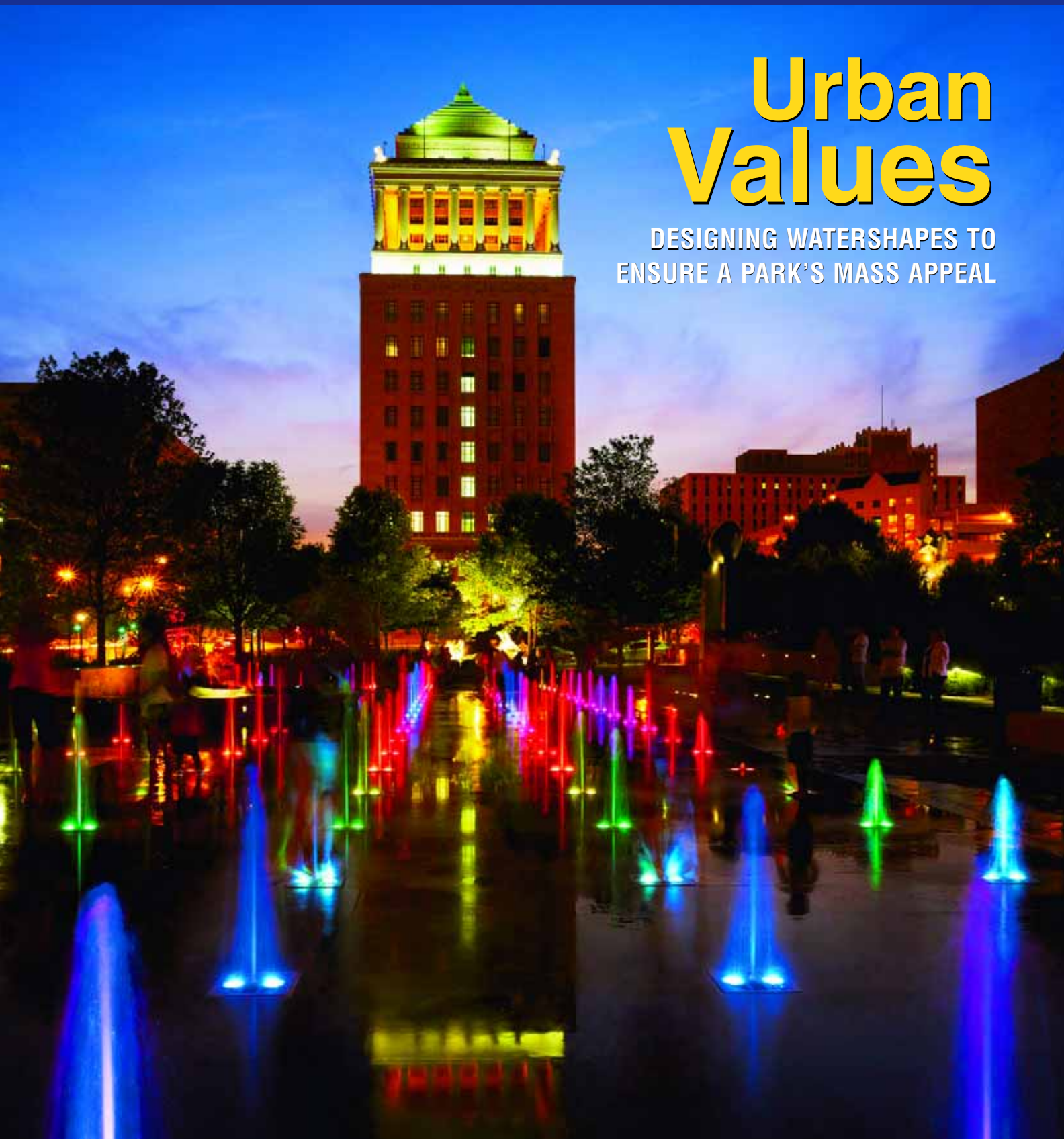
WATERSHAPES
Design
Engineering
Construction

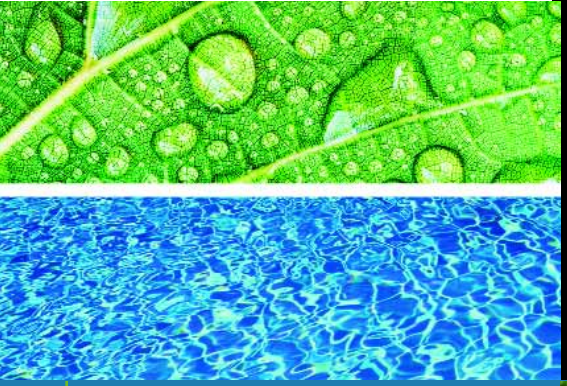
Volume 12
Number 1
January 2010
$7.00

INSIDE: Green Roofs • Integrated Design • Softening Pond Edges



Urban Values

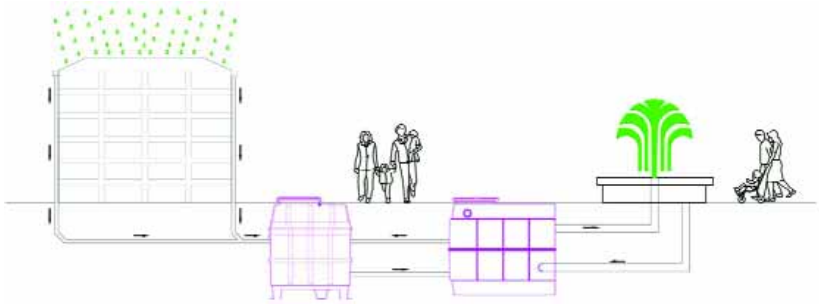
DESIGNING WATERSHAPES TO ENSURE A PARK'S MASS APPEAL



Introducing Rainwater Harvesting Systems from Roman Fountains®

— America's Green Fountain Company! S.M.

- Sustainable Sites
- Water Efficiency
- Energy & Atmosphere
- Materials & Resources
- Innovation & Design



Capture • Contain • Control • Circulate

(Sustainable Solutions for Our Changing Planet) S.M.

U.S. GREEN BUILDING COUNCIL MEMBER

roman fountains®

America's (Green) Fountain Company! S.M.

AMERICAN SOCIETY OF LANDSCAPE ARCHITECTS CORPORATE MEMBER

Leading the way on LEED™ Certification

www.romanfountains.com

1-800-794-1801

Atlanta • Albuquerque • Phoenix • Los Angeles

For more info, go to www.watershapes.com/ads

Contents

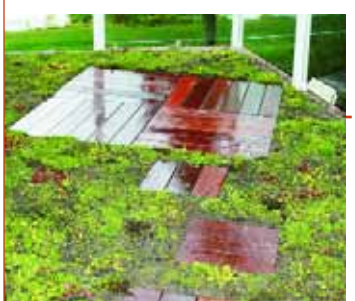
january 2010

Features

Volume 12 • Number 1

WATERSHAPES

Columns



Departments

On the Cover: Photo by Steve Hall, Hedrich Blessing Photographers, Chicago; courtesy Hydro Dramatics, St. Louis

WATERSHAPES (ISSN 1522-6581) is published monthly by McCloskey Communications, Inc. 6119 Lockhurst Dr., Woodland Hills, CA 91367. A controlled circulation publication, *WaterShapes* is distributed without charge to qualified subscribers. Non-qualified subscription rates in the U.S., $30 per year; Canada and Mexico $48 per year; all other countries $64 per year, payable in U.S. funds. Single copies $10 per issue in the U.S. and Canada. All other countries $15 per issue. Subscription requests must include name, job title, business location, address information and a signature and date.
POSTMASTER: Send address changes to *WaterShapes*, P.O. Box 1216, Lowell, MA 01853-9930.
Periodicals postage rates paid at Woodland Hills, CA 91365 and additional mailing offices.

Reasons to Believe

By Eric Herman

Although I've done it on a couple occasions through the past 11 years, I've always had trouble writing columns that welcome a New Year – even when times have been good and there have been reasons aplenty for lavish doses of optimism. I just don't like clichés, and they're amazingly difficult to avoid when you look to the future with no clear idea of what's to come.

The last thing I want to do right now is hold out hope for instantly better times. The past two years have been swallowed up by the most brutal recession of my lifetime, and I get the sense that all of you might gag if I wrote about blue skies, puppies, silver linings and the coming of a new dawn. This is, in short, a time for weighing and acting upon hard realities rather than indulging in greeting-card aphorisms.

You don't want a hollow pep talk, and I don't much feel like delivering one.

For all that, however, my assessment of the current situation leads me to believe that we are indeed headed for better times – not out of the weeds just yet, but making significant progress on many key fronts. The economy is growing again, the housing market has stabilized, and I even hear murmurings about new residential construction having turned a corner.

That's all interesting macro-level stuff, but what has me more fascinated these days are the anecdotes I'm hearing from watershapers coast to coast. A great many of you start by thanking your lucky stars that you work the custom market and had the foresight to spend the past several years upping your game and figuring out better ways to serve affluent clients. Then some of you tell me that you're nearly as busy as you've ever been and, in many cases, that you have the sense you've broken through into a whole new marketplace that isn't so subject to the whims of the general economy.

I'm even more thrilled to hear from these professionals that inquiries, leads, requests for proposals and bids are all up – *way* up in some cases – and that if just a fraction of those jobs come through, 2010 might be a banner year.

In the midst of all this, we now know that swimming, hydrotherapy and aquatic exercise of all kinds are getting great press these days. I also can't help loving the fact that the projects crossing my desk are, in many cases, light years more advanced than those I saw five or seven or ten years ago, both aesthetically and technically. And then there's the environment: We know that a "Green Revolution" has arrived and is exercising a strong influence on how watershaping's top professionals are approaching the future.

Facing facts in the clear light of day, we should view the year to come as one requiring retrenchment and reconsideration, but also as one that will carry abundant opportunities for growth to those enterprising enough to rise to the occasion.

Bottom line? I have the feeling that the phrase "Happy New Year" may well be more poignant and prophetic than it has been in times past. To better days!

WATERSHAPES

Editor
Eric Herman – 714.313-6136

Associate Editor
Melissa Anderson Burress – 818.715-9776

Contributing Editors
Brian Van Bower
Bruce Zaretsky
Mike Farley
Mark Holden
Mike Gambino
Dave Peterson

Art Director
Rick Leddy

Production Manager
Robin Wilzbach – 562.342-4012

Circulation Manager
Simone Sanoian – 818.715-9776

National Sales Manager
Camma Barsily – 310.979-0335

Web & Marketing Consultant
Lenny Giteck – lennyg123@sbcglobal.net

Publisher
James McCloskey – 818.715-9776

Publishing Office
McCloskey Communications, Inc.
P.O. Box 306
Woodland Hills, CA 91365
Tel: 818.715-9776 • Fax: 818.715-9059
e-mail: main@watershapes.com
website: www.watershapes.com

Letters

Dear Editor: I was taken aback by RicoRock's advertisement appearing in *WaterShapes*' October 2009 issue (page 19) and its assertion that using artificial rock is less damaging to the environment than is using natural stone.

I am certainly not opposed to creative promotion in a down market, but in this case the ad reaches beyond the creative and indulges an aggressively negative message about natural stone that is, in my view, misleading.

It begs a simple question: Which product really *is* more environmentally friendly? The ad points out that the use of natural stone depletes the supply of surface stone found in the natural environment. At the same time, it fails to mention that, although some quarrying is done irresponsibly, it can be done in ways that limit its impact on the environment.

The ad also fails to note that, with respect to energy consumption, environmental contamination, reusability, durability and life-cycle costs, natural stone may be a better choice than cement-based artificial rock. After all, cement is quarried from the earth, too, and the processes by which it is extracted also have the potential for doing environmental damage.

Certainly I am not opposed to the cement industry or to the cement products of which RicoRock is just one example, nor am I opposed to fair marketing and the promotion of products' environmental benefits. What I *am* opposed to is the exaggeration of claims in the promoting of one product type at the expense of another.

If a product has merit, won't it stand on its own without questionable claims and comparisons?

Matthew Mueller
Siloam Stone
Canon City, Colo.

The response: We stand by our observation that depleting surface rock is forever changing natural habitats.

Yes, artificial rock uses concrete, but it does so very efficiently and represents just a tiny amount of the concrete used in the United States. Moreover, on a per-acre basis, the harvesting of surface rock disturbs many times the very few acres we use to produce our cast rock.

Bruce Riley
RicoRock
Orlando, Fla.

LIFE PRESERVER

The DECK-O-SEAL System: Extra Insurance for Your Investment

Protect, enhance, and beautify your pool deck, walkway, or patio with our expanded DECK-O-SEAL line of products for concrete, brick pavers, natural stone or decorative concrete. The DECK-O-SEAL line also includes the DECK-O-DRAIN® and Signature Series Redwood drainage systems to solve all your deck drainage problems.

deck-o-seal®

deck-o-seal
A Division of W. R. MEADOWS®, INC.
P.O. Box 397 · Hampshire, IL 60140
Phone: 800.542.POOL · Fax: 847.214.2268
sales@deckoseal.com · www.deckoseal.com

For more info, go to www.watershapes.com/ads

In This Issue

January's Writers

Peter Cattano is president and owner of Paco Pools & Spas, a design, installation and service firm for residential and commercial watershapes in Baldwin, N.Y. His career in the swimming pool industry spans 50 years, beginning with work as a student for various contractors associated with his father, Peter Cattano Sr., who invented and manufactured Hi Perm swimming pool filters. Cattano opened Paco Pools & Spas in 1980 following his father's death. Active in the industry through the years, he has been president of the Long Island Chapter of the National Spa & Pool Institute and is a past president of NSPI Region I. He is also a graduate of the Genesis 3 Design Schools.

Steve Sandalis is founder and president of Mystic Water Gardens, an Encino, Calif.-based designer and installer of custom streams, waterfalls and ponds. Sandalis founded the firm in 2000 after several years of pursuing watergardening as a serious hobby. Since then, he has immersed himself in the arts and crafts of watershaping and currently designs and installs highly detailed watershapes for a range of mostly residential customers across the United States. A former model and actor, Sandalis appeared on more than 700 covers of romance novels published by Topaz, a division of Penguin Books, and has appeared in a variety of movies, television programs and commercials. A native of Commack, N.Y., he began working in the construction trades as a child with his father and uncles – all of them contractors in the area.

Jeff Freeman is founder and owner of Fluid Logics, an Upland, Calif.-based manufacturer of electrolytic chlorine generators. In addition to being a licensed Certified Pool Operator (CPO), he has been inventing, guiding agency regulatory policy and lecturing before countless watershaping organizations for more than 30 years – while also participating as a designer, consultant and builder of many noteworthy watershapes. Recently, Freeman has dedicated his career to the advancement of water purification and sanitization technology. He can be reached at *jeff@fluidlogics.net.*

Kerry Friedman is vice president and general manager for Hydro Dramatics, a St. Louis-based fountain consulting and design firm and division of Missouri Machinery & Engineering Co. With more than 35 years' experience in the water-pumping and hydraulics industries, Friedman has played a pivotal role in creating a number of the company's projects in St. Louis, including all of the waterfeatures at the Missouri Botanical Garden; the Grand Basin and Jewel Box in Forest Park; projects

Approved by NSF or UL (UL File No. SA8564)

NSF UL VGB 2008

Waterway™

Be Sure It's Genuine

©2009 Waterway Plastics • 2200 Sturgis Road, Oxnard, CA 93030 • Ph. **805-981-0262** • waterway@waterwayplastics.com • www.waterwayplastics.com

ws0110

For more info, go to www.watershapes.com/ads

at St. Louis University and the St. Louis Zoo; and the Gateway Geyser in East St. Louis – the tallest vertical-jet fountain in the United States. His credits nationwide include My Big Backyard at the Memphis Botanical Garden; The Legends at Sparks Marina, Nev.; and the Bob Kerry Pedestrian Bridge in Omaha, Neb. Friedman also has applied his expertise to projects in San Juan, P.R.; Doha, Qatar; and for the U.S. Embassy in Moscow.

Once each year in January, we provide fuller biographies of our columnists:

Brian Van Bower operates Aquatic Consultants in Miami and is a co-founder of the Genesis 3 Design Group. With more than 40 years' experience in the swimming pool and spa industry, he now specializes in the design of swimming pools, recreational areas and hydrotherapy clinics. As a consultant, he also conducts training and inspections and serves as an expert witness in insurance investigations. From his start with pools in 1967, he's been a pool manager, service technician and contractor, operating Van Bower Pool, Patio & Spas from 1971 until 1991. He began consulting in 1989 and co-founded Van Bower & Wiren in 1995 to specialize in high-end pool-construction projects. He's been active in trade associations throughout his career at the local, regional and national levels, has won numerous design awards and has been inducted into the Swimming Pool Hall of Fame.

Bruce Zaretsky is the owner of Zaretsky and Associates, a landscape design/installation/consulting firm in Rochester, N.Y. Since starting in the landscape design industry in 1979, he and his firm have become nationally recognized for their creative and inspiring landscapes and waterfeatures in projects ranging from small residential spaces to innovative public projects. Zaretsky also works as the Landscape Consultant to the Town of Penfield, working with developers to ensure that the city's beauty is preserved. He teaches courses on landscape design and installation at the Chicago Botanic Garden and at national landscape conferences, and his firm has placed emphasis on conceiving and installing healing and meditation gardens for healthcare facilities and on promoting sustainability and conservation in the landscape industry.

Three columnists contribute to 'Currents': **Mark Holden** is a landscape architect, contractor, writer and educator specializing in watershapes and their environments. He has been designing and building watershapes for more than 15 years and currently owns several companies, including Fullerton, Calif.-based Holdenwater, which focuses on his passion for water. His own businesses combine his interests in architecture and construction, and he believes firmly that it is important to restore the age of Master Builders and thereby elevate the standards in both trades. One way he furthers that goal is as an instructor for Genesis 3 Design Schools and also as an instructor in landscape architecture at California State Polytechnic University in Pomona and for Cal Poly's Italy Program. He can be reached at *mark@waterarchitecture.com.* **Mike Gambino** owns and operates Gambino Landscape Lighting in Simi Valley, Calif. A graduate of Adelphi University with a bachelor's degree in business administration, he has been a California-licensed landscape contractor since 1990. In 1995, he began specializing in high-performance low-voltage landscape lighting systems designed and built to last. For more information, visit his web site: *www.gambinolighting.com.* **David Peterson** is president of Watershape Consulting of Carlsbad, Calif. He's been part of the watershaping industry since 1994, when he began working for an engineering firm that specialized in large aquariums and marine-mammal exhibits. In 1998, he stepped onto the manufacturing side of things with Polaris Pool Systems, ultimately serving as vice president of engineering there before starting his own firm in 2004 to support industry professionals with design, engineering and construction-management services. He earned a BS degree in civil engineering in 1995 from the California State Polytechnic University at San Luis Obispo and is a registered civil engineer.

