining the momentum of the MOU partnership for the next three years will require a sustained supporting effort by the partners—especially in integrating the regulatory, policy, and research issues of the new partners into future MOU activities—while continuing to build upon the group's shared goals and common interests. As the partnership moves through the remainder of 2008 and beyond, there will be an increasing emphasis on improving consistency regarding decentralized wastewater management, and linking management to treatment technology, risk factors, and receiving waters. Training events, conferences, and workshops will continue to play a major role in maintaining the viability of the partnership and educating the public.

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### STATE LEADERS MEET TO DISCUSS FUTURE WITH NOWRA

*Chair: Hilary Moore*

On April 7, 2008, over 20 state leaders from 14 state associations gathered for the first of two state leaders' meetings to be held this year. The purpose of the meetings was to discuss

programs and issues occurring in the industry as well as within NOWRA.

The past two years have found the Affiliate Groups wrestling with an identity crisis: How do they fit into the NOWRA structure? Numerous conference calls, discussions, and meetings have identified key questions:

1. What does NOWRA do for each state association?
2. How do the state associations fit within NOWRA's structure and what is their purpose?
3. What are the goals and mission of NOWRA?
4. Why can't an open line of communication be kept between all groups?
5. Should NOWRA be able to provide more information to the states, including financial breakdowns?

Hope is on the horizon for getting these issues resolved. The April meeting proved to be refreshing in that open and honest dialogue occurred between the affiliates and the Board and new Management team. The affiliates learned that NOWRA is in the process of re-defining itself. NOWRA is trying to discover just who it is as an organization and where it fits into the onsite arena. The Board shared the financial state of the organization and its need to become sustainable, as well as the responsibilities of the new management team.

In turn, each representative provided input on current concerns and needs within its respective association. Those needs were presented, in order of importance, as a punch list that was distributed to the NOWRA Board. Needs included association software, national buying power, national voice, speakers bureau, strategic planning, best practices, website assistance, and leadership orientation. At the end of the meeting, the Management team vowed to provide new association software by which associations could submit their input.

In order to move forward, all parties need to work together as a team. A strategic planning session, currently scheduled for August, will provide an opportunity for state affiliates to work with the NOWRA Board to provide key input into the development of a stable association with benefits to all. Better lines of communication are being developed by which the Board meeting minutes, committee meeting minutes, and financial statements will be available to all NOWRA members. Eventually, these will be posted in a members-only section on [www.nowra.org](http://www.nowra.org). As the Local Affiliate Group Chair, I have been invited to attend Board and committee meetings and to provide input where needed. This will also be an opportunity to share our monthly meeting minutes with the Board.

The road ahead is full of promise if we each take the time to be involved, patient, and understanding. "Unity is strength . . . where there is teamwork and collaboration, wonderful things can be achieved." ■

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### ARIZONA ONSITE WASTEWATER ASSOCIATION

Arizona Onsite Wastewater Association (AzOWRA) held its 2008 Onsite Wastewater Educational Conference and Exhibition in Flagstaff on June 5–7, 2008. The program featured exhibitors and sessions devoted to the following topics:

- Implementing nitrogen management requirements for subdivisions
- NSF standards
- Graywater reuse
- Design.

In addition, the Arizona Transfer Inspection Program was the subject of workshops designed specifically for inspectors and real estate professionals.

A recent AzOWRA newsletter explored the direct and indirect economic impacts of the onsite wastewater industry in Arizona. During recent years of robust growth, when approximately 11,000 new onsite wastewater systems were installed, the direct economic impact resulting from new and existing systems was approximately \$100,000,000 per year. Moreover, the statewide indirect contribution of onsite wastewater systems was nearly \$3 billion per year. See details at [www.azonsite.org](http://www.azonsite.org).

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### DELAWARE ON-SITE WASTEWATER RECYCLING ASSOCIATION

#### On-Site Award

On May 1, 2008, the Delaware On-Site Wastewater Recycling Association (DOWRA) was proud to partner with the Delaware Technical Community College in presenting the second annual On-site Professional of the Year award. This award is given to an on-site professional who demonstrates a consistent and above average dedication to the betterment of the environment.