Mike Farley is a landscape architect with more than 20 years' experience and is currently a designer/project manager for Claffey Pools in Southlake, Texas. After receiving his degree in landscape architecture from Texas Tech University, he began his professional career in California with a high-end landscape-design firm through which he became involved in several pool-remodeling projects. He later joined Geremia Pools in Sacramento, Calif., where he worked for six years before returning to Texas in 1998. A graduate of the Genesis 3 schools, he assumed his current position in the fall of 2003.

The complete UV solution for sanitation and dechloramination in semi-commercial and commercial pools and spas

Delta UV
Ultraviolet Solutions

Better for you, safer for the environment

GO GREEN

SOLUTIONS FOR YOUR EVERY NEED

UV technology is rapidly gaining recognition in pool water treatment. The World Health Organization (WHO) and the Centers for Disease Control (CDC) support UV as being the only real available technology for the eradication of Cryptosporidium and Giardia micro-organisms. Stories about pool closures and outbreaks are frequently reported in the news. In addition, consumers are looking for "green" and water efficient solutions. Delta UV is the only company offering such a large range with both technologies and complete certification / evaluation.

Healthier For You And Your Customers

- Deactivates 99.99% of micro-organisms (bacteria, viruses, etc.) and especially chlorine resistant Cryptosporidium and Giardia
- Improved air quality for bathers and pool personnel
- Helps prevent asthma and allergies
- 50-75% reduction in combined chlorine levels (less chloramines, especially NCL_3)

An Installed Unit

More Sales, Higher Profits

- Expand your business by offering a green alternative
- Value for money for pool professionals

- Additional margin thanks to a targetedbulb replacement program

Cost Savings

- 25-60% savings in water costs due to reduced water renewal
- Reduced corrosion in enclosed pools environments
- Pays for itself in 9 to 24 months

Customer Testimonial

"I have been in the swimming pool industry for more than 20 years, and there are few products that have impressed me as much as the Delta UV systems...After some basic plumbing, the installation was virtually plug and play."

UV Water Sanitation and Dechloramination for every pool and spa (50 - 4000 GPM)

ELP SERIES

Delta UV offers a complete line of commercial and semi-commercial pool and spa UV sanitizers. The EM Series and ELP Series are NSF-50 annex H certified and Cryptosporidium efficiency evaluated.

Both series:

- Deliver at least 60 mJ up to the end of lamp's life
- Offer UV-C sensor monitoring, flow control, and temperature sensor, and more

EM Series sanitizes 100 - 4000 GPM
(best efficiency for high-flow rates)
ELP Series sanitizes 50 - 396 GPM
(preferred application for low-flow rates)

EM SERIES

Call Now 1 (866)-889-8765

Visit us at the Atlantic City Pool and Spa Show
Booth #1331 - Jan, 26-28 2010

www.deltauv.com
email: info@deltauv.com

Deficits of Trust

By Brian Van Bower

The *Harvard Business Review* recently published results of an interesting survey: Overall, they said, some 75 percent of those contacted reported diminishing trust in U.S. business managers and their companies; moreover, their faith in educational institutions, product suppliers and government is on the decline as well – but not to quite such an extent.

It all seems gloomy and pessimistic, but I couldn't be surprised by the findings. In fact, I can even imagine things being much worse, because for some time I've been observing an unfortunate trend in which we, as a people, have permitted our society to become one in which trust is almost a lost virtue and cynicism has become the norm.

It's a sad state of affairs, but on too many levels, it's reached a point where many of us simply do not trust other people – and are even more distrustful of institutions and organizations. What's developed instead is a world in which there's an almost perverse value placed on "getting yours" from someone else, no matter the means or the consequences.

I remember a time when running a small business meant that your best intention was to provide value to clients by operating from a foundation of knowledge, hard work and reliability.

all around us

This condition is so pervasive and crept up on us so gradually that I can only hope this explains why we haven't done a better job of recognizing it. This is why, for example, we've come to expect and accept the fact that large corporations seem to swindle the public and their own employees with such regularity; that the government so easily misleads us about the costs and ramifications of its programs; and that politicians make big promises and invariably fail to deliver on them while seeming to feather their own nests.

We've all been scammed so repeatedly that, sadly, we seem to be getting accustomed to it.

Some would say that, as a result, we've come by our current cynicism justifiably, but the upshot of this trend is that too many of us *start* from the premise that the vast majority of the people around us have loose relationships with the truth and are always looking out for their own interests. That's just the way it is, they say, in a dog-eat-dog world.

For all that, I remember a time when running a small business meant that your best intention was to provide value to clients by operating from a foundation of knowledge, hard work and reliability. Now, however, all too often I hear candid admissions that business today is all about finding people you can exploit – and ways of doing so that involve the least effort and the greatest profit.

I also remember a time when bankruptcy was an unacceptable outcome, a personal disaster of massive proportions rather than something openly promoted as a solution to all sorts of financial woes. Thirty years ago, the idea that anyone would have to file bankruptcy meant taking on an enduring stigma. Nowadays, it's the fast, easy way out from under foolishly accumulated debt.

Yes, there are times and situations in which bankruptcy is the right path to take, but it's reached a point where using it as a means of escaping debt has become so accepted that it's almost celebrated as a good thing. Personally, I view it as a form of le-

WHAT IS AT THE HEART OF YOUR AQUATIC PUMP ROOM?

The Answer...

AcuDrive™ XS

VARIABLE FREQUENCY DRIVE

Aquatic pump installations will never be the same...

Call us today!

Save Energy • Save Cost • Save Time

Eco Select

Pentair Water

Pentair Water

Commercial Pool and Aquatics™

800-831-7133

1620 Hawkins Avenue

Sanford, NC 27330

WWW.PENTAIRCOMMERCIAL.COM

Aurora® 341 Series™

EQ Series®

Find more information on the Aurora® 340 Series™, EQ Series® pumps and AcuDrive XS™ variable frequency drives on our website or contact customer service at 800-731-7133.

For more info, go to www.watershapes.com/ads

galized theft – and another in a long list of signs that, as a society, we're losing our moral compass.

And things have gone so far that suggesting another path (as I am here) and arguing that dignity, quality and value are practical concepts that should govern our working relationships opens a person to being called a Pollyanna and getting dismissed as someone incapable of seeing things as they really are. To the contrary, I think I see things *exactly* as they are, but I refuse to accept that cutting corners and failing to meet commitments are virtuous behaviors, and I also feel compelled to call things as I see them.

And anyway, how did we reach a point where it's naïve to believe in integrity, honesty and trust?

eyes open

Some people who've heard me expound on these concepts call me "Mr. Happy" and tell me my optimism about the way the world should run is simply unrealistic.

This stings me occasionally, because nobody really wants to be seen as being unschooled in the ways of the world. But then I consider "reality" from the point of view of those who have accepted cynicism as a guiding principle: Among these are some who are serially embroiled in conflicts with clients, vendors and business contacts and who quite often find themselves caught up as losing-end participants in lawsuits.

Among these cynics (to bring things home) are those watershapers who are constantly on the lookout for fear of running into past clients at shopping malls or in grocery stores.

There's a brutal irony here: As watershapers, we're all in the business of providing products that bring combinations of beauty, recreation, relaxation and pride into clients' lives. Our aim is to create gathering places and sources of family fun. We seek to present clients with all the best life has to offer, but all too often those who create these spaces have proved so untrustworthy that those clients won't greet them civilly, let alone as friends.

Certainly, it can be argued that times are tough and that we all need to look out for ourselves. In such business climates, some say, a certain level of chiseling is to be expected – just look at the tolerance for athletes who break drug rules; citizens who cheat on taxes as a first resort; corporations that raid pension funds with impunity; and governments on local, state and national levels that have trouble acting as stewards of the public's resources.

So cynicism thrives, they say, and who are we to resist a rising tide?

Well, I guess I'm among those who think something should be done. It may sound naïve in this day and age, but I would argue that we can still live our lives and conduct our businesses based on a belief that trusting others and being trusted has value. And I do so partly because I'm weary of listening to those who say that honesty, competence and social integrity are the passé vestiges of an idealism that died long ago.

The fact is, lots of time and effort goes into cheating people, hiding bad intentions and living with lies. I choose an easier path and a different life in which I devote myself to using my time, energy and talent to do my best and deliver honest-to-goodness value.

The best byproduct of this approach is that I enjoy the benefits of being trusted by others and can (for the most part) return the favor by trusting people in return. In doing so, I have enjoyed a wonderful measure of success, have a great time in the process and have reached a point where I can only wonder why so few of us seem to recognize that it's much easier to follow this high, trustworthy path: I sleep well at night, have lots of friends, enjoy unexpected pleasures when they arise and experience a life led well.

making it work

Of course, there aren't switches here that you can flip on and off at will.

To trust others, for starters, you must first be worthy of trust yourself. Some might think the opposite is true, but in practice, being trustworthy is what enables you to understand what it takes and, more

important, to recognize it in others. And the best thing about running into other trustworthy folks is that it tends to draw you into whole communities where trust has been established as a common value.

We see manifestations of this all the time: There are some people who, because of their actions and their interactions with others, both embody and project integrity and credibility. You see it in the way they move, in the things they choose to say, in the things they choose *not* to say and, mostly, in how they represent themselves. Sure, there are those who try to fake it, but in my experience, people who carry themselves with the confidence of the trustworthy will (most of the time) turn out to be the real deal.

So what does it take to develop that confidence and come to trust and be trusted?

From a business standpoint, it means delivering what you say you will. That sounds simple, but if it were so easy, there wouldn't be nearly as much conflict (or so many lawsuits) as we see all around us. The fact of the matter is, too many people over-promise and under-deliver – or just flat out lie to get what they want or where they think they need to be.

My experience and observations lead to a different path on which you reach trustworthiness by constantly striving for excellence: It's by far the straightest path to being trusted and finding yourself in the company of those you can trust. If you are the very best at what you do, you can approach clients with confidence and honesty and then follow up on the expectations you set without worrying that somewhere along the line that you'll be found out as a fraud.

If you follow this path, all of a sudden you find yourself in a world filled with colleagues rather than competitors. In fact, when people ask me how I cope with the competition these days, I tell them I don't need to because nobody out there does exactly what I do. As I see it, I've set myself apart by becoming educated and constantly reaching for excellence: In any given situation, I believe I'm the best at delivering what my clients need, and from that point it's a matter of following through on what I know I can do.

What this requires, of course, is a large measure of honesty with myself and a willingness to think about these issues clearly and objectively. Am I someone who can be trusted? Are there occasions when I'll compromise and work with those I don't trust? Do my business practices result in conflicts with clients or other professionals engaged in my projects? Am I honest in these relationships, or do I need to bend the truth from time to time?

I'm brutally honest with myself when it comes to these reflections. Unless you, too, can be completely straightforward in your own reckonings, this whole discussion is futile.

Continued on page 18

waking up

As I see it, taking the time to reflect in this way is critical – and if there's something positive to be said about the current economic climate, it's that most of us have been given unprecedented opportunities and more than enough time to examine ourselves and where we stand. So sit down and, as I do frequently, take a hard look at yourself and your business and determine for yourself if you're where you want to be. If trustworthiness has been a problem for you, learning to believe in your ability to think these sorts of issues through will be a great first step.

Second, seek outside opinions and advice. This can seem counterintuitive in that you might end up asking or even paying someone to tell you that the way you've been doing things is wrong or somehow off base. As tough as that might sound, getting reliable outside counsel can open your eyes to issues you haven't considered or fully realized.

(Back in May 2009, Mike Farley devoted his wonderful "Book Notes" column in *WaterShapes* to Jeffrey Gitomer's *Little Teal Book of Trust*, another worthy resource that might prove valuable in your deliberations.)

Third, make a plan: Identify a goal and define the steps you'll need to achieve it, recognizing that almost anything of value is accomplished over the long haul – and that very few things are completely beyond your reach.

To those of you who would say this all sounds too simple, even childish, I counter by saying, *if it's so damned easy, how come so few people have taken these basic steps?* Ultimately, being trustworthy and having the judgment and confidence to trust in others are flip sides of a single coin that reflects the core of what and who you are as a professional and a person.

The irony of this discussion is that those who probably need it most are probably infrequent readers of magazines of the caliber of *WaterShapes* or nonparticipants in educational programs of the sort offered by Genesis 3. Odds are that those of you who *do* read and use this magazine *and* take advantage of available educational opportunities are already moving along this path. Unfortunately, those on the outside may never perceive the most obvious of truths: The values we live by are the values we impose on ourselves, and being worthy of trust is one of those that defines the essence of who we are as people.

Sure, I'm being preachy, but I've seen these principles work in my own life and business and in the lives and businesses of countless others I've met and worked with through the years. Elevating your game *does* work, but you have to free your mind to think not only in terms of achieving great things for yourself, but also for involving and elevating those around you.

Finally, to those who would say that, in any economy such as this, there's no self-help regime that can change the fact that business has dried up and cupboards are bare, I would argue that in this market, trust and integrity are absolutely *the* most important of all commodities. When things are good, people don't watch their pennies quite as carefully and might be more willing to take chances – but that's certainly not the case right now.

It may be in short supply in our society, but I would say that trust is what we need most these days. Those of you who are already trustworthy bring to the marketplace something special and of immeasurable value, and it's my bet that the most trustworthy among us are those who thrive in bad times and will always reap the greatest benefits from the good.

Without fear of contradiction, I know I am correct in this: *Trust me.* WS

HAYWARD®

Introducing
Hayward Commercial

Dedicated people and products for commercial pools and spas

It's time to raise your expectations of a commercial equipment supplier. We're bringing your commercial pool and spa business an exceptional level of customer service, expertise and products, backed by 45 years of Hayward Industries commitment. You can count on our dedicated commercial team for a broad base of specialized commercial products such as plastic pumps up to 12.5 hp, gel-coated filters in 30- and 36-inch sizes, controls affording chemical automation and advanced web-based communication systems that can revolutionize how you manage facilities. To learn more about Hayward Commercial products, call a specialist toll-free — 1-800-657-2287.

Total System: Pumps | Filters | Heating | Cleaners | Sanitization | Automation | Lighting | Safety | Parts & Accessories

On the Level

One of the most exciting things happening in our industry these days is the emergence of green roofs as a practical option. Literally, this involves treating a rooftop as we would a ground-level site (at least in design terms).

Up on the Roof

By Bruce Zaretsky

Like it or not, we're all on the front lines of the environmental sustainability movement.

In fact, as shapers of water and land, few are in better positions than we are to make a difference, with many of us frequently working alongside architects, municipal officials and developers and being asked to design and implement green approaches that minimize a given project's effects on its surrounding environs.

As I see it, this offers us not only a golden opportunity to shape the future of land development and architecture, but also to rise from our customary place near the bottom of the design/construction totem pole by providing compelling, well-considered and effective answers to environmental challenges related most significantly to water reclamation and filtration.

I've jumped into this arena with both feet just recently, and in the course of the coming year I'll be using this space to share my trials, tribulations and, I trust, triumphs in these areas. Partly, my ambition is to cajole all of you into agreeing that this is a path you should watch and follow, but I also want to examine the realities, facts and figures and demonstrate that this pursuit is viable for (and valuable to) all of us in the exterior design/construction professions.

reaching higher

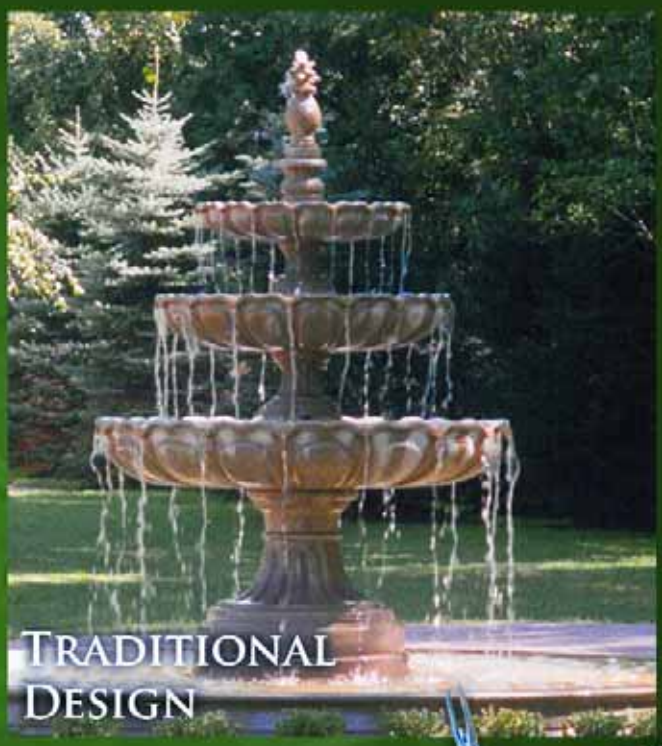
One of the most exciting things happening in our industry these days is the emergence of green roofs as a practical option. Literally, this involves treating a rooftop as we would a ground-level site (at least in design terms). With proper engineering, in fact, we can install all of the same things we might install at ground level up on rooftops, including decks, watershapes, cabanas and other structures.

This is, of course, nothing new, and "green roofs" have been around for nearly as long as civilization itself. The Hanging Gardens of Babylon, for instance, were among the Seven Wonders of the Ancient World; sod roofs have been in common use in northern climes for untold years; terraced rooftop gardens were in vogue during the Renaissance; and more than 100 years ago, innovative Germans started using rooftop vegetation to reduce fire risks related to the use of tar.

Heck, 30 years ago I myself spent a lot of time installing gardens on rooftops of high-rise buildings in New York, filling planter boxes with topsoil, small shrubs, perennials and even trees. Back then, it was meant to lend a grace note to urban living. Today, however, green roofs have been "elevated," as it were, and have become integral, functional building features valued for saving energy and conserving and filtering precious water resources.

This reconsideration comes at a time when insulation, heating systems, waterproofing, ultraviolet-resistant membranes and fire departments are all remarkably efficient, so in the back of my mind I've long wondered why everyone's so excited about putting plants on rooftops. What is the purpose? Is there really so great a benefit other than the trendy "coolness" factor?

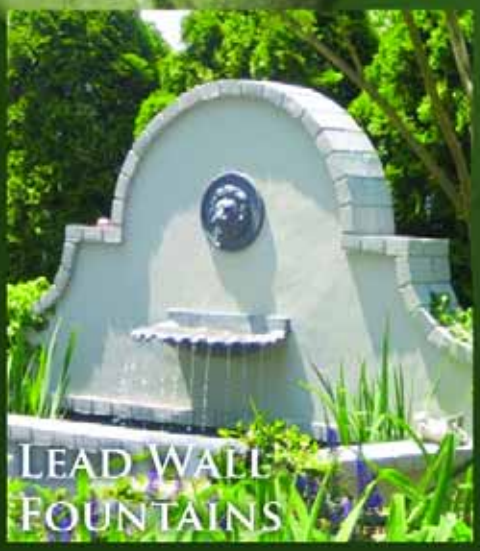
As I've read up on things, followed the literature and basical-

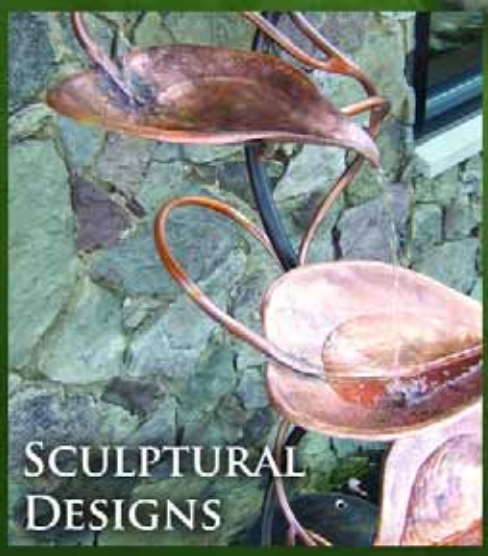


114 Willenbrock Road
Oxford, Connecticut 06478
203.264.2831 Fax 203.264.2833
www.klynchandsons.com

Kenneth Lynch & Sons

Craftsmen of Fine Garden Ornament





All products are made to order and have the possibility of being customized to meet your unique needs.
We look forward to collaborating with you.

Contact us today to receive your copy of our 460 page catalog "The Book of Ornament" with included price list, $15 includes shipping.

ly found myself being pulled in this direction by clients and colleagues, I've heard all sorts of reasons why this is important – not the least of which is that I'm being asked to create these special environments for use by actual *people* rather than to meet some practical conservation program.

In that light, I'm seeing these projects in a whole new way: These aren't novelties or some passing trend; rather, this is a whole new frontier in exterior design and gives us access to a clientele that has long been denied the simple pleasures that come with walking in private or public garden spaces.

thick and thin

Before we get into the details of current projects that have triggered this cascade of thoughts for me, I believe a quick primer on the types of green roofs is in order. For simplicity's sake, there are essentially two types of green roofs: extensive and intensive.

- *Extensive roofs* are simple to install and in many cases can be retrofitted onto existing roof structures. (Before we get even a step farther along, I want to stress the *absolute* necessity of involving structural engineers at every step of the way in designing and installing even the most innocent-seeming green roof. Failures in these cases are often spectacular – and sometimes catastrophic.)

An extensive roof calls for only a thin planting medium, typically in the range of three to six inches, and finished weights in the vicinity (at most) of 50 pounds per square foot – an approach that makes the substructure much less critical. The tradeoff for light weight is a smaller planting palette, as you're generally limited to using shallow-rooted types such as sedums and grasses.

These spaces can include sitting areas and other spaces for human activity, but the orientation is usually more practical and is focused on catching, filtering and recycling water rather than sending it to waste. Given the thin soil base, irrigation is needed in most parts of the country to keep the plants alive during the warmer or drier months.

- *Intensive roofs*, by contrast, are more involved and costly to install. They start with a much thicker planting medium (ranging from minimums of eight inches and reaching depths of four feet or more in some cases) and are mainly installed over engineered concrete roof systems designed to support the extra weight of soil, plants, structures and water at levels that can approach 150 pounds per square foot.

The upside with these programs is that the plant palette is much wider: Very large shrubs and even trees can be accommodated. Proper irrigation and drainage systems are a *must* with these installations, because no more than a carefully determined amount of (heavy) retained water can remain on the roof.

This need to be weight-conscious leads to use of many tricks to hold overall mass within tolerances. In many areas, for example, extruded Styrofoam insulation is used to build up areas where elevations are needed (and deep-rooted plants aren't), such as on raised lawn areas. These and other measures are used to minimize the overall load.

Whichever way a project goes, the concepts of construction for both extensive and intensive green roofs remains the same: The roof surface itself needs to be waterproofed in one of a number of ways (using EPDM liners, spray-applied liquid rubber or coal-tar applications, to name a few) – the basic point being that this membrane is the most critical feature of green roof installation.

The applied surface must be flooded to test its watertightness, and a business has already grown up around testing these systems for leaks. Once the roof surface is leak-proof, the lining system is protected with a heavy geotextile atop which a drainage/water-retention layer is placed. In some cases, an insulating layer is next in line, but if it's left out, installation proceeds with a root barrier (typically a woven fabric), then the planting medium, then the plants.

Membrane Longevity

One of the concerns about green roofs is how long they last relative to surface systems used on conventional rooftops.

The plain fact is, a properly installed green roof system, protected along the way from construction-related damage, will last significantly longer than a ballasted rooftop (that is, a liner covered with gravel). Even the lifespan of the least expensive membrane (that is, EPDM, which is typically guaranteed for 20 years) can be doubled.

Moreover, many green-roof systems are installed using modular systems and planting trays, so in some cases the greenery can simply be lifted off the roof in the event that liner repair or replacement is required.

– B.Z.

counting the benefits

So now that we've rolled through Green Roofs 101, what does it all mean? Why is it of such vital current interest?

Already, a huge number of entire books have been compiled to answer those questions, but I'll keep it short and sweet: Green roofs have *tremendous* insulating capabilities that result in substantial savings in the costs of both heating and cooling. These days, that's enough on its own to have gotten the bandwagon rolling.

And the numbers are indeed impressive. In one Canadian study, for instance, it was found that a common, single-story building with a grass roof growing in

slightly less than four inches of soil reduced summer cooling costs by 25 percent. Another study found that a six-inch, extensive-style green roof reduced heat gains by 95 percent and heat losses by 26 percent. And research on Chicago's City Hall found that on a day when the outdoor air temperature was in the 90s and the black-tar portion of the roof warmed to 169 degrees, the half-acre *planted* portion of the same roof checked in between 91 and 119 degrees.

There have been numerous other studies as well, with all of them showing similar results. And not only do these insulating properties help reduce heating and cooling costs, but they also lead to another, less obvious benefit in that, in many cases, the equipment used for heating, ventilating and air conditioning can be reduced in size, thereby lowering initial costs, ongoing operational costs and other costs associated with installation of conventional insulation.

But there's more, and this is where things get exciting for watershapers in particular: Beyond insulation, the main virtue of green roofs is their ability to aid in the control of stormwater runoff – an area in which watershapers' familiarity with strategies for containing and controlling water come in quite handy.

Especially in urban environments – and particularly with huge, warehouse-type buildings – the amount of water that can run off a rooftop during a large storm is significant and problematic. In many large cities, moreover, storm and sanitary sewers are interconnected and carry all water to sewage treatment facilities. In times of significant rainfall, these systems can be overwhelmed by the volumes of water running through them, resulting in diversion of the sewage portion of the flow to surrounding waterways. In my hometown of New York, for example, this means that raw sewage sometimes flows untreated directly into the Harlem and Hudson Rivers.

With enough green roof development in urban areas, much of that stormwater can be slowed and/or retained by the vegetation and drainage layers, thereby significantly reducing the flow of water to the storm sewers. This is especially important in the first minutes of the storm events.

A few more numbers tell the story: In summer, green roofs retain from 70 to 90 percent of the precipitation that falls on them, while in winter they retain between 25 to 40 percent. With enough green roofs, we can help to alleviate the massive burdens imposed on combined sewer systems during rain events – and there are even proposals that will give property owners tax breaks or credits if their green roofs do not tie into sewers at all.

Do It Right

If you're going to get involved with green roof development, take very seriously how you design and install them and surround yourself with tried-and-true manufacturers and advisers.

Toronto-based Green Roofs for Healthy Cities has an entire educational curriculum available for anyone willing to take the time to attend their yearly conferences and ongoing sessions. I believe they've gathered the best manufacturers and installers in the world to teach and inspire. You might also take a look at Green Living Technologies (Rochester, N.Y.) and at Zinco, a German company with decades of experience: Both of them offer seminars and happily impart their wisdom on this very promising subject.

– B.Z.

and then some

Another huge benefit of green roofs is that they filter the water that falls or flows on their surfaces. With proper planning, the retained water can, in many instances, be used to irrigate the roof itself in dry times or to maintain gardens at ground level. There's also the possibility of using this "gray water" to flush toilets in the building, thereby reducing the substantial volume of potable water used for such purposes.

There's much more: Green roofs have aesthetic appeal, thereby making real property more valuable; reduce the heat-island effect; improve quality of life for employees who have access to these green spaces, thereby improving productivity; reduce sound infiltration; and provide space for recreation and habitats for birds and insects. In some cases, there's also an opportunity for growing food – one of the many ways building owners can generate positive impressions about their properties.

In other words, green roofs have such a wide range of possible benefits that they give watershapers and landscape architects and designers who move into this specialty new types of projects to pursue and all-new stories to tell along the way.

In our case, we're now working with officials in Rochester, N.Y., in trying to implement urban gardens on rooftops and in vacant lots in some of the neediest parts of the city. Food production is, to me, a grand-slam no-brainer and an amazing opportunity. Just think: People can walk out their apartments' front doors, take an elevator to the roof and pick a few tomatoes and cucumbers for that night's dinner.

If for no other reason than to provide healthful food sources in urban areas, we should all explore the installation of green roof systems wherever it's feasible.

Yet for all the virtues these rooftop environments encompass, it's still tough to persuade property managers (especially developers) to buy into this concept. With more and more people looking to LEED certification as a selling tool, however, we can explain to them that a green roof will earn them credits in many categories – by reducing site disturbance, minimizing heat-island effects, managing stormwater flows, providing water-efficient landscaping, improving wastewater systems – and wowing everyone with innovation in design.

So far, much of the green-roof movement is being underwritten by municipalities rather than by private owners, but that will inevitably change as those very municipalities reap the benefits of these designs and eventually require them in local codes. As I see it, we watershapers and landscape professionals have a golden opportunity to jump in here energetically, aiding in water-conservation efforts while making urban life more pleasant for everyone.

For the moment these may just seem like cool, trendy spaces, but a time is coming when they'll become commonplace for the good of the planet – and undoubtedly for our businesses! WS

Your Vision... Our Expertise.

For over 30 years, Hydro Dramatics has designed stunning, world-renowned fountain systems and water features across the United States and abroad.

Types of projects include:

- high-end residential
- public parks
- botanical gardens
- corporate/commercial
- monumental public art

Call us to find out what we can do for you.

(314) 231-9806

Hydro Dramatics

The Fountain Division of Missouri Machinery and Engineering Company

1228 South Eighth Street • St. Louis, MO 63104 • www.hydrodramatics.com

To make the most of the water used in the systems we build, we must completely understand all of the ways that water enters and exits them.

Inflows and Outflows

By Dave Peterson

In most watershapes, we circulate and treat water through use of pumps and filters – and although we still don't think about it much these days, we do so because fresh water is in precariously short supply and we can't simply fill and dump it as we please.

Yet even a perfect watershape – that is, one devoid of leaks, never subject to splash-out and never in need of backwashing – occasionally requires the addition of new water if only because evaporation will carry it away, bit by bit. In fact, there's no way to cut Mother Nature out of her share, *or* to keep her from meddling with the level of any outdoor pool through precipitation.

To make the most of the water used in the systems we build, we must completely understand all of the ways that water enters and exits them. That may seem simple and obvious, but it's actually a fairly complicated subject when you dig into it and consider influent and effluent in all of their various forms.

by defintion

I'm an engineer by training, and I know through both education and years of experience that the water in any watershape is subject to physics and the principles of conservation of mass, energy and momentum.

Let's take a swimming pool and its treatment system as an example: We know that evaporation transfers a certain mass of water beyond the surface boundary and into the atmosphere, so if we want to maintain the water mass in the pool (and also want to avoid having to do it manually), we must install an automatic filling device to transfer external water across the surface boundary, usually through a three-quarter-inch potable-water line. This is called an *influent*.

Precipitation is also an influent, either as rain, snow, ice or even wind-blown water from adjacent decks or separate bodies of water. For this reason, we should always include an overflow port called the *effluent*. So at this point we have a pair of influents – the autofill device and precipitation – as well as a pair of effluents in the forms of evaporation and overflow.

Those are the main players, but there are more. Consider the drain plugs on simple cartridge filters, for example. They are not used much, but they represent potentially significant outflows. Even more significant are the backwash ports of sand and diatomaceous earth filters, which can send hundreds or even thousands of gallons to waste. Of course, effluents of this sort are always balanced on the influent side because autofill devices do what they need to do to maintain watershape volumes in steady states by automatically filling them to desired set points.

It's important to note that the influent sources of water must be healthy. Obviously, we don't want the introduced water to contain bacteria, viruses, pollutants, toxins, colors, odors or other contaminants. For this reason, we use *potable* water sources – that is, water that's fit to drink.

Potable water can originate from a city's domestic water supply, a well or some other source. The key requirement is that it must meet generally accepted water-quality parameters for healthy, drinkable water and should require no further treatment.

Continued on page 28

"Experience A New Era"

NATIONAL PLASTERERS COUNCIL
21st NATIONAL CONFERENCE

February 3-5, 2010
The Ritz Carlton Hotel, New Orleans

EDUCATIONAL • INFORMATIVE • BEST PRACTICES
ENLIGHTENING • INSTRUCTIVE • REVEALING • USEFUL
ENJOYABLE • ENTERTAINING • AFFORDABLE
NETWORKING • OPPORTUNITIES • SAVINGS
REUNION • CELEBRATION • INSPIRATIONAL

YOU"RE CORDIALLY INVITED TO JOIN US FOR
The 21st Annual National Plasterers Council Conference

Book your room today, as we WILL sell out! Standard Room: $139.00
Discount Code: APKAPKA Make your reservation by calling the
Ritz Carlton directly at (800) 826-8987

For more information or registration information contact NPC at (941) 766-8788 Or visit our website at www.npconline.org

In truth, potable water is usually pretreated in some way before it arrives at our kitchen sinks. If the source is the local municipality, for example, its water utility filters and chemically treats the water before it moves into extensive networks of water mains and residential laterals and ultimately reaches the tap. To prevent pathogens from developing in city water supplies, it is common for the water to leave the treatment plant with a certain residual of chlorine – one that survives and can be detected at the faucet.

moving downstream

We take the reliability of these municipal and other water systems for granted, but potable water is in short supply these days in many parts of the country. This explains why water conservation is so large a consideration and has led to so much recent emphasis on the use of *reclaimed water* for a variety of purposes.

Unfortunately, this reclaimed water is unsuitable for use in almost all watershapes. The water originates in sanitary sewers (that is, it's the water from toilets). To be sure, it is subjected to several treatment systems that produce reasonably clean water, and while it is definitely not drinkable, it can be used for various other purposes. This is why some cities have developed parallel "purple pipe" networks – reclaimed-water lines that distribute it to irrigate public golf courses, parks and landscaped areas. In some cases, this water is also made available for residential use – but *only* for irrigation.

Again, this water is not for consumption by humans or animals, which is why these lines are identified with the color purple and places where it is used have signage warning against drinking it. Once this water passes into the soil, there's essentially no risk, and plants actually benefit from the nitrogen, phosphorus and other contaminants it carries.

With people and pets, it's a different story. We know that, when swimming, it is almost impossible to prevent water from getting in our mouths, eyes, noses and ears, so use of reclaimed water in pools and spas is definitely out. And if you're thinking that fountains and other decorative waterfeatures aren't intended for human contact and might be candidates for reclaimed-water use, think again.

In fact, even if nobody ever interacts *directly* with these waterfeatures, it is possible (and indeed likely) that even a slight breeze can combine with water vapor, overspray or atomization to produce airborne water – and if the airborne water is contaminated and inhaled, it could be dangerous or even deadly. (Legionnaire's disease killed 34 people staying at a posh hotel when contaminated water vapor was accidentally distributed through its air conditioning system.)

Is it possible to use reclaimed water in watershapes? Yes, it can be done, but only if the water is strenuously pretreated to meet drinking-water standards can it be recycled into a watershape. Also, there are some watershapes that can use reclaimed water directly, including man-made wetlands – but only if contaminant levels are sufficiently low and/or those contaminants are of types compatible with wetland systems.

With those thin exceptions, use of this water is definitely *not* indicated with any watershapes.

filling up

Now we come to the autofill system itself. In my business, we always start with a potable-water supply terminated with a valve so that, if necessary, the supply can be shut off for watershape maintenance.

From a construction-contract standpoint, we generally require the owner to provide a water line and isolation valve of the correct size and get very specific about where and how the connection will be made. That seems simple, but every once in a while you run into a surprise.

We built a pool for a residence a few years ago, for instance, where we knew the only point of connection was via a tee cut into the lateral line between the water meter and the front of the house. What we *didn't* know was that the builder had used a new PEX plastic plumbing system that requires special crimped fittings – and it cost us about $700 to hire a certified plumber to make the connection. We didn't know about the unusual pipe, and because the contract didn't specifically exclude unusual connections, we ended up eating the plumber's fee.

After the isolation valve (which may be far from the rest of the autofill equipment), we set up a wye strainer, a backflow preventer (usually of the pressure-reducing-valve type) and a high-quality brass solenoid valve.

The *wye strainer* prevents debris from entering the components – a lesson we learned after a small pebble jammed open a solenoid valve so that it leaked and made a pool overflow. This happened twice, and it was all because the landscape contractor responsible for extending the water supply to the equipment area didn't bother to flush the system properly before telling us it was ready for our connection (and we didn't think to flush it either).