The winner of this year's award was Lisa Wood of Terra Firma Consulting. Lisa has long been a standout soil scientist in the private sector, while she also works with the Department on regulation amendments and database creation. Also, she serves on the On-Site System Advisory Board to ensure current and future licensees meet the necessary requirements for knowledge, experience, and education. Her tenacious work ethic and high professional standards continue to make their mark in the onsite industry.

### Committee Highlights

The Board of Directors and Committees have been busy in establishing new projects for this year. They include:

- Developing Realtor educational materials and classes
- Purchasing a septic model for educational exhibits
- Partnering with DNREC to assist with large-system guidelines
- Partnering with DNREC in commenting on Pollution Control Strategies
- Becoming a bigger voice within the industry.

### Conference

After four years of successful conferences at the Delaware State Fairgrounds, the DOWRA board has announced that the 12th annual DOWRA Conference and Exhibition will be held at the Dover Downs Hotel and Casino. With a format similar to that of past conferences, this year's conference will have a two-track presentation schedule and offer attendees the opportunity to network with exhibitors. The conference will be held on October 14 and 15, 2008. For more information contact Ken Walsh at [mks1@aol.com](mailto:mks1@aol.com)

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### KANSAS SMALL FLOWS ASSOCIATION

The Kansas Small Flows Association (KSFA) is in the process of planning its next annual conference. The dates have not been finalized, but the conference will be either at the end of January or the beginning of February. Also, we are planning to offer training courses throughout the year on subjects such as soils and a real-time installation.

KSFA still struggles with persuading contractors to attend training. In most cases, counties that require continuing education offer the training themselves without charge every year. Our new marketing initiative to the counties includes offering our training as a more cost-effective alternative for providing their installers with high quality training.

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### MISSOURI SMALLFLOWS ORGANIZATION

Missouri Smallflows Organization (MSO) continues to add new seminar topics for the onsite professional. The latest offering is a class on Onsite Pumps, Panels and Electricity. The

*continued on page 24*



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## Local Affiliate Updates *(continued from page 22)*

course is a one-day/six-hour addition to the current MSO offerings. The following is an outline of the course:

### Pumps

- Voltage choices—115, 230, 208, and 277
- The importance of horsepower in a pump
- Identifying and measuring current draw
- Learning how TDH and GPM influence pump choice
- Learning to read a pump curve
- Learning to create a system curve
- Understanding and learning how to convert PSI and TDH
- Grinders – Sewage – Effluent. Knowing the difference and understanding the application of each

### Panels

- Voltage choices—115, 230, 208, and 277
- Knowing the different enclosures and their ratings
- Understanding how to match floats with panels
- What is the HOA switch and how does it work?
- Time dose panels – How they work
- Volume dose panels – How they work
- Learning what a timer override is and when to use it
- Understanding elapsed time meters (ETM) and cycle counters (CC)
- Understanding what a Programmable Logic Computer (PLC) is and why we are starting to find them in onsite panels
- Understanding auto dialers and how they work

## **Attn: NOWRA Members** **You are invited to submit articles** **for publication in the *Onsite Journal***

- Articles should be submitted as email attachments in Microsoft Word format.
- Author biographies limited to 100 words must be submitted with article.
- All references need to be correctly cited using ASABE guidelines.
- Articles may be submitted at any time to the Editorial Board of *Onsite Journal*.
- All submissions are reviewed by the Editorial Board. Submissions may be returned to the author for revisions. The completed submission is reviewed by the Editorial Board for a final publication decision. The Editorial Board reserves the right to delay or withhold publication of any article.
- All published articles are the property of NOWRA. Permission to reprint an article must be obtained from NOWRA.

Email articles to [info@nowra.org](mailto:info@nowra.org) with the subject line "OSJ Submission."