The *backflow preventer* is required by the International Plumbing Code to keep water from the pool (considered "contaminated" by pollutants) from flowing back up the line to the kitchen sink. (In freezing climates, it is important to use backflow preventers designed for use in cold conditions.)

The *solenoid valve* is the autofill system's main operating component – a mechanical device we choose with care. We've found that the plastic solenoid valves shipped with certain electronic autofill devices can crack under pressure and fail over time, so now we typically use brass valves from Rain Bird (Azusa, Calif.). Beyond pools and spas, we occasionally use mechanical autofill devices for certain waterfeatures. The details are all the same, but solenoid valves are not used and pressure regulators are sometimes added because the float valves perform better at 40 psi.

The last detail to consider in system design is the size of the autofill components. We work with a minimum of three-quarter-inch lines, moving up from there (to two inches in the case of large commercial pools) depending on the surface area of the watershape and anticipated losses to evaporation in the range of a quarter to a half inch per day across the entire surface. We size the system to replace that evaporated volume in 20 minutes so that, theoretically, the day's water needs can be handled in one shot before the autofill controller shuts off for the day.

effluent destinations

Now that we have examined where and how water enters our watershapes, it's time to consider *overflows* and the three primary places it can go when it moves out of a watershape: into the landscape, into a storm drain or down a sanitary sewer.

In some projects, more than one of these will come into play depending on what, specifically, is being discharged. In addition, there are some regions in which storm drains and sanitary sewers are combined – a factor that definitely affects system design. As a rule however, you *don't* want to send overflows into sanitary sewers.

Generally, sanitary sewers are sized to handle domestic waste from houses and are not large enough to handle storm runoff. In fact, the flow from a good-size storm can easily exceed sewer capacity, which can result in sewer backups that will send hazardous material out onto the street.

Residential pools can have tremendous surface areas to collect precipitation. In the Southeast, for example, rainfall studies show that up to six-and-a-half inches can fall per hour in limited bursts. In Toronto, rain fell at a rate of nearly eight inches an hour on a stormy day in August 2005. That's a lot of water in a hurry, and we should also plan for a contingency in which the autofill system fails or a pool's operator leaves a manual filling line open.

Our rule of thumb is that we use a three-inch overflow line for each 1,000 square feet of surface area. Even that will struggle to keep up with a short, high-intensity burst of rain, but in practical terms, it doesn't make sense to design all systems to accommodate hundred-year storms.

So where do we send all of that rainwater? When it comes to precipitation, it is preferable to discharge the overflows to the landscape whenever possible so that the rain and snow will enter the soil and eventually replenish our diminishing groundwater supplies. In freeze/thaw regions, these discharges need to occur away from structures, including watershapes. In California, some cities require the overflow to run to daylight in a swale, with any excess runoff not absorbed into the ground to be picked up by an atrium grate and carried through a curb-core to the storm drainage system.

That's interesting, because, typically, people see pool water as being contaminated with chemicals and think that it should never be allowed to flow to groundwater or into a storm drain. While certainly there are cases where copper-based algaecides discharged in large volumes to a coastal estuary might kill fish and other aquatic life, the vast majority of overflows pose no such threat.

After all, watershapes will overflow only during heavy or prolonged storms, basically because there's approximately two to three inches of freeboard between the maximum operating water level and the

elevation of the overflow port. Peak rates of six-and-a-half or even eight inches seldom last more than a few minutes, so even then the water level is unlikely to exceed the freeboard in one burst.

To be sure, a prolonged storm might eventually exceed the freeboard, but when the pool overflows, the escaping water is predominantly fresh rainwater that has just fallen from the sky and any contaminant content will be quite diluted relative to the huge volume of the pool's water.

sensible caution

Yes, water overflowing from the pool may carry contaminants, but only in much-diluted forms. And when that effluent mixes with the incalculable volume of rainwater that *didn't* fall on the pool's surface but instead fell on roofs, streets, decks and landscapes, the chemistry is so diluted that it would be hard to detect contamination at any ecologically significant levels.

Furthermore, these overflow incidents are the exception rather than the rule, and the output of common, smaller rainfall incidents will be completely stored within the watershape's freeboard, at which point evaporation between cloudbursts will continuously create new capacity.

There are, of course, the other effluent sources – namely, filter backwashing and equipment-maintenance drainages.

In the former case, the water flows backward through the filter medium to dislodge debris (and some of the medium itself) and send it to a discharge point. We don't want to discharge this effluent to a storm drain because it is fouled by chemicals and debris. Indeed, diatomaceous earth should never be sent to storm drains or sanitary sewers, with separator tanks usually being required to keep the media out of these systems.

For large watershapes (or where water is scarce), backwash systems are also sometimes discharged to recovery basins where small, low-rate filters reclaim the water by collecting and concentrating the debris. These small filters are usually backwashed with potable water, but volumes and flow rates are much lower, the net result being reduced water usage and effluent volume. (This is common practice in seawater systems at places such as Sea World, where Shamu's waste needs to go to the sanitary sewer but the seawater does not.)

As for discharges from the small maintenance drains on the underside of some filters, strainers, centrifugal separators, flow cells, filter-vent valves and other equipment, these are mostly present in commercial settings where they're discharged to floor sinks connected to sanitary sewers.

Few residential devices have these drains, and they are actuated so infrequently that dumping the water onto the equipment pad to evaporate or letting it fall onto the soil is the most common practice. It is very unusual to have a sanitary sewer line anywhere near an equipment pad – unless, of course, the equipment is indoors, in which case the pad will tend to be set up to resemble a commercial installation.

looking ahead

As we all get more ecologically conscious and society's attitudes about water usage change, we'll almost certainly be challenged to think in new ways about how we deal with pollution, recycling, waste discharge and energy efficiency. Watershapes and their influents and effluents are very much part of this emerging picture.

Many of us are taking steps even now to reduce splash-out and evaporative losses, for example, and we're using technologies such as variable-speed pumps to conserve energy and reduce water consumption. With a little ingenuity, in fact, I see a time when watershape overflows will be collected and stored for future use – or routinely sent into landscapes to regenerate groundwater supplies and take the pressure off our storm-drainage and flood-control systems. It's likely in this context that we'll also need to take a hard look at the chemicals we use to treat our watershapes and get involved with systems that don't leave residual killing agents behind for discharge into the environment.

For now, we just need to keep our eyes open for opportunities to conserve and protect water and become accustomed to the ways these measures influence our system designs. After all, if we don't get there first, it's more than likely local authorities will be only too happy to help us get things straight! WS

simple Green

There's a place in the world, says veteran watershaper Pete Cattano, for relatively modest swimming pools. Using a recently completed 'garden pool' to illustrate that point, he describes how great clients, an integrated landscape design, professional cooperation and careful construction can come together to deliver the best of everything swimming pools have to offer, even in a situation where the project's scope and scale are quite down to earth.

By Peter Cattano

Swimming pools don't always need to be complex or innovative to be beautiful. In fact, I'd like to suggest that even the simplest of design programs, when handled well by the watershaper, can lead to outstanding results.

The reasons are obvious and well known: With water, we manage the world's most beautiful and alluring design material. If we do a good job, put that water in the right place and build our structures well, the potential for achieving gorgeous results is almost always within reach and we organize reflections, flows, sounds, hardscape and plants.

If all of those elements are in control and integrated into the same thoughtful program, in other words, even the most basic of projects can be so aesthetically on target that it will elicit strong emotional responses.

All of these factors were in play with the small pool discussed here: With just 800 square feet of surface area, it sits in the front yard of a modest but attractive home in the Five Towns area of New York's Long Island and is distinguished by a compact, raised island, some lovely detailing – and one of the most beautiful planting plans I've ever seen.

When we at Paco Pools & Spas of Baldwin, N.Y.,were approached about the project, I knew right away that what we were being asked to do wouldn't pose much by way of technical difficulty. Even so, I recognized immediately that this apparently simple structure was to become a key part of an overall work of spatial artistry.

A Well-Placed Pool

For want of a better term, we came to describe this as a "garden pool" – that is, a fully functional swimming pool integrated into a garden setting rather than standing alone as an artistic statement or serving as an architectural element associated with a home. Basically, a pool of this sort is there to complement a beautiful landscape, providing a destination within the space without dominating its tranquil surroundings.

Our firm specializes in just this type of project – tasteful watershapes for mostly modest spaces and clients of middle-class means who want to enjoy the beauty of water and the pride in owning a well-crafted watershape.

In this case, we were brought into the project by a local landscape firm, Schlick Design Group of Green Lawn, N.Y. We've worked with them on several previous projects and have always enjoyed both the collaboration and the outstanding results. Ours is a relationship marked by mutual respect and appreciation for each others' expertise, and our contact this time was Manoli Galanakis, a truly gifted landscape designer with a genius for organizing spaces and selecting great plants.

The project was somewhat unusual in a couple of respects. First (and as was mentioned in passing just above), it's located in the front yard. The property had been shaved off a larger estate, and the way things worked out, the home had almost no backyard but a substantial area to work with out front. This presented us with a need to develop the space as a private haven sheltered from the street.

(As a side note, we had to apply for a variance from the local township to build the pool in the front. This slowed us down a bit in the project's early stages, but as it turned out, this was just about the only obstacle in the way of an otherwise smooth process.)

Second, the homeowners are avid travelers – expert scuba divers who have spent a great deal of time under the water in warmer climes. One of their desires was to create a space that would give them the feeling of being in the tropics. It was something of a tall order in our area, but they insisted that they wanted lush foliage, sheltering trees, spaces loaded with flowers, areas marked by varied textures, fragrances and colors and an overall design that would change from place to place with little surprises offered at every turn.

Compared to the challenges laid at Galanakis' feet, our task list was far simpler: We were to work on the pool, fitting it in among an outdoor dining area, a detached spa space and an outdoor shower – all of which were encompassed within the landscape designer's vision.

Give and Take

Working with Galanakis was a true pleasure: He conducted the orchestra when it came to the plants and surrounding

The front yard presented us with a clean slate, and the design team collaborated closely in deciding where major elements would be placed and how they'd relate to one another within the available space. With those issues settled, we built a fairly straightforward pool with sweeping, naturalistic lines – but made no attempt to make it look like a pond.

spaces, while we, as a sort of chorus, took care of the pool and associated details. Although these functions were well-defined and distinct, we constantly interacted with each other to make sure everything harmonized.

The clients played a part as well, on the one hand offering us their ideas but on the other giving the design team the latitude it needed to exercise its creativity. This made for one of those situations in which the job was a pleasure from start to finish: No significant problems, no major changes along the way, everyone showing up on time for meetings and a work process marked by seamlessness from beginning to end.

In the design phase, we considered a number of possibilities, placements and configurations before settling on an elegant naturalistic pool. It makes no pretense of being a pond, but it is so well placed amid planted spaces that its artificiality isn't an issue – especially given that its edges are softened by various plants that moderate transitions from the water to the surrounding spaces *and* that the overall impression is tempered by three sheeting waterfalls that spill into the pool.

As a result, we felt no need to make a "naturalistic statement" by strewing the area with boulders. In fact, we went the other way and crafted an architectural look by stacking pavers on the edges as a coping treatment and finishing the pool's interior with a gray plaster. Basically, we left the "natural" part of the design to the surrounding landscape, making the pool a foil for stronger impressions made by the plants.

As we saw it, this was basically the opposite of what might be called the standard approach to pool construction, where little or no thought goes into the surrounding landscape. Certainly, the plantings don't need to be this lush to be beautiful, but with so many rich aesthetic opportunities available in combining plants and water, projects in which pools are designed without integrated planting plans simply seem incomplete.

That's the beauty of working with a terrific landscape designer such as Galanakis – especially in a case where it's so clear that the clients want the space to look and feel like a tropical garden. Frankly, if we'd built this pool and the plantings weren't a part of an integrated picture, the results simply wouldn't be as satisfying.

The side of the pool close to the home is manifestly artificial, but across the water, the edges are softened by a lush intrusion of plants that overhang the water and in some places caress its surface.

The yard features a number of nice touches, including a shower placed between the pool and a spa tucked into a corner alongside the house. Several of these special spots were set up by the pool's irregular contours, which helped divide the space visually and allowed the landscape designer to create a number of hidden destinations, including a secluded seating area at the end of a winding path.

In this case, the clients were so dedicated to the concept that they committed themselves to a scheme in which some of the plants will need to be replaced every year: Some of the key selections just can't withstand Long Island's winters. To balance that annual exercise, the rest of the plants are perfect for the climate, including the various hedges and conifers that provide primary screening from the street and create the space's permanent canopy.

Their willingness to stay involved gave Galanakis tremendous flexibility, opened his palette to include a wide variety of flowering plants and enabled him to exploit the fragrances the exotic plants release on warm summer nights.

Adult Ambiance

It's important to note that this pool was built exclusively with adults in mind: It's definitely *not* for play. There are, for example, no convenient spots for diving; in fact, the edge treatments discourage diving by offering no convenient access. Instead, the entire setting focuses on tranquility, intimacy and a sense of calm repose.

The pool fits this picture with its freeform shape (a modified kidney), its raised walls (around the deep end) clad with Carney Stone ledging and the small, heavily planted island that marks the transition between the shallow and deep ends.

We used the pool's irregular contours to help Galanakis create a variety of lovely vignettes, one of my favorites of which is a small seating area adjacent to the deep end of the pool: It's a little alcove you approach using a path made of natural stones, and in reaching it you feel as though you've entered a different world, very tranquil and romantic.

Other special spaces include a sunning area set off to one side of the pool, a lawn and the abovementioned spa patio – each of them offering their own sensations of seclusion and intimacy. To sum things up, there's quite a lot going on in a relatively small space.

To link these areas, we used combinations of eight-inch gray pavers and flat, natural stones to establish meandering pathways. In many instances, the plantings at least partly conceal one area from the next, lending elements of surprise and discovery to passage through the space.

We also used lighting as part of the overall scheme to bring mystery and subtlety to the various settings after dark, enhancing those potent sensations by placing small niches for candles in the pool's raised wall. Within the pool, we gave the homeowners flexibility in managing moods by installing a multi-hued LED lighting system from Jandy (Vista, Calif.).

The clients had no interest in linking any of this space to the street, visually or otherwise, so the garden features walls of greenery that create a strong sense of enclosure and privacy. Accentuating this sense of isolation, the three waterfalls in the pool's raised wall generate a gentle white noise that masks the sounds of traffic – a complete retreat in the midst of a busy suburban environment.

If you'll recall, the homeowners are scuba enthusiasts, and they asked us to make one end of the pool eight feet deep. Generally, I'm not a fan of "deep ends,"

The Technical Side

Just because the project described in the accompanying text is relatively simple doesn't mean we could ease up on our standards for technical excellence. Indeed, all of the aesthetic considerations for the project are supported by a pool system that meets elevated standards for hydraulic design, energy efficiency and safety.

The clients use the pool often and, as is true of many homeowners these days, are concerned about water quality. To maintain excellence on this front, we installed an AutoPilot saltwater chlorinating system from Team Horner (Ft. Lauderdale, Fla.) including an ORP controller and a pH-management system. We also used a 30-inch high-rate sand filter from Pentair Water Pool & Spa (Sanford, N.C.) along with pumps and a control system from Jandy (Vista, Calif.).

To extend the swimming season – very important to our clients – we installed an AquaCal heat pump, also from Team Horner. Although fossil-fuel heating is still a more popular choice in the industry locally, we've had terrific success with heat pumps' ability to maintain comfortable water temperatures while conserving energy.

Finally, the pool is fully compliant with provisions of the Virginia Graeme Baker Act, with split main drains, compliant drain covers and a vacuum release.

– P.C.

PLANT LIST

Key	Botanical Name
	TREES AND SHRUBS
CGC	Chamaecyparis obtusa 'Gracilis Compacta'
CLE	Clethra alnifolia
COR	Corylus avellana 'Contorta'
EAC	Euonymus alatus 'Compacta'
FO	Fothergilla
HYBW	Hydrangea macrophylla 'Blue Wave'
HYD	Hydrangea 'Pia' - Dwarf
HYQ	Hydrangea quercifolia
ICC	Ilex crenata 'Compacta'
ICH	Ilex crenata 'Hetteri'
IBM	Ilex x meserveae 'Blue Maid'
JW	Juniperus horizontalis 'Wilton'
LAG	Lagerstroemia indica
PPM	Picea pungens 'Montgomery'
PLO	Prunus laurocerasus 'Otto Luyken'
PLS	Prunus laurocerasus 'Schipkaensis'
RHY	Rhododendron yakushimanum
RO	Rosa 'Flower Carpet'
SLP	Spiraea japonica 'Little Princess'
SYP	Syringa 'Palibin'
SY	Syringa vulgaris
TSU	Tsuga canadensis 'Sargentii'
VO	Viburnum opulus
VM	Viburnum plic. Tom. 'Mariesii'
YU	Yucca filamentosa 'Golden Sword'
	PERENNIALS AND GROUND COVERS
aj	Ajuga 'Burgundy Glow'
ast	Astilbe - hybrid
asp	Astilbe chinensis 'Pumila'
aff	Athyrium filix femina
ech	Echinacea purpurea 'Magnus'
ger	Geranium sanguineum 'Lancastriense'
hem	Hemerocallis
hmv	Hosta medio 'Variegata'
hse	Hosta sieboldiana 'Elegans'
lir	Liriope 'Big Blue'
lirv	Liriope, variegated
mis	Miscanthus sinensis 'Gracillimus'
pach	Pachysandra terminalis
pen	Pennisetum alopecuroides 'Hameln'
rud	Rudbeckia 'Goldsturm'
seas	Seasonal Color
saj	Sedum spectabile 'Autumn Joy'
vm	Vinca minor

especially in cases such as this where no provision has been made for diving. Here, however, I went along with it happily because they wanted water deep enough to let them test out new diving equipment.

The shallow end is wide, with generous steps that fan out into the pool and offer ample space for lounging. We set pavers around this half of the pool, providing plenty of spots from which bathers can sit and look across the water to the planted areas. That's all there is to it: No single element in the pool or the surrounding landscape dominates our attention. Instead, it's a set of tasteful elements that complement each other and combine to form a complete, harmonious composition.

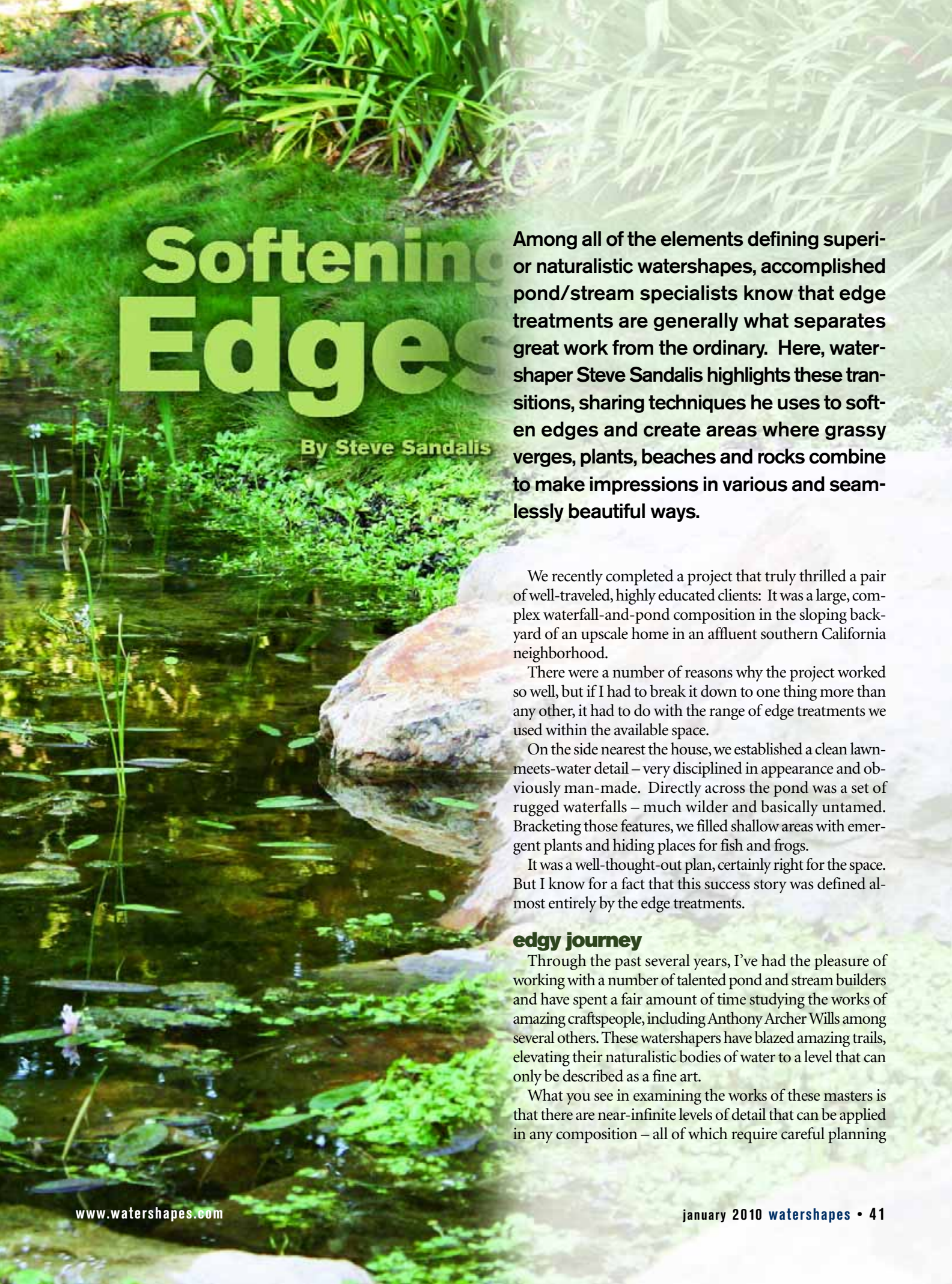
Three-Legged Charm

As mentioned above, the technical approach to this pool was fairly simple. Yes, the equipment and approaches are state of the art, but for the most part it's the sort of basic pool that could be installed in just about any backyard for clients with an eye for quality design and construction.

What makes this project special is the way this pool became part of an overall program through processes of collaboration, communication and cooperation between the design team and the homeowners. I like to think of this process as a three-legged stool in which a beautiful design, quality construction and great clients stand as a sturdy foundation for a setting that will give joy and pleasure for years to come.

This project had the best of all three of these elements, and it's a case where we're already looking back on it with the type of craftsperson's pride that only comes from a project well done on all levels. Best of all, the clients love their new garden and salute our collective efforts by using it regularly and maintaining it diligently – not bad for an ordinary suburban yard!

We love the way the pool turned out and the degree to which it complements and enhances the space without dominating the view. It all works because of the planting plan, which softens edges, brings abundant color and texture to the setting and creates fascinating vignettes that make the yard a pleasure to visit, day and night.



Softening Edges

By Steve Sandalis

Among all of the elements defining superior naturalistic watershapes, accomplished pond/stream specialists know that edge treatments are generally what separates great work from the ordinary. Here, watershaper Steve Sandalis highlights these transitions, sharing techniques he uses to soften edges and create areas where grassy verges, plants, beaches and rocks combine to make impressions in various and seamlessly beautiful ways.

We recently completed a project that truly thrilled a pair of well-traveled, highly educated clients: It was a large, complex waterfall-and-pond composition in the sloping backyard of an upscale home in an affluent southern California neighborhood.

There were a number of reasons why the project worked so well, but if I had to break it down to one thing more than any other, it had to do with the range of edge treatments we used within the available space.

On the side nearest the house, we established a clean lawn-meets-water detail – very disciplined in appearance and obviously man-made. Directly across the pond was a set of rugged waterfalls – much wilder and basically untamed. Bracketing those features, we filled shallow areas with emergent plants and hiding places for fish and frogs.

It was a well-thought-out plan, certainly right for the space. But I know for a fact that this success story was defined almost entirely by the edge treatments.

edgy journey

Through the past several years, I've had the pleasure of working with a number of talented pond and stream builders and have spent a fair amount of time studying the works of amazing craftspeople, including Anthony Archer Wills among several others. These watershapers have blazed amazing trails, elevating their naturalistic bodies of water to a level that can only be described as a fine art.

What you see in examining the works of these masters is that there are near-infinite levels of detail that can be applied in any composition – all of which require careful planning

and execution on site, where large doses of imagination and improvisation also come into play.

I'm proud to follow in their footsteps and love the fact that this is an art form you can spend a lifetime exploring and never run out of ways to expand your knowledge or ever completely "perfect" what you do.

Bottom line: This business of following nature as a model makes you realize that there's always *more* you can do as you try to mimic what nature does. As I see it, this is a process of expanding my understanding of the details and *layers* of details I find in natural settings and accepting the fact that, as much as I think I might know, I still have infinitely more to learn.

One set of lessons I've learned well, I think, has to do with the way I work with edges and my recognition that these transitional moments define the body of water I want to design and build. I know for a fact that our eyes are drawn to these borderlines between the water and the land and that the configuration of these interfaces is basically what tells us we're looking at a pond, a swimming pool, a beach, a riverfront, a reservoir or an architectural waterfeature.

Certainly, there are other important details to consider, but if I had to pick just one that makes or breaks the visual success of a naturalistic body of water, it's the edge treatments.

All of this is why the dreaded "string-of-pearls" appearance is so abominable: Nature simply does not line up evenly sized rocks along the water's edge, so whenever I see an edge that's finished that way, I immediately know that it's "man-made" and that the person who did the making really wasn't all that sharp. (If I could wave a magic wand and somehow fix just one thing that too many watershapers do wrong, this would be my personal choice.)

Some say that their clients have demanded this look, but that contention makes me suspicious every time I hear it, because whenever I show clients what we can achieve by varying the edge treatments, they always want the more refined look and what I call its "soft edges."

grassy lines

When I talk with clients about soft edges, what I'm really doing is leading them away from any thoughts of strings of pearls.

The simplest of these approaches – in visual terms, at least – involves bringing grass right to the water's edge. This can look artificial because of the precise lines that are usually drawn, but when you use this strategy in conjunction with other edge treatments, it can also be quite wonderful and subtle and can convey the impression that someone has come along and tamed part of the shore fronting a longstanding body of water.

Personally, I think the world of this detail: It can draw beautiful lines where the water meets the land; enables people to walk securely right up to the edge of the water; and, in cases where the pond is going to be used for swimming, creates the most natural and easy of all possible points of entry and egress.

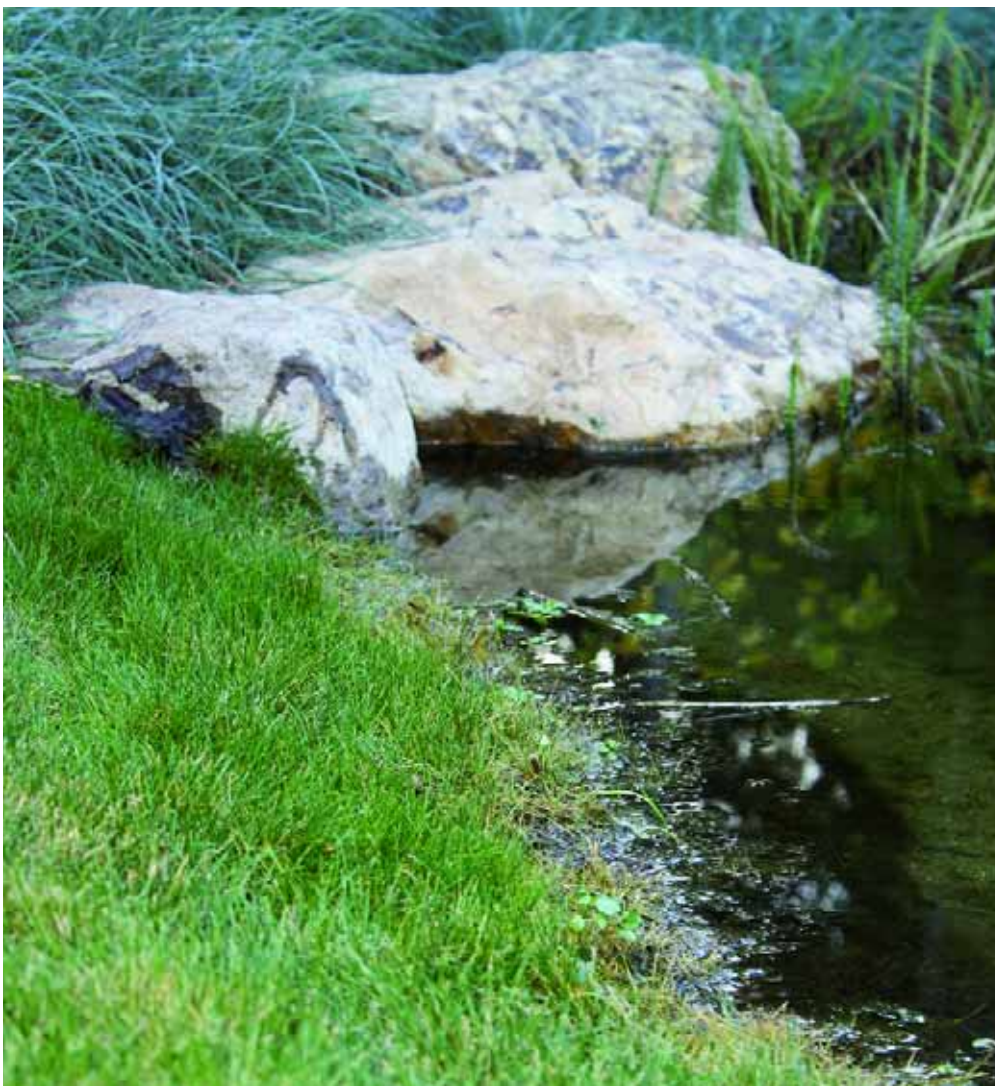
My clients seem to like this approach almost as much as I do. I've had situations where I've approached designs thinking that rockwork would play a primary role only to learn that what the homeowners want most is the look of grass on water, perhaps with some stone pieces scattered in the water and across the landscape. I liken this to the refined look to top-flight golf courses – a formal composition in which the grass represents a sort of meadow bordering the water.

As I suggested above, this grassy look also provides wonderful contrasts to wilder edge treatments.

This leaves us, of course, with the technical challenge of establishing and maintaining these edges for the long haul – something that sounds simple to do but which can be tricky. I use two basic techniques: In one, I'll build a border structure – basically a very low retaining wall comprised of brick, stone or, in some cases, wood – and pull the liner well beyond that edge. We then create a small channel in the liner, backfilling it with soil and laying sod on top.

That's a safe, reliable approach, but it *does* leave you with a visual band around the edge that can look extremely artificial. And when you take the reflection of the edge material into account, it actually looks twice as big as it actually is. The key here is expectations: You must make certain the clients will be happy with this look.

The other approach is a bit harder to pull off but yields a far cleaner look. Here, we essentially create a shelf around the edge and build up a barrier with rocks two or three feet out into the water, just beneath the surface. After plac-



Bringing grass right down to the water is among the simplest *visual* approaches you can use in softening edges, but it's not the easiest when it comes to installation. Indeed, it's not hard to get it wrong and create an obviously artificial boundary – but when you get things right, you create the wonderfully subtle impression that someone has come along and tamed the shore of a natural body of water.

ing an underlayment and backfilling the area with sand, we contour a slope to a point up above the water's edge and bring the grass right down to it.

It's a great look, but you have be precise in the slope and in cutting the edge of the grass off right at the water level – not an easy trick for the novice.

planted transitions

An easier and certainly more flexible way to create a soft edge is to use plants. This can be accomplished in a limitless variety of ways, but the basic goal is to control the transition from aquatic to terrestrial specimens in accordance with principles observed in nature.

The key to success in this approach is proper planning of the transitional planting areas – beneath the surface, at the edge and in the adjacent landscape. This means first and foremost that you must accommodate the plants from the outset of the design process, creating a space for them that will begin taking shape in the excavation phase.

We'll often establish wide, shallow shelves: This gives us a great deal of flexibility to work with plants within the water. In smaller applications or tight spaces, however, we'll often work with planting pockets, which also can be wonderfully effective in detailing and softening the edges of rock formations.

In observing nature and by following the work of the best designers in the business, I've learned that grouping like plants in large, homogeneous areas tends to look more natural than going with a wide range of different plants every few feet. Other species might encroach upon them, but plants in the wild tend to grow in clusters.

This often leads me, in planting my edges, to use the same plant types over relatively large spans. I might establish large areas filled with rushes, dwarf cattails or irises – a durable, multi-hued favorite that offers me the advantage of coming in both aquatic and terrestrial forms. This is a spectacular way of *completely* softening the edge and even lets me create colorful marsh areas where the casual observer might not be able to tell where the water meets the land.

Plants also work wonderfully well with rock-strewn edges. Indeed, one of the all-time classic looks – one that's been used to great effect in a wide variety of settings – involves draping various hanging, trailing plants over rockwork. It's so common an approach that I won't dwell on it here other than to note that it's easy to achieve, looks great and works well so long as you don't overdo it.

In the event, however, that you are tempted to try to use this approach to obliterate a string of pearls by interspersing plants amid the rock material, please be aware that this will *not*, even if you use large volumes of greenery, fully or successfully conceal the necklace effect.

on the beach

Sandy beaches are a far less common soft edge from those discussed above, but they fit perfectly into a certain sort

the rule of three

When it comes to planning edge treatments, there are no set rules: Every single site is different, and all of our clients have their own ideas about what they want.

For larger projects especially but for smaller ones as well, however, I think we would all do well by using more than one edge treatment as a means of bringing diversity and visual interest to our projects. I also think – and for reasons I can't completely define – that designs featuring *three* different treatments almost always seem to work out best.

Sure, you can have a pond or stream composition with only two or even four edge treatments, but there's something innately harmonious and balanced in observing the rule of three. I suppose one could get into some deep philosophical or even mystical territory in trying to pin this down; to me, it just seems to work out better than other groupings.

I've come to accept the fact that three edge treatments will do the trick to such an extent that I usually start with trios of options in my design work. I'm not inflexible about it and sometimes head in other directions, but as a point of departure, I've never found anything better.

– S.S.

Softening edges with plants is a time-tested, flexible approach. We'll generally establish wide shelves to make these looks work, knowing that the key to success is controlling the transitions from aquatic to terrestrial species and accommodating plants beneath the surface, right at the edge and moving back into the landscape.

of project – especially when clients want to be able to swim in their ponds. These edges also provide great places for kids to wade and play in the shallow water and have a soft, distinctly familiar look that serves as a great contrast to other treatment options.

Scale is the key issue. I have seen, for example, beaches that are oversized relative to their bodies of water – so much so that they lend the setting an oppressively barren feel. By contrast, I've seen some so small that they look completely lost, out of place and unnatural. There are, unfortunately, no rules governing how much of the edge you should or shouldn't devote to a beach: It's mostly a matter of intuition when it comes to striking these important balances.

Even so, I think it's safe to say that beaches are at their best as parts of large ponds in settings where the feature can be big enough to work as a "natural" beach – without, of course, dominating the scene.

I've had success locating beaches at key focal points where the sandy area serves as a foreground for a rewarding view across the water to, say, waterfalls or large, planted areas. In this way, beaches reinforce invitations that lure observers close to (or even into) the water to enjoy the best of the visual effects you've crafted.

In building these features, it's important to establish beach areas with gentle slopes – the slighter the better. We excavate our beach areas to depths of 18 to 24 inches, then fill them with the cleanest sand we can find.

On the land side, there are several ways to create borders and transitions, whether with plants, lawns or hardscape elements. Down under the water, it's important to extend the sand area anywhere from seven to ten feet out into the pond (if not even farther), thereby avoiding sudden changes underfoot or sudden, discordant changes in subsurface appearance.

Although I've spent a bit of time here mocking the inappropriate use of rocks in edge treatments, when they're used well I see them as the perfect accent in beach areas – and, in fact, as an excellent softening measure in grassy and planted approaches as well. Stone and plants work particularly well together, so much so that I almost always use plants when-

ever I install boulders large or small.

As I see it, the art comes in varying the size and placement of these stone pieces. I love putting them out in the water, where they emerge within a few inches of the water's edge. The little shoreline channels that are created in this way can be utterly fascinating, even if they're just a few inches wide and deep.

When I use rocks in the water or on edges, I also make a point of using them in the landscape beyond. This not only serves to soften the look of rocks in the water or on the edge, but it also helps the entire composition seem more natural. (Seldom in nature do you see rock material exclusively within or outside of the water – and certainly never just along the edge!)