### Electricity

- Basic electric current
- Safety
- Voltages
- How to calculate costs of electrical usage
- How to read an electrical schematic
- How to read a multi-meter
- Knowing when to call in the pros

MSO also offers seminars on Drip Irrigation and Design, Troubleshooting Onsite Systems, Hydraulics for Onsite Systems, and Operation and Maintenance of Onsite Systems. More information on seminars can be found on our website: [www.mosmallflows.org](http://www.mosmallflows.org) or call 417-739-4100.

Currently, the Missouri Department of Health and Senior Services requires 20 continuing-education contact hours over a three-year period as a prerequisite for renewal of the onsite professional's state registration. MSO has planned to present training seminars at 30 locations throughout the state in 2008 in order accommodate installers by minimizing their time away from the jobsite.

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## **OHIO ONSITE WASTEWATER ASSOCIATION**

The Ohio Onsite Wastewater Association (OOWA) and the Operator Training Committee of Ohio (OTCO) have teamed up to sponsor a 2-day event for everyone in the onsite industry, including contractors, service providers, pumpers, designers, and regulators. It will take place at the Roberts Conference Centre in Wilmington, Ohio, on July 31 and August 1, 2008.

On the first day, the OTCO Sewage Treatment System Installer, Service Provider, and Septage Hauler/Pumper Workshop will be held. Topics will include legislative updates, the STS component approval process, and site/soil evaluations. There also will be various industry-specific breakout sessions.

On the second day, OOWA will present its unique Vendor's Day. During that event, attendees can gain hands-on knowledge about the newest onsite industry products at stations where vendors explain their product's design and implementation and discuss proper installation and maintenance. Questions from the attendees are welcomed. Attendees spend about 30 minutes at one station and then move on to another. That process continues throughout the day, giving everyone the opportunity to take part in the presentations at twelve stations.

Exams for the Certified Installer of Onsite Wastewater Treatment Systems (CIOWTS) credential will be offered after the workshop on July 31. This is a national credential that certifies installers of onsite water treatment systems. The different exams for basic level and advance level will be offered concurrently. Registration will be at 5:30 pm and testing will begin at 6:00 pm. For more information on the exams, visit NEHA's website at [www.neha.org/onsite](http://www.neha.org/onsite) or contact Heidi Shaw at (303) 756-9090, ext. 339, or at [credentialing@neha.org](mailto:credentialing@neha.org).

For more information on the Workshop/Vendor's Day event contact OOWA toll free at 866-843-4429 or at [oowa@ohioonsite.org](mailto:oowa@ohioonsite.org).

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## VIRGINIA ONSITE WASTEWATER RECYCLING ASSOCIATION

Planning is underway for the annual Educational Conference and Trade Show of the Virginia Onsite Wastewater Recycling Association (VOWRA). The event will take place on October 12–15, 2008, at the Inn at Virginia Tech and at the Skelton Conference Center on the campus of Virginia Tech in Blacksburg, Virginia. If you would like to be included on the mailing list for Conference details and information, please email [vowra@shentel.net](mailto:vowra@shentel.net) or call (540) 465-9623.

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## WASHINGTON ONSITE SEWAGE ASSOCIATION

### Training Professionals for the Industry

May 2008 marked the accumulation of 13 years during which the Washington Onsite Sewage Association (WOSSA) has trained onsite professionals in the design, installation, operation, and maintenance of onsite systems. Providing people with the skills and training to support the emerging infrastructure in Washington has benefited the Association, the industry, the regulatory community, and the consumer. In the 2007–2008 training season, we had more than 700 attendees in our classes.

Our educational endeavors have allowed us to make strategic partnerships with many of our local health jurisdictions and to pursue other valuable opportunities. In June of 2008, for example, WOSSA will begin to support Clallam County in conducting training sessions for instructing homeowners in inspecting their onsite systems. The County had struggled with determining the appropriate technology level at which to engage the typical homeowner. Eventually, they settled on a pilot program that limited homeowner inspections to simple gravity systems. We look forward to working with the homeowners directly to get a better understanding of their knowledge level and providing them with information on protecting the environment.

### \$20,000 in Scholarships Awarded to Members' Children

At the annual conference in January, our exhibitors' contributions, raffle proceeds, and other gifts raised over \$30,000 for our annual competitive scholarship program. The fund was further augmented by \$12,000 realized by the design and installation of a system by local WOSSA members organized by Ken Moody of Environmental Earth Systems along with Bio-Microbics.



*Over 700 onsite professionals attended WOSSA's training classes during 2007–2008. The classes focused on the design, installation, operation, and maintenance of onsite systems.*

The Board approved a total of \$20,000 to be divided between 50% of this year's applicants. The first award is to be \$5,000 with subsequent awards to be in lesser amounts totaling up to the maximum of \$20,000. Scholarship America Inc., based in Minneapolis, MN, is the program manager for WOSSA. We are excited to provide these resources to our members' children as they set out to pursue their higher education. Congratulations to the winners!

### Reaching Out to Our Consumers with Talk Radio!

With the approval of the Board in May, WOSSA is moving forward with a community radio program that will reach up to 250,000 KVI listeners in Western Washington. Kirby Wilber, Shaun Hannity, and WOSSA will host a one-hour talk show titled "Septic Solutions." We will talk about urban myths, discuss issues concerning on site systems, and allow people to "call in" and get straight answers to their questions. We are in the development stage now, putting together advertising and program partnerships to help underwrite the \$40,000 that it will cost to air the program for 26 weeks. We expect that the show will begin to air in the fall

### WOSSA Website Upgraded

With the help of a talented Board Member—Eric Evans with E-Onsite—we have changed our website to make it interactive. Online registration for WOSSA events will be available and members can post employees-wanted and equipment-for-sale advertisements. Take a look at [www.wossa.org](http://www.wossa.org)

Contact John Thomas at: 253-297-2837  
or email [wossa1@hotmail.com](mailto:wossa1@hotmail.com)

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### YANKEE ONSITE WASTEWATER ASSOCIATION

The Yankee Onsite Wastewater Association (YOWA) was formed in 2006 to provide an organization for wastewater professionals across the New England region. As the newest NOWRA affiliate, YOWA represents the states of Maine, New Hampshire, Vermont, Massachusetts, Connecticut, and Rhode Island. Our current membership stands at 85 individuals. Our current officers are: Steven Corr (MA) – President; Russell Martin (ME) – Vice President; Daniel Ottenheimer (MA) – Secretary/Treasurer; and John Higgins (MA) – Past President.

In September 2007, YOWA hosted its first educational program—a one-day seminar titled “Alternative Treatment Techniques.” The program was held in Randolph, VT, and drew over 65 participants. YOWA also lent its support to the Northeast Short Course, held in Groton, CT, in March 2008, which drew over 250 participants from the region. YOWA representatives recently took part in the Vermont Small Community Sewage Solutions Conference on June 4, 2008.

As a growing organization, YOWA is concentrating efforts in the following areas:

- Increasing the membership throughout the region
- Broadening the membership base to represent all the public and private sectors involved in onsite wastewater treatment and dispersal

- Supporting educational opportunities when appropriate
- Providing a comprehensive newsletter to the membership to document past and upcoming events of interest.

Submitted by Russell G. Martin, PE  
YOWA Vice-President/State Affiliate Representative

## IN THE NEWS

Were you or a NOWRA colleague the subject of a news story? The story could have been in your local newspaper, an association newsletter, online news or other format. Send copies of the article to NOWRA to be included in the next *Onsite Journal!*

### PHOTOS WANTED!

Submit photos of NOWRA members in the news for publication in the *Onsite Journal*.

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# NOWRA 18th Annual Technical Education Conference

National Onsite Wastewater Recycling Association

## 2009 CALL FOR PAPERS

Midwest Airlines Convention Center • Milwaukee, Wisconsin • April 6–9, 2009

The National Onsite Wastewater Recycling Association (NOWRA) welcomes abstracts for papers to be presented at the NOWRA Annual Conference in Milwaukee, Wisconsin, on April 6–9, 2009. Milwaukee will serve as a great location due to its position in the center of the Midwest, in the southeast corner of Wisconsin, and on Lake Michigan's western Shore.