Partially burying boulders (usually about halfway down if not more) so that they erupt from the bottom of the pond or the surrounding ground is a tried and true way of making them look like parts of some natural subsurface formation. This is especially true if you're lucky enough to be working with specimens covered in lichen or moss or covered with erosion patterns that give the impression the material has been in place for uncounted millennia.

uncommon sense?

With every one of these edge treatments, improvisation is certainly an important part of getting the details right – but you can't start down any of these paths, no matter how seemingly direct they might seem, without planning for everything up front in the design process.

This is particularly true when large rocks come into play. In these cases, you must include broad, well-compacted shelves to support their weight, and in some cases you'll need to set up concrete substructures to carry the load. And no matter what, you must use underlayments to protect the liner from incidental damage.

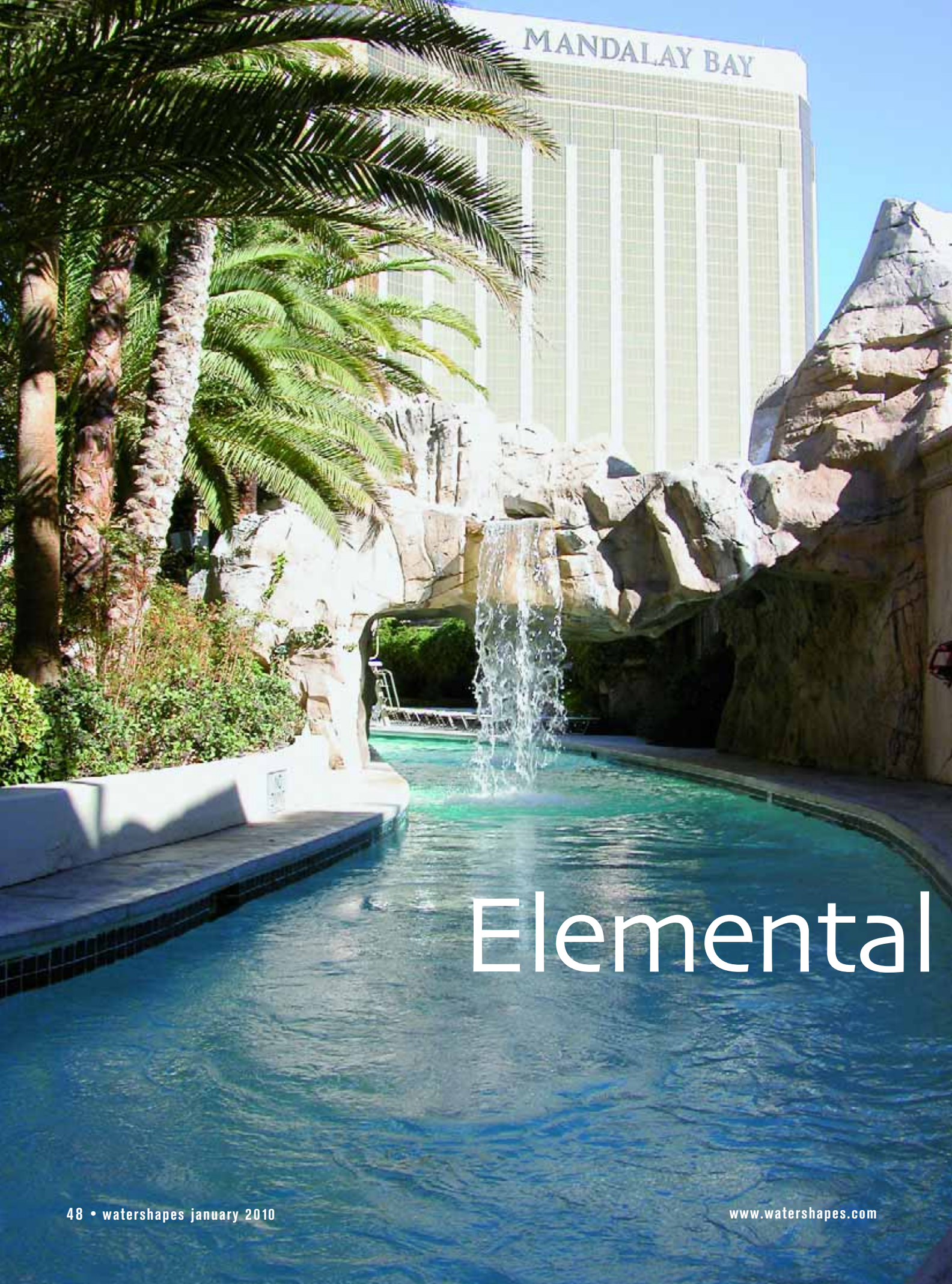
In cases where a client actually wants to be able to swim or wade in a pond, setting up sandy beaches for access is generally a good way to go in both visual and practical terms. The important thing here is to establish gradual slopes and avoid sudden transitions underfoot – and not to be shy about using lots of sand (to depths of 18 to 24 inches in most cases).

If much of what I've discussed here seems like plain, common sense, that's because to a large extent it is, and I would trust that these measures are familiar to the more accomplished pond and stream specialists among you.

The uncommon skill – the one that keeps me out in nature, drives me into seminars and keeps me reading book after book – comes in developing a sense of how all of these elements flow together into single, fully integrated designs: *That* takes a certain affinity with the natural world and years spent in perfecting the tiniest details of the design and installation processes.

As I see it, the pathway to success is streamlined to a good extent simply by recognizing the central role edges play in the aesthetic results we're all trying to achieve. On a basic level, it all seems within easy reach; on another, higher level – and the one for which I think we all should strive – it's the pursuit of a lifetime.

Rocks play an important role in establishing our boundaries, and we use them with and within all of the soft-edge approaches we deploy. Often, they'll define a break between a grassy area and a planted one, for example, and we'll have them both creep out into the water and retreat into the surrounding landscape to provide visual continuity and break up any sort of string-of-pearls impression that might be made.



Elemental

Finesse

By Jeff Freeman

Electrolytic chemical generation has been used by various industries for more than a century, but it's only recently that it has become familiar to watershapers, mainly in the form of saltwater chlorinating systems. Now, says watershaper/inventor Jeff Freeman, it's time to take this technology to a new level, using its capacity to coax old chemical compounds into doing new tricks that meet a broad array of water-treatment challenges.

Ever since people decided to contain and control water for recreational and decorative uses, there have been competing ideas about how to treat it so that it remains safe for human contact. That environment has become even more intense in recent years, as questions and concerns have arisen about the continuing use of traditional chlorine chemistry to get this important job done.

Today, for example, we hear a lot about "natural pools" – systems using plant material to absorb the nutrients that feed algae and bacteria. There's also ozone technology, which needs to be combined with stabilized halogen to treat water effectively. Then there are the various copper/silver ionization systems and their cousins, the saltwater chlorinators, which have taken root and gained support in many quarters.

My career working with alternative sanitizers began a few decades ago. About three years ago, my firm – Fluid Logics of Upland, Calif. – entered this arena with the thought in mind that the watershaping industry needed to take a broader view of the last of those alternatives, digging back through the 100-year history of electrolytic chemical generation and expanding the capacity of these systems to oxidize organic compounds and sanitize the water.

For several years before then, I had sold and installed saltwater chlorination systems in the pool/spa industry. I did my homework and came to believe that the technology could be improved to a point where we could generate greater levels of chlorine than existing systems could – and might even be able to do it without needing to add so much salt to the water.

When I had this epiphany, I recognized that the basic technology could be tailored to a variety of other applications in this and other industries. That's when I set out to develop my own version of electrolytic water treatment and make it an even better alternative to traditional approaches.

Constant Contamination

Although technologies have changed and in some cases have even come and gone through the years, the fundamental challenge of treating water remains the same: When it comes into contact with humans, it must be free of bacteria and of the organic compounds that engender their growth. This is why chlorine has been such a success in swimming pools and spas: It does both jobs quite effectively – so much so that when it comes to bodies of water used by large numbers of people, it's tough to find a better option.

In recent times, however, chlorine has suffered in the realm of public opinion and many consumers have sought ways to avoid use of chlorine products that have to be manufactured, packaged, transported, stored and added to water. That's all a hassle and can be hazardous, and so, whatever its merits, chlorine is becoming distinctly unpopular.

Ironically, several of the options to basic chlorination still use chlorine – particularly saltwater chlorination systems, in which sodium chloride (common table salt) is transformed into sodium hypochlorite (bleach) to treat the water. My ambition was to take this simple electrolytic concept and put it on steroids so the technology would become even more effective not only with smallish pools and spas, but also in other applications involving far larger volumes or bodies of water.

The key to this expansion of applications flowed from recognizing that, with electrolysis, chlorine generation is only part of the picture. Indeed, I quickly came to appreciate the fact that, using this technology, we could do far more than generate chlorine by using salt dissolved in water – and that many other constituents in water, treated electrolytically, can produce a range of compounds that also can be useful in water treatment.

These added compounds – ozone, nascent oxygen, hydrogen peroxide among them – each has its own characteristics and can be used quite effectively, depending on the application. The crux of the matter is that these entities stay in solution for varying lengths of time, giving us the opportunity to work with those different contact-time characteristics to target various harmful pathogens and organic compounds before the beneficial compounds themselves are destroyed by sunlight or by decomposition.

Take ozone as a familiar example: Any watershaper who has worked with it to any extent knows that it's a powerful sanitizer and oxidizer, but that it remains in solution in water for only a few seconds to a few minutes and therefore must be constantly generated or used in conjunction with another chemical (typically chlorine as a residual barrier) to extend the periods during which water is safely treated.

Less familiar is nascent oxygen (also known as the "hydroxyl radical"), which is similar to ozone and is, in fact, the component that attaches to O2 (oxygen) to make O3 (ozone). Nascent oxygen exists in water for only fractions of a second. There's also hydrogen peroxide, which may be familiar to those who've thoroughly explored the realm of chlorine alternatives: It, too, is a powerful oxidizer that works by way of adding hydroxyl radicals to the water.

Using these possibilities, we've been able to push electrolytic water-treatment technology well beyond small pools and spas to the point where we now are working with applications in treatment of stormwater, sewage, gray water, marine-animal exhibits, large-scale ponds and streams, lakes, big waterparks and a host of industrial applications.

Expanding the Discussion

The big difference between existing pool/spa saltwater chlorinators and the technology we're pursuing is that the amount of chemicals generated relative to the amount of power required to prompt the electrolytic reaction has been altered dramatically: In other words, these new systems offer much more bang for the buck.

We started down this path of exam-

When we began developing systems, we found that, by working with the composition of the coatings on our electrolytic cells, we could manipulate their chemical output and make them suitable for use in a wide range of applications including (as shown here) oil production, industrial research and winemaking, among many others.

ining chlorine generation because we saw untapped potential in the technology and figured we could advance the cause of delivering all of the benefits of chlorine water treatment while minimizing the downsides involved in its byproducts, the cost of production and the hazards and costs of producing, storing, transporting and adding it to water.

As our research continued, we came across an odd fact: Few people think of it this way, but ocean water is, in fact, chlorinated. Seven-tenths of the earth's surface is covered with water that contains sodium chloride – water that contains plants that survive by photosynthesis, a process that generates infinitesimally small amounts of electricity.

This electrolytic potential does, in point of fact, generate chlorine from chloride ions that play a part in the earth's natural system of biological checks and balances. Add to that the fact that sodium chloride itself has antiseptic qualities and that dissolved oxygen is always present in ocean water through the churning action of wind, waves and surf and you have a system in which a vast volume of water carries and manages incalculable volumes of organic compounds. We recognized that, in a very real sense, we could use electrolytic technology to mimic these natural processes and therefore treat bodies of water far larger than anyone would have imagined.

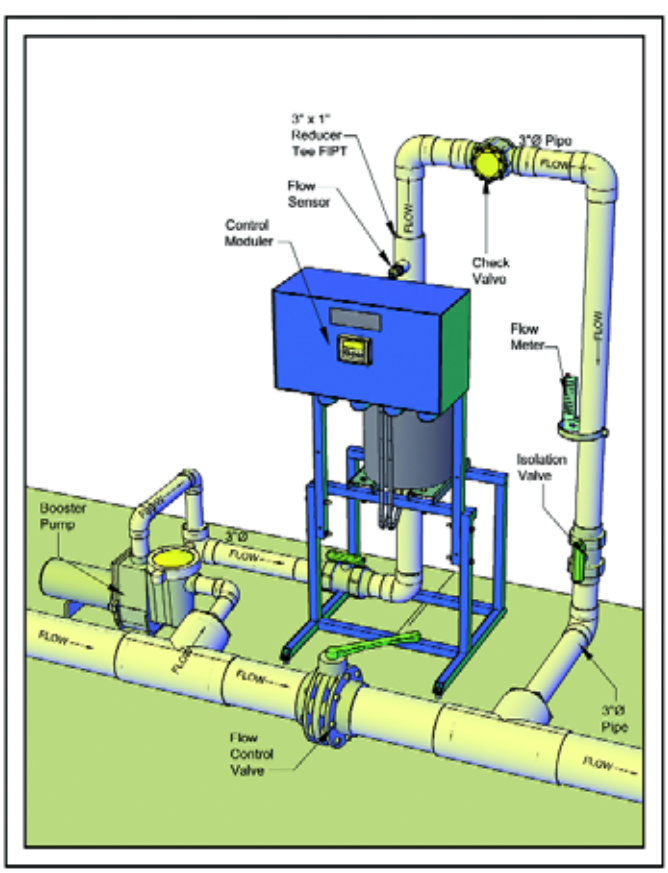
On the most basic level, there are three primary elements in these systems: the anodes, the chamber in which the reaction takes place and the power supply. In system development, we spent a good bit of time evaluating these key components in electrolytic systems and how they interrelate.

We learned that *anode technology* has come a long way since the first systems were developed in the 19th Century. Without going into too much detail, manufacturers have experimented with a variety of materials, including titanium, iridium, platinum, copper and silver (to name just a few), working to find anode coatings that efficiently transfer electrical energy to water while also withstanding the intense electrolytic and chemical environment. Long story short, our systems use a proprietary coating that reflects the latest developments in anode science.

No matter the industry or application or volume of water, setting up one of these systems involves pretty much the same configuration of pipes and fittings that direct the flow of a defined quantity of water to and through the electrolytic cell.

We can vary the ingredients of the coatings to perform different tasks, such as producing different chemicals in conjunction with other electrolytes or lower levels of certain electrolytes. Lower salt levels, for example, actually create a more aggressive environment for the cell coatings, so in some circumstances we must make the cells more robust.

The *chambers* that contain these anodes – the places where the electrolytic reactions actually happen – have also undergone extensive development related to size, shape and hydraulic cycling, and there's also been a large volume of research on the sizes of anode surfaces relative to water flow. Again, we took the best of that recent research and applied those insights to our systems.



A Leap Forward

Where the big advancements have come recently (and where we saw our greatest opportunity to advance the technology) is in the *power supply* portion of the equation.

The relationship between the anode and the power that feeds it requires extremely precise control to maximize system efficiency and output. Our work focused primarily on using integrated-circuit technology to condition the power and enable us to produce dramatically increased chemical outputs while keeping energy consumption to a minimum, no matter the power source.

The electronics involved here are fairly sophisticated. Without revealing too much about our approach, suffice it to say we condition alternating-current (AC) power to deliver direct current (DC) to the anode in a way that generates much less heat and instead transfers that energy to the anode. The system runs cooler, consumes less power and delivers increased output.

The upshot of all this is that these systems can operate across a wider range of applications in terms of vessel size and nutrient load. Moreover, because the volumes of the chemicals generated by these systems can be so much greater, the way these chemicals work together becomes more important. In most bodies of water, in fact, there are multiple available constituents that will, when subject to electrolysis, produce oxidizers and sanitizers.

Our systems, for example, can be modified to generate elevated levels of nascent oxygen to increase sanitizing and oxidizing effects. In most cases, in fact, that output reaches such high levels that it's not even necessary to add salt to generate chlorine: Instead, we simply use the water's natural saline constituency to do the job.

Water that's been treated at some point with sodium hypochlorite, for instance, will always contain some residual level of salt, so given the system's efficiency, it's unlikely we'll need to add more than a bit of salt to an existing watershape system to generate a chlorine residual.

That's significant with pool/spa applications, but we also observed that it might have even larger implications for other bodies of water in which low sanitizer concentrations are desirable, as with lakes or large ponds. By combining the effect of chlorine generation (or even hydrogen peroxide generation) with elevated levels of nascent oxygen, we're able to open up the technology to applications where on-site chemical generation has never been considered before.

Doubling back to the technology itself, materials science has taught us that by using different compounds on the anodes, we can either encourage or inhibit the production of specific chemicals and, in effect, can fine-tune our systems to specific applications. In effect, we can create systems that generate *only* nascent oxygen and no chlorine. That's not something that means much to the pool/spa industry, but it certainly has relevance for those in the business of maintaining exhibits with large marine animals or of enhancing the performance of wetlands-treatment systems.

A Fair Start

We're just three years into the development of our systems and so far have spent the bulk of our time simply finding ways to tune our systems to meet very specific sets of demands. We've found a huge interest in the technology within the petroleum industry, for example, where companies use water reinjection to fill subsurface voids left behind by removal of raw petroleum or to enhance the output of wells. For reasons I won't discuss here, this water must be treated in very specific ways we've been able to master.

The treatment requirements of that application are vastly different from those required to prepare water for direct human contact, but the principles remain the same – and we believe we're positioned to use our systems to address a variety of current and future needs with great accuracy and efficiency.

Quite often, technological innovation has less to do with the creation of new systems than it does with rethinking the way existing systems are used and configured. That's what we've done in this case – and will continue to do in our ongoing effort to give designers and engineers the tools they need to develop increasingly creative solutions that meet client needs and expectations in a changing world.

By rethinking a technology that's been around for more than a century, we've broken the volume barrier that had previously limited the potential of saltwater chlorine generation and have developed systems that deliver high levels of desired chemicals – and do so in an energy-efficient (and therefore cost-effective) manner.

"Very informative

I especially enjoyed the relaxed format and personal attention. Highly recommended for any one trying to move to a higher level in our industry."