The NOWRA annual conference serves as the premier conference for the conveyance of new research; regulations and policy; and experience and practices in the decentralized wastewater industry. The conference's exposition hall provides an invaluable opportunity to network and view the current and emerging technologies in decentralized wastewater treatment.

In addition to the three-day annual conference covering a broad range of topics relating to onsite/decentralize wastewater treatment, NOWRA will be hosting a pre-conference workshop on April 6th focusing on Pharmaceuticals and Personal Care Products in Wastewater, Surface Water, and Groundwater and will have a track at the conference from April 7th through April 9th focusing on the range of related issues.

### Two types of abstracts are open for considerations:

1. Technical topics including both case studies with limited data and research projects with a larger data set.
2. Policy topics dealing with regulations and policy, management, etc.

### They can be presented in a range of formats:

- A. Poster
- B. 30–45 minute presentations in either breakout or plenary sessions
- C. Panel discussions from 45 minutes to a full day
- D. Topic-focused seminars from half to a full day

### All subject matter related to decentralized systems is open for submission, including:

1. Technical
  - a. Influence of onsite systems on the surrounding eco systems
  - b. Modeling the fate of wastewater constituents: treatment processes and soil environments
  - c. Treatment processes: process level understanding of commonly used treatment components
  - d. Innovative products, technologies, and solutions for wastewater treatment
  - e. Pharmaceuticals and personal care products
  - f. Nitrogen-related research and case studies
  - g. Cluster system design and application
  - h. Reuse case studies and research
  - i. System performance evaluation
  - j. Modeling of decentralized systems
  - k. Soil and site evaluation research and evaluation tools
  - l. Fundamental decentralized related research
2. Policy
  - a. Standards, regulations and policy
  - b. Effective planning and management
  - c. Cluster systems
  - d. Responsible management entities

- e. Performance standards
- f. Reuse
- g. Education, training, and certification
- h. Successful planning and management strategies to assure performance
- i. Integrated water resource management strategies

### Abstract and Paper Deadlines

1. Abstracts submittals are due by September 10, 2008.
2. They will be submitted electronically at NOWRA's website at: <http://www.nowra.org/abstracts.html>
3. Confirmation of abstracts submission will be sent via email within one week of the abstract being received.
4. Individuals will be notified of the Education Committee's selection by October 8, 2008, and provided with instructions regarding paper criteria and format. A draft agenda will also be provided at this time. This information will also be available on the web site.
5. Approved submittals are to be produced as papers and submitted via the website to the Education Committee for review and editing by January 7, 2009.
6. Comments and/or edited papers will be returned to the author by February 11, 2009.
7. Final papers must be provided to the NOWRA Headquarters office by March 4, 2009, in electronic format to be included in the proceedings and conference.

### Submittal Procedures

The following information is needed to submit your paper via the web site:

1. Title of paper
2. Abstract: 200–300 word description of the proposed paper and presentation
3. Name of Lead Author and Presenter
4. Affiliation of Lead Author/Presenter
5. Address of Lead Author/Presenter
6. Phone number and email address of Lead Author/Presenter
7. Names of co-authors, if any
8. A short biography of Presenter in paragraph form that includes educational degrees and description of experience as it relates to the onsite industry.
9. Abstract Type
  - a. Technical
  - b. Policy
10. Format for presentation
  - a. Poster
  - b. 30–45 minute presentations in either a breakout or plenary sessions
  - c. Panel discussions from 45 minutes to a full day
  - d. Topic focused seminars from half to a full day
11. Session topic in which your paper best fits (see above list)

Questions about the applicability of topic should be discussed with Committee Chair Sara Christopherson by email at [shc@umn.edu](mailto:shc@umn.edu) or by phone at 612-625-7243.