Guy Wood
Westside Pools & Service, Fort Worth, TX

Drakeley Swimming Pool Company LLC, SWD, Platinum Member

Don't Miss Us At The:

Orlando Pool & Spa Show
February 18-20 Orlando, FL www.orlandopoolshow.com

Carecraft Annual Meeting
Advanced Fluid Engineering
20-HOUR DESIGN SCHOOL
February 22-26 Lake Las Vegas, NV www.carecraft.com

Dallas

Texas Educational Forum
March 15-20, 2010

An Introduction to Basic Perspective Drawing
8-HOUR WORKSHOP

Understanding the Elements of Renovation of Existing Pools & Spas
3-HOUR SEMINAR

Elements of Construction
3-DAY SCHOOL

20-HOUR DESIGN SCHOOLS

NEW!

3-Dimensional Computer Drawing
PART I & PART II

Design Communication
Measured Perspective

Color Theory and Design Application

Elements of Design

The History of Water in Architecture

For more than a decade the Genesis 3 Design Schools have influenced the professional lives of hundreds of watershapers.

Our formula is simple:

EDUCATION+ABILITY=$

"**I came in with limited knowledge and I feel I'm walking away with a priceless education.** I'm looking forward to more classes."
Tammy Ellis, Sinclair & Associates / Duncan, SC

"**Wish this was available a long time ago. Very informative and helpful.** Has made me think about how I have been performing in the past and how I will perform in the future."
Kirk Gillette, Kirk's Pool Corporation, Redlands, CA

"**There isn't a person in our industry that would not benefit from this school.** I found the courses to be well structured, well taught, and enlightening. When you think you know everything, let the pros at Genesis 3 expand your horizons yet again."
Bud Sudhop, Aqua Vision Consulting, Doylestown, PA

"**Perspective drawing is a technical skill** – with the proper tools and knowledge I am able to draw 3D renderings now."
Rick Katz, Allstate Pools, Westlake Village, CA

"**Experienced teacher, loads of information, very informative, great personality, great material.** Color presented in a way I had never considered. Loved the class."
Rick McGee, Poolscapes, Granite Bay, CA.

GENESIS 3 DESIGN GROUP

www.genesis3.com

Genesis 3 is proudly sponsored by Aqua Magazine, AquaCal/AutoPilot, Aquamatic, Aquavations, Cactus Stone & Tile, International Pool I Spa I Patio Expo Zodiac Pool Systems, Inc., Pebble Technology, Pentair/Sta-Rite, RJE International, WaterShapes and Pool & Spa News

Founded by: David Tisherman, Skip Phillips and Brian Van Bower
(615) 907-1274 / Toll Free: (877) 513-5800 / FAX: (615) 907-7338 / lisa@genesis3.com
GENESIS 3 - THE INTERNATIONAL FORUM FOR CONTINUING EDUCATION FOR WATERSHAPE DESIGNERS AND CONTRACTORS

For more info, go to www.watershapes.com/ads

Urban Statements

By Kerry Friedman

Photos by Steve Hall, Hedrich Blesing Photographers, Chicago

This past summer, St. Louis saw the opening of Citygarden, a shimmering downtown park filled with art, dynamic spaces and an array of waterfeatures executed by the fountain specialists at Hydro Dramatics. Here, project manager Kerry Friedman guides us through design and development of the various systems, discussing the ways in which these watershapes are used to define both their surroundings and distinct recreation zones within the park.

It was no easy task: We were called on to take the majestic landscape defined by the confluence of the Mississippi and Missouri rivers; use it as a template for an urban oasis filled with sculptures, plants and water; and develop a park that would mesh seamlessly with its surrounding urban spaces.

Furthermore, they wanted this park to appeal to every conceivable user – people of all ages, needs and backgrounds – while also serving as a catalyst for growth and a profound revival of the city's core. And not only was the space to carry that symbolic load, but it also had to function efficiently with long-term reliability.

We at Hydro Dramatics (St. Louis, Mo.) know from experience that projects of this scope and scale require much planning and coordination to go along with large measures of innovation. We also know that these types of challenges make success that much sweeter.

So we jumped into the task with all our energy, supporting the design team charged with developing Citygarden, a 2.9-acre parcel that was to be filled with garden spaces punctuated by sculptures, stonework and watershapes created in a massive celebration of civic pride.

People's Park

The park opened in July 2009 and was the culmination of a partnership between the City of St. Louis and Gateway Foundation, a local non-profit organization dedicated to the enrichment of life and culture in the city through outdoor art and urban design. The foundation alone put up the $25 to $30 million ultimately required to design and build Citygarden and also dedicated an undisclosed amount to purchasing its

many sculptures.

In concept, the park stands as the only completely open and accessible public sculpture garden located in any urban setting in the United States. Spanning two city blocks, it is open 365 days a year and accessible by all visitors free of charge. The sculptures, which represent the work of two dozen internationally recognized artists, embody a wide range of styles and media – indeed something for everybody.

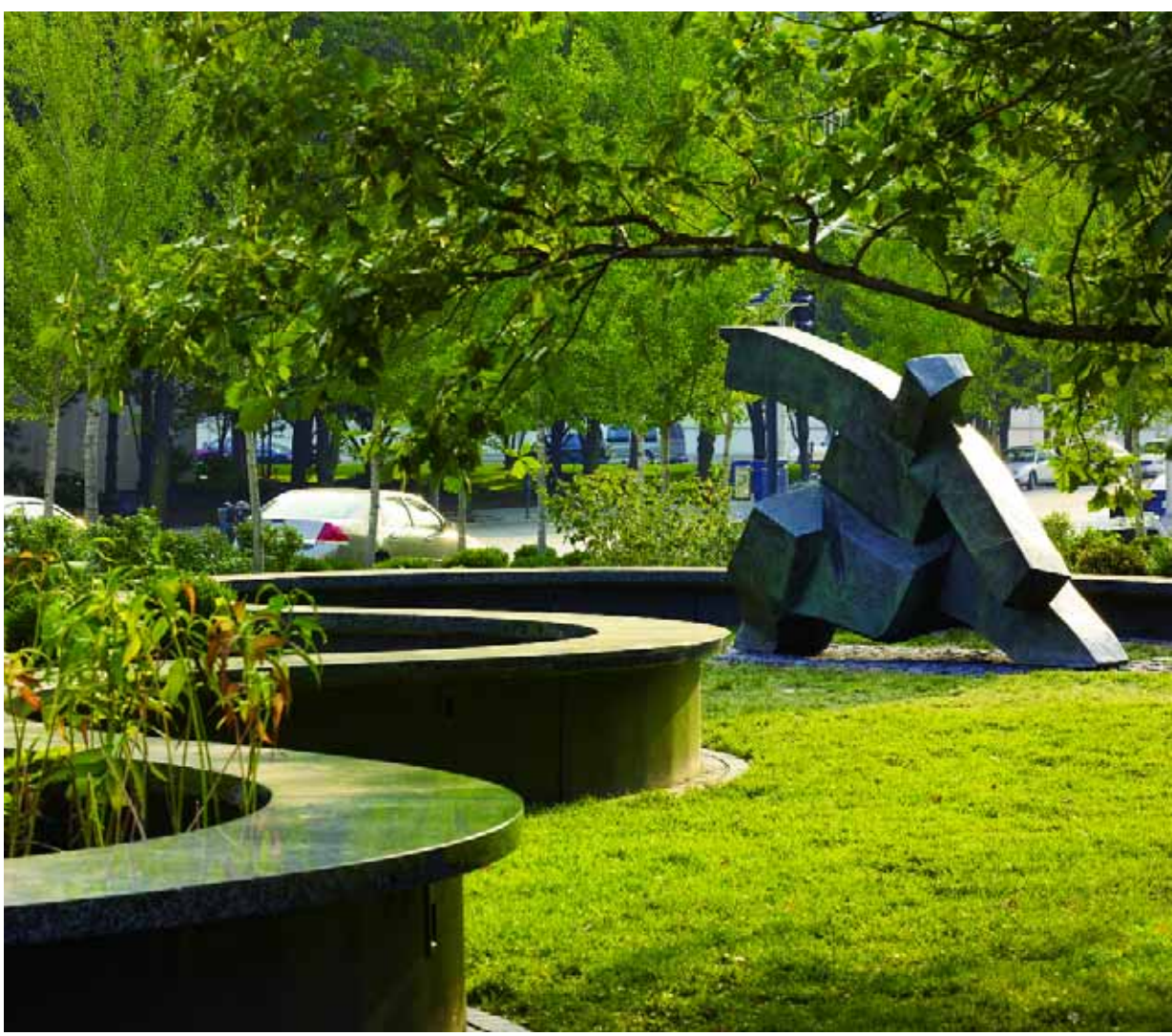
In addition to being an urban park, Citygarden is also a botanical garden that weaves the natural elements of the St. Louis region into a multi-dimensional tapestry – and the water, as countless visitors can attest, is among the most inviting of all those elements.

The design team was spearheaded by Nelson Byrd Woltz Landscape Architects (NBWLA) and reveals the heavy influence of the two rivers that have shaped the city's geology and history. Lead designer Warren T. Byrd, Jr., FASLA and principal at NBWLA, envisioned the fountains as combinations of stone and water that would not only emulate details of the regional landscape, but would also serve as the aesthetic anchor for the overall garden experience.

He and his colleagues defined three signature water fountains that would use sight, sound and touch in ways that would appeal to observers of all ages. To that end, we explored the best ways to use water in creating contrasting ambiances – on the one hand, active spaces for cooling off and splashing spaces; and on the other, serene spaces for reflection and contemplation in the midst of a busy city.

Let's look at these three spaces in turn – and also visit a fourth space in which water plays a defining role.

SENSE OF PLACE: Situated in the shadow of the Gateway Arch in the heart of downtown St. Louis, Citygarden immediately became a gathering place for people of all ages, some drawn by the park's playfulness and opportunities for fun, others by an outstanding collection of sculptures set amid wonderful garden spaces.



Greeting park visitors at the main entrance is a dramatic water element highlighted by Igor Mitoraj's "Eros Bendato," a bronze sculpture set atop a granite disk 34 feet in diameter. A scrim of water sheets gently across and down the disk, lending the space a sense of serenity while also cooling the air.

To accomplish these effects, we designed a fitting to span the top of the disk and connected it to a three-horsepower pump that would distribute water at low velocity across the entire surface of the disk – not enough to generate an unsightly spate of water but sufficient to sweep the surface and clear away any dirt, debris or algae that might want to collect and grow.

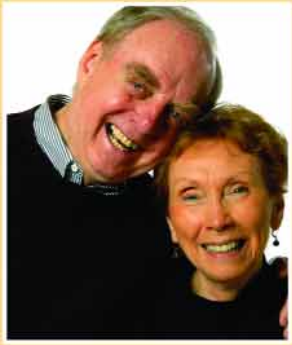
Getting this flow just right was no small challenge. For starters, the slot had to be large enough to do the job, but it also had to be cut in compliance with various industry and Americans with Disabilities Act safety standards. That was so because this sculpture, as is true of all the visitor-friendly sculptures in Citygarden, is meant for hands-on exploration.

Ultimately, we lit on just the right configuration, and the water gently spills down the disk at a continuous rate to create an appealing, shimmering effect. At the edges of the disk, the water disappears into a narrow concrete trough via which it is filtered and recirculated to the top slot.

The success of this composition depended largely upon the skills of those who installed the granite with such precision. Two St. Louis-based firms get the nod here: BSI Constructors (which served as the park's general contractor) laid the massive concrete foundation and Leonard Masonry surmounted it with a two-inch mortar bed, preparing the way for the meticulous installation of the granite.

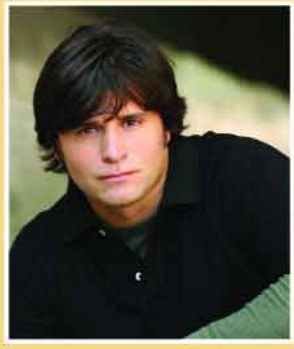
The WaterShapes Interviews

Ideas…insights…inspiration



Ron and Suzanne Dirsmith: Watershapers from Outer Space

For some five decades, Ron and Suzanne Dirsmith of The Dirsmith Group have designed imaginative structures and environments that incorporate waterfeatures and other natural elements. (One of their best-known projects: the pool and grotto at the Playboy Mansion West.) In the first installment of this two-part interview, the Dirsmiths tell why they claim they're from another planet when working with new clients.



Steve Sandalis: Watershaping For the Rich and Famous

Steve Sandalis has built his company, Mystic Water Gardens in Encino, Calif., largely by creating extravagant ponds, streams and other water-features for Los Angeles' wealthy elite. Their virtually limitless budgets enable his creativity to flow freely—but what are these clients really like to work for? Sandalis gives you the inside story in this special interview.

Judith Corona: Understanding Watershaping's Color Palette

Judith Corona leads a colorful life: Among other things, she teaches color theory and application for UCLA Extension, as well as a 20-hour course on the subject for the Genesis 3 Design Group. In this far-ranging interview, Corona discuses the importance of color in pool design, plus various factors to consider when creating a color palette for a backyard watershape.

Go to www.watershapes.com and click on Interviews.

WATERSHAPES ONLINE

Visual Delight

The park's second major water element is a split-level, 180-foot-long, 20-foot-wide, 16-inch-deep basin installed in the shadow of an arcing Missouri limestone wall. Located about a block past the entrance, this watershape is meant to replicate the distinctive bluffs overlooking the Mississippi River.

The limestone wall stretches throughout the two-block space, with one section featuring a state-of-the-art, ten-foot screen for displaying video art and, occasionally, motion pictures. On opening day, for example, the screen displayed a ten-minute time-lapse video that portrayed the 13 months of the park's construction process, giving observers the chance to watch the garden unfold.

As for the two basins, the upper level is situated next to an unusual indoor/outdoor glass pavilion café and includes a tranquil pool that surrounds "La Riviere," a bronze female nude by artist Aristide Maillol. This upper basin flows to the lower basin by way of a waterfall that cascades across an angled, 40-foot-wide break in the limestone wall.

This design presented numerous difficulties. The designers requested, for instance, that the water in the upper basin be kept smooth to make it as reflective as possible in highlighting the sculpture. The pool was relatively shallow, which made it tough to place and space inlets in ways that did not disturb the water's surface while also keeping the flow at a sufficient level to achieve the perfect cascade.

Moreover, they wanted the pool below that massive flow to be serene as well. We accomplished this by relying on a 20-horsepower pump to drive water to carefully placed inlets, then used stone pads set at the base of the cascade to quiet the water as much as we could. Not only is the result functional and dramatic, it also brings sight and sound to the setting while muffling the traffic noise.

As is the case with all of Citygarden's waterfeatures, the water in these basins is filtered, treated and recirculated. There's also a special thermal detector that shuts the system down automatically when the air temperature approaches the freezing point, but we set the basins up with a heater that keeps the waterfeature fully operational well into the colder months and brings it back on line as soon as winter releases its grip.

Urban Oasis

There's a small watershape tucked into Citygarden – this one set near the splash plaza (discussed next) and intended to offer a sharp contrast to the lively fun offered by the spray system in the form of a serene pool containing "The Voyage," a small, thoughtful bronze sculpture by Jean-Michel Folon.

Along with his NBWLA colleagues Sara Myhre, Breck Gastinger and Mary Wolf, Warren Byrd had observed the ebb-and-flow patterns of a river and wanted to bring a sense of water's fluctuating rhythms to this pool, basically so the sculpture (of a man and boat) would appear to float. This left us with the considerable challenge of replicating water eddies and backflows of the sort seen in quiet river coves.

To achieve this, we used a low-horsepower pump and designed special fittings that break the surface tension of the water. The effect is mesmerizing – just the right touch to "buoy" the sculpture and create a contemplative spot in an otherwise bustling park.

Modern Necessities

It makes sense, given Citygarden's ambition to represent harmony between people and nature, that we constantly kept our eyes on ways to make every aspect of the project's waterfeatures as eco-friendly as possible.

The lighting, for example, uses energy-saving LED technology, and we recirculate as much water as we can. In addition, the spray plaza's water flows into an underground vault where it is filtered and cleaned with computer-controlled equipment that minimizes the use of chemicals.

It's also no surprise that, in a modern world where everyone commissioning a project wants it done yesterday if not sooner, we accomplished all of this on an extremely tight schedule that had contractors climbing all over the site almost constantly.

The three subterranean mechanical vaults for the fountains, for example, not only required long lead times with the manufacturer, but also, when they arrived, had to be installed around the planting of more than 235 trees consisting of 20 different species – all of which required extensive truck access to the area. This beehive approach required serious logistical management: With cooperation and diligence, however, we all managed to complete our work on schedule.

The outcome is not only a matter of civic pride for St. Louis, but also the source of personal pride for those of us who worked on it – artisans, contractors, consultants and specialists alike. We all rose to the challenge, and the city is better off for our collective success.

– K.F.

The Art of Play

The third of Citygarden's main waterfeatures is among the largest interactive "play fountains" in the United States. This state-of-the-art spray plaza, where children and the young-at-heart can play with rare abandon, features 102 vertical water jets – the largest collection of such jets in any of the nation's spray areas.

These dynamic fixtures can shoot up to six feet in the air and pulsate in ever-changing patterns along a 120-by-36-foot plaza paved with slip-resistant bluestone pavers from Pennsylvania. The jets have been designed to perform 1,200 different water sequences (all of which can be programmed and monitored on site) and are governed by an anemometer that adjusts the height of the streams according to wind velocity.

Instead of flowing to a draining pool beneath the bluestone pavers, all of the water jetted into the plaza moves directly away to a reservoir and then proceeds to a vault in which it is filtered and chemically treated with chlorine and ultraviolet sterilization before being recirculated.

The key to making both the functional and aesthetic programs work had to do with developing a custom, multi-purpose, stainless steel nozzle with a square aperture. On the functional side, each nozzle had to be built into a stainless steel canister that doubled as a drainage head while also housing two LED lights, with everything protected by an acrylic lid. On the aesthetic end, the square nozzle was required to harmonize with the plaza's linear design, and there was also the fact that the square format saved installation crews the labor-intensive task of cutting circular holes in the bluestone pavers.

Franklin Mechanical, Kaiser Electric and B.E. Scaife Plumbing Co. (all of St. Louis) performed the expert installation, and it's all been done so ingeniously that visitors are completely unaware of the labyrinth of more than 20 miles of mechanical and electrical conduits beneath the area.

The LED lights are controlled by an on-site computer located in a subterranean vault we at Hydro Dramatics designed, remotely monitor and maintain. There are seven different power-supply locations, with each running 14 lights capable of generating any of more than 16 million colors.