# Local Affiliate Groups and NOWRA Upcoming Events

## October 2008

12–14 **Virginia Onsite Wastewater Recycling Association**  
*Conference and Tradeshow*, Blacksburg, VA  
Contact: Trapper Davis at 804-966-9190 or  
[www.vowra.org](http://www.vowra.org)

14–15 **Delaware Onsite Wastewater Recycling Association**  
*12th Annual DOWRA Conference*, Dover, DE.  
Contact: Hilary Moore, 302-739-9331 or  
[Hilary.Moore@state.de.us](mailto:Hilary.Moore@state.de.us)

18–22 **WEFTEC**, Chicago, IL  
Contact: 800-666-0206 x2 or [www.weftec.org](http://www.weftec.org)

## December 2008

8–10 **National Onsite Wastewater Recycling Association**  
*4th Annual Installer Academy*, Las Vegas, NV  
Contact: 800-966-2942 or [www.nowra.org](http://www.nowra.org)

## January 2009

13–14 **Iowa Onsite Wastewater Association**  
*11th Annual Conference*  
Polk Count Convention Complex, Des Moines, IA  
Contact Alice Vinsand, Inc. at (515) 225-1051 or  
[www.iowwa.com](http://www.iowwa.com).

13–15 **Michigan Onsite Wastewater Recycling Association**  
*58th Annual Michigan Onsite Wastewater Conference*, East Lansing, MI  
Contact: Ted Louden at (517) 353-3741

23–24 **Washington On-Site Sewage Association**  
*13th Annual Conference*  
Contact: [www.wossa.org](http://www.wossa.org)

30–31 **Wisconsin Onsite Water Recycling Association**  
*2009 Annual Convention*, Madison, WI  
Contact: Ann Gryphan at (608) 256-7701 or  
[www.wowra.com](http://www.wowra.com)

## April 2009

6–9 **National Onsite Wastewater Recycling Association**  
*NOWRA Annual Conference and Expo*  
Milwaukee, WI  
Contact: (800) 966-2942 or [www.nowra.org](http://www.nowra.org)

**ONSITE** journal  
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## COPY/ADVERTISING DEADLINES

### Summer 2008 Issue — July 22

Theme: *Installers Academy • Contractor Focus*  
*Septic Tanks and Pumping Stations*

### Fall 2008 Issue — Sept 19

Theme: *Regulations and Environmental Impacts*  
*Management Technologies*

For more information, please call: **1-800-966-2942**



## NOWRA 18th Annual Technical Education Conference

Midwest Airlines Convention Center  
Milwaukee, Wisconsin  
April 6-9, 2009

The National Onsite Wastewater Recycling Association (NOWRA) will present the NOWRA 18th Annual Technical Education Conference in Milwaukee, Wisconsin on April 6-9, 2009. Milwaukee will serve as a great location due to its position in the center of the Midwest, in the southeast corner of Wisconsin, on Lake Michigan's western shore.

In addition to the three day annual conference covering a broad range of topics relating to onsite/decentralize wastewater treatment, NOWRA will be hosting a pre-conference on April 6th focusing on Pharmaceuticals and Personal Care Products in Wastewater, Surface Water, and Groundwater and will have a track at the conference April 7th through April 9th focusing on the range of related issues.

For More Information Visit  
[www.NOWRA.org](http://www.NOWRA.org)

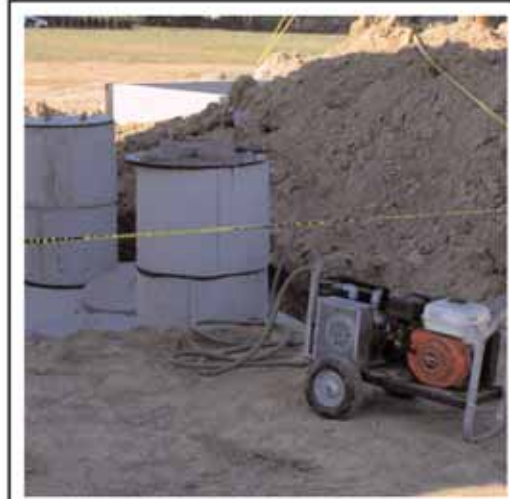
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