Information Express

For More Information...

Our reader service card has gone high-tech. To request additional information from any of the advertisers listed below, go to **www.watershapes.com/ads**

Advertiser Index

Let your suppliers know where you found out about them: Mention January 2010 WaterShapes when contacting them by phone or the interent

Spotlight Index

For live links to the companies listed in the Spotlight Index, go to **www.watershapes.com/spotlight**

In the Spotlight

For live links to the companies featured here, go to **www.watershapes.com/spotlight**

Concrete Coloring

L.M. SCOFIELD CO. (Douglasville, GA) has introduced SolaChrome, an integral coloring treatment for high-SRI concrete. Designed to reduce the urban heat island effect, the treatments come in 44 colors and work by increasing surface reflectivity in the near-infrared range to cut the amount of solar energy the concrete can absorb. The result is cooler pavement, improved air quality and reduced energy costs.

LED Landscape Lighting

PENTAIR WATER POOL & SPA (Sanford, NC) offers IntelliBrite LED landscape lighting. The system comes with 10 fixed colors and 14 light-show combinations that can be synchronized with the line's underwater pool lights to create dynamic visual experiences. The fully adjustable, compact lights operate on two brightness levels and feature lens geometry that creates uniform light and color distribution.

Fire/Water Fixtures

BOBÉ WATER & FIRE FEATURES (Phoenix, AZ) offers a variety of features for outdoor residential and commercial environments, including custom scuppers, po pots, fire/water pots and more. Crafted from raw natural materials including stainless steel, copper and Cor-Ten steel (as well as recycled materials), the custom-fabricated products are fully welded across all seams for durability and beauty.

Modular Green Roof System

LIVEROOF (Spring Lake, MI) offers modular, pre-vegetated green roof systems. Designed with connections between units that allow for transmission of water, nutrients and beneficial organisms from 1-by-2-foot module to module, the system unites soil across the entire roof (avoiding compartmentalization and problems with hot/dry and wet spots) and has drain channels that keep the roof membrane dry.

Rainwater Harvesting

ROMAN FOUNTAINS (Albuquerque, NM) has introduced rainwater harvesting systems for use in conjunction with fountains. The pre-engineered systems include pre-filters and corrosion-resistant FRP tanks and vaults with storage capacities ranging from 500 to 5,000 gallons. Systems can be expanded simply by adding more tanks, each of which have lockable access hatches and internal safety ladders.

Compact Excavator

BOBCAT CO. (West Fargo, ND) has introduced the E60 excavator. Designed for operator comfort and mechanical durability, the rubber- or steel-tracked units can be matched with various attachments (trenching buckets, hydraulic breakers, earth augers and grading buckets) to meet a variety of job-site needs and have minimal tail swing for work on compact sites or next to buildings or other obstructions.

Pre-Filter System

WATERCO USA (Augusta, GA) offers MultiCyclone, a pre-filter designed to save water and reduce pool-filter maintenance. Based on principles of centrifugal filtration, the unit clears away up to 80 percent of the water's dirt load before it reaches the main filter; requires little water to clean, as it operates without any filter medium; and has no effect on hydraulic performance, even when filled with dirt.

Fence-Installation Guide

EVOLUTION FENCE CO. (Hauppauge, NY) has developed an online instructional video to guide contractors through installation of its screw-free, no-sharp-edges Fusion-Loc fencing systems. Featuring step-by-step visuals, the video walks installers through application of the locking mechanisms that keep pickets from rattling and ensures against dislodging if children stand on the lower rail.

The information seen here has been provided to WaterShapes by product suppliers.
To contact these companies for details, please use the live links at **www.watershapes.com/ads**.

Continued on page 67

Introducing
The WaterShapes Community

WaterShapes has launched a premium, members-only section of our Web site for watershaping's elite! By participating in The WaterShapes Community, you'll benefit from exclusive features and capabilities that will enhance your experience as a watershaper and contribute to your success. You will:

- Enjoy unlimited access to an **electronic archive** of our back issues, with an index to help you find what you're looking for.
- Have a lively forum where you can **express your views** on important issues facing the industry and learn what other watershapers think.
- Receive **discounts and special offers** from The WaterShapes Store and the magazine's advertisers.
- Be able to place **business-to-business classified ads** that will enable you to connect with other watershaping companies.

Plus, additional features will be coming as The Community develops!

Don't miss out on this opportunity to be part of a unique online group of leading watershapers. To sign up and receive a 20% introductory membership discount, go to www.watershapes.com/register.

WATERSHAPES
ONLINE

In the Spotlight

For live links to the companies featured here, go to **www.watershapes.com/spotlight**

Wheel Loader

CATERPILLAR (Peoria, IL) has introduced the 907H Compact Wheel Loader. Featuring a skid-steer-loader-style coupler, two-speed hydrostatic drive, standard differential locks (in both axles) and a high-visibility operator's station, the smooth-operating unit is designed for varied landscape and general-construction applications with a variety of tools, from trenchers and stump grinders to dump buckets.

Waterplay System

SCS INTERACTIVE (Denver, CO) is distributing the Cannonball in the North American market. Based on the idea of a water cannon and designed for safety, this unique, German-made waterplay feature is available in both standard and custom configurations and projects riders up to 23 feet into a swimming pool, sending them flying through the air on a wave of water before landing smoothly in the water.

Classic Coping

STEPSTONE (Gardena, CA) offers classic bullnose coping for use with swimming pools. Designed to complement the company's full line of paving products, the coping comes in an array of standard colors and in outside/inside corner, outside/inside radius and straight components. All are made using 4,000-psi hardrock concrete and come with either stippled or sand-blasted non-slip finishes.

Deck Lighting

HADCO (Littlestown, PA) offers a full line of low voltage deck lights in a variety of styles, profiles and finishes. Designed for mounting atop posts, under steps, on posts or walls or under railings, the fixtures are made with brass, copper, aluminum, stainless steel or composite material in a variety of finishes and colors. Each one comes packaged with a lamp, six feet of wire and a low-voltage connector.

Continued on page 68

ATTENTION ALL READERS!

Many of you have asked why you need to fill out subscription cards if no information about your business has changed. Here's why:

We are required by the U.S. Postal Service and the Bureau of Publication Audits to be able to prove, with your signature on a card, that you asked to receive the magazine and that you are a watershaper.

If we don't hear from you *once each year*, you run the risk of being cut off our subscriber list. And it can happen even if you have received every issue we've ever published.

This is important, so take a minute once each year to complete one of the subscription card we include in every issue of the magazine and mail it to us. Thanks!

WATERSHAPES

In the Spotlight

For live links to the companies featured here, go to **www.watershapes.com/spotlight**

Outdoor PVC/Flooring

FIBERON (New London, NC) has introduced its Outdoor Flooring line. Made with solid-core cellular PVC and finished for quick cleaning, the easy-to-install, ultra-low-maintenance, scratch- and stain-resistant decking is made to stand up to just about anything with which the elements and people can challenge it and features a fusion-bonded surface that is highly resistant to mildew, staining and fading.

Fire-on-Water Systems

HEARTH PRODUCTS CONTROLS (Dayton, OH) has expanded its line of fire pits, rings, torches, enclosures and accessories with the addition of fire-on-water systems. Designed to overcome issues related to sooting and nuisance drop-outs, these remote-controlled systems feature electronic ignitions that incorporate flame recognition through use of thermocouples for safe, reliable performance.

Rockwork Kits

ROCKWOOD RETAINING WALLS (Rochester, MN) has introduced a series of outdoor living kits. These easy-to-install hardscape kits (including fire rings, fireplaces and barbecues) come in three color options and eliminate all the difficulties of designing, estimating, and building custom backyard landscape features by coming packaged with everything needed to build on a properly prepared base.

Vegetated Roof Tiles

CARLISLE SYNTEC (Carlisle, PA) has introduced a new Roof Garden system that provides instant coverage in the form of vegetated sedum tiles. When set in place on a properly prepared roof space and a layer of the company's growth medium, the tiles give clients rooftop planted spaces of any size on the day of installation, and the sedum grows so tightly that there's little opportunity for airborne seeds to take root.

AutoCAD Capability

STRUCTURE STUDIOS (Las Vegas, NV) has added a feature that allows AutoCAD files to be imported directly into its Pool Studio design software. Making it easy to open templates, symbols and whole projects generated using a system popular among architects and landscape architects, the feature transfers .dwg files (AutoCAD's native file format) to Pool Studio files within minutes.

Climb/Slide Structure

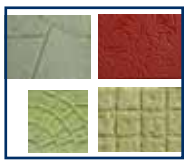
EMPEX WATERTOYS (Uxbridge, Ontario, Canada) has introduced the AquaDek T410-243S climb-and-slide structure for spray-parks or shallow, beach-entry areas of pools. The units provide step entry and three different slide designs for active use by children 12 and under. Fabricated from non-ferrous materials, the structure is corrosion-resistant and has low electrical and heat conductivity for safety.

Get Our Free e-Updates!

Provide us with your e-mail address and we'll send you informative and useful **WaterShapes EXTRA!** electronic updates.They're a great bonus – and absolutely free!

Go to **www.watershapes.com/updates**

Flagstone Pavers



ECG (Elizabeth City, NC) produces a full line of commercial-grade flagstone pavers made using mostly recycled materials. Designed for toughness and durability in patio, sidewalk, courtyard and driveway applications, the units are available in an array of patterns to meet a range of architectural and landscape needs and come in an array of standard colors as well as in custom colors – all cast through each unit.

Water-Treatment Guide

SEAKLEAR (Bothell, WA) has published a reference for pool/spa professionals. Entitled *The Book on Effective Water Treatment*, the 58-page pamphlet covers water chemistry and clarity, algae and phosphates, stains, metals, recreational water illnesses and more, using checklists and a problem/solution format with clearly explained recipes for solving a wide range of chemical and equipment-related problems.

Shapeable Pool Walls

CARAVELLE INTERNATIONAL (Schuylkill Haven, PA) has introduced a unique spline attachment that, when secured to the back of its flexible polymer pool panels, allows for the design and installation of vinyl-liner pools of almost any shape. The attachment is easy to install or remove using tek screws rather than traditional push nuts or serrated locking washers, making the process both fast and simple.

Wood Alternative

TIMBERTECH (Wilmington, OH) offers decking, railing, fencing and integrated low-voltage lighting products. Designed to provide an attractive, low-maintenance alternative to wood, the components will not splinter or warp, never require painting, staining or sealing and come in a wide array of standard colors. The deck planks are mildew- and slip-resistant and come in six profiles to suit a variety of applications.

Book Notes

Small Wonders

By Mike Farley

On several occasions through the past few years, I've been called on to design several projects that were both extremely small and extremely detailed. I've found that working in these intimate spaces is a tremendous challenge, with every single detail taking on tremendous importance and even something as innocuous as the mortar color making or breaking an entire scene.

At the same time, I've found these projects to be exceptionally rewarding because of the intensity of the effects and the subtlety of the ambiances I've managed to create: Those same details are so immediate and close at hand that I would even argue that their emotional impact is heightened to levels not possible in more expansive designs.

Looking to add to my own well of inspiration with these projects, I set out to find resources to help me deal with designs in miniature. I came up big, with three terrific books that look at the process from different angles.

Small Garden by John Brookes (Dorling Kindersley, 1989). Although it is 20 years old, this volume is timeless. Brookes (whom I idolize) is a master gardener, and the book puts a number of his projects in England on display. Along the way, he addresses the subject of working in small spaces by looking at elements in the garden, from plants and hardscape to water and much more.

His description of his extremely methodical design process offers tremendous insights on ways to make keen stylistic statements, and the illustrations that fill the book's 220 pages include both photographs and his hand renderings – all revealing the remarkable creative range of one of today's greatest designers.

The Small Garden Planner by Graham Rose (Mitchell Beazley, 1987). This book, by an esteemed, London-based garden writer, covers small spaces from the perspectives of a number of designers using a variety of styles and approaches, again in a case-study format.

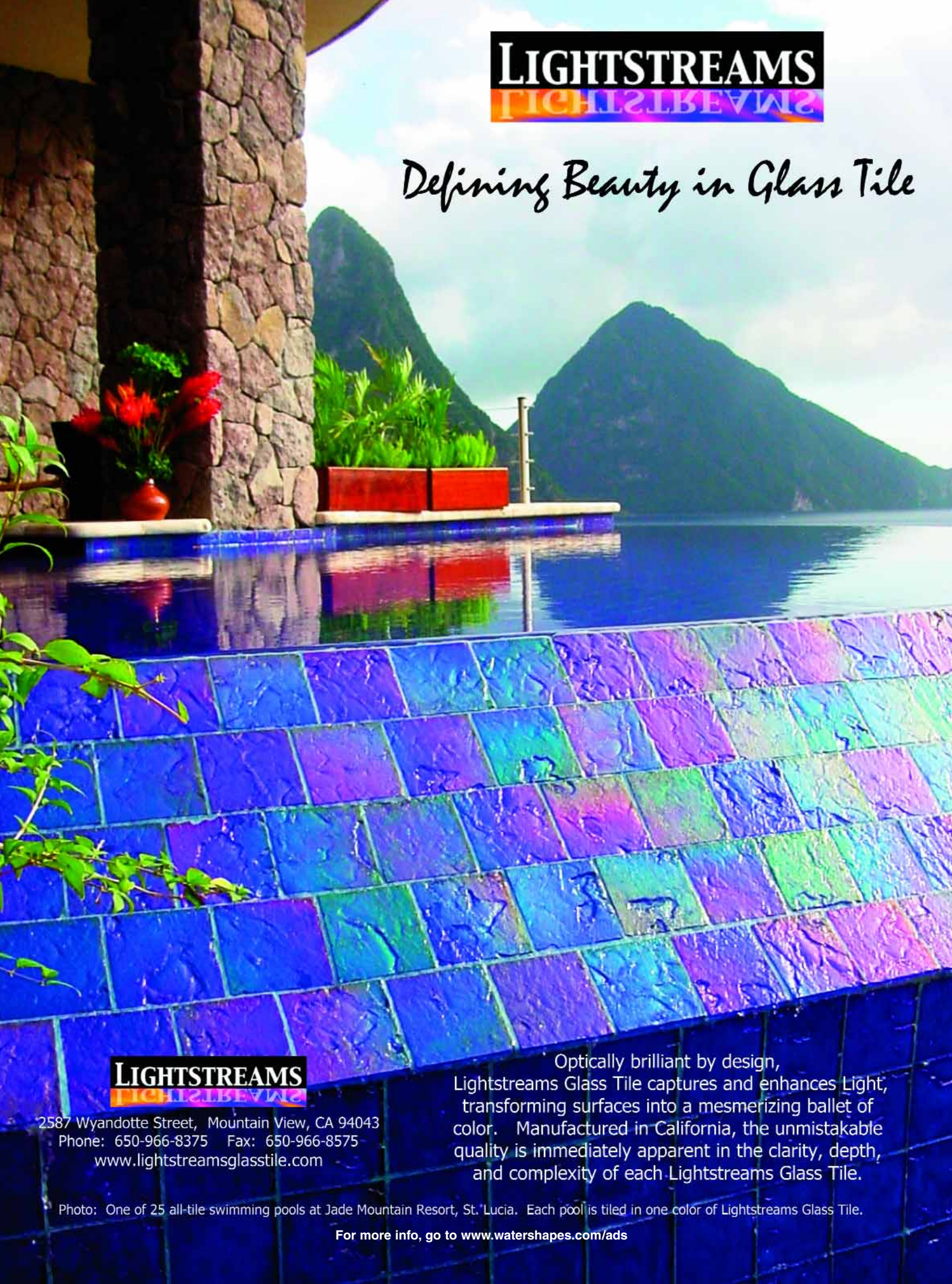
The book's 170 beautifully illustrated pages are well-formatted, with each entry including plan views of the project that helped me understand how these spaces are organized and how small spaces can be set up in ways that bring variety and even surprise to intimate settings.

Small Spaces, Beautiful Gardens by Keith Davitt (Rockport Publishers, 2001). This appropriately slim volume takes on small spaces using case studies generated by a well-known designer (and past *WaterShapes* contributor) who has specialized in private and public gardens in and around New York City for many years.

His is an urban practice that obviously involves work in tight confines, and he uses his case studies to explore issues of organization, proportion and a range of design fundamentals with a special focus on thinking small. It's just 140 pages long, but Davitt's compact text offers wonderful insights into the thought processes that shape his designs.

It bears mentioning that none of the projects covered in these books includes a swimming pool or spa, although a number do include small ponds and fountains. Nonetheless, as a pool designer I value them all for the information they offer about design methodology and a sense of discipline that applies to jobs both small *and* large. WS

Mike Farley is a landscape architect with more than 20 years of experience and is currently a designer/project manager for Claffey Pools in Southlake, Texas. A graduate of Genesis 3's Level I Design School, he holds a degree in landscape architecture from Texas Tech University and has worked as a watershaper in both California and Texas.


LIGHTSTREAMS
Defining Beauty in Glass Tile
LIGHTSTREAMS
2587 Wyandotte Street, Mountain View, CA 94043
Phone: 650-966-8375 Fax: 650-966-8575
www.lightstreamsglasstile.com
Optically brilliant by design,
Lightstreams Glass Tile captures and enhances Light,
transforming surfaces into a mesmerizing ballet of
color. Manufactured in California, the unmistakable
quality is immediately apparent in the clarity, depth,
and complexity of each Lightstreams Glass Tile.
Photo: One of 25 all-tile swimming pools at Jade Mountain Resort, St. Lucia. Each pool is tiled in one color of Lightstreams Glass Tile.
For more info, go to www.watershapes.com/ads

Jandy®

AquaLink® RS TouchLink™

- Full Color Touch Panel
- Wired or Wireless Installations
- Energy Savings Programs
- Intuitive Navigation
- Customizable Home Screen
- Digital Photo Frame and Slideshow Display
- Smart Interfaces with Variable Speed Pumps, Salt Water Chlorinators and Color Lighting
- Available Early 2010

EXPERIENCE ULTIMATE CONTROL

TouchLink automates backyard equipment including filtration, pumps, heaters, heat pumps, solar, cleaners, lights, chemicals and more. With virtually unlimited programming options, TouchLink is engineered to automate the latest equipment technologies, and is perfect for the renovation and after market segments.

For more information, contact your local Zodiac Sales Consultant at **800.822.7933** or visit **www.jandy.com**