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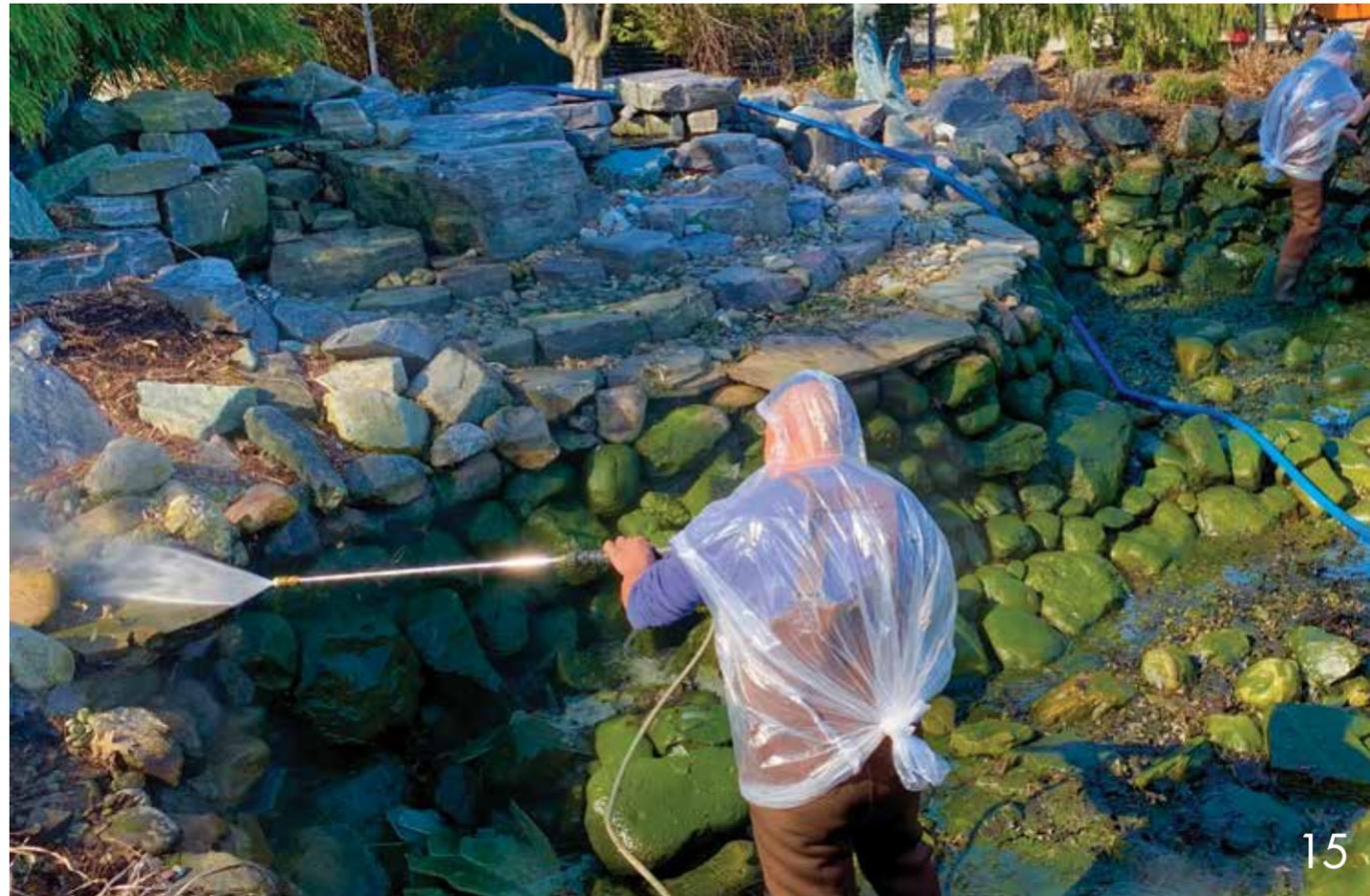
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29 Checkerboard Koi LANGUAGE OF KOI

Ellen Kloubec is back with a close look at some of the various Utsurimono koi varieties. If that's too much of a mouthful, just think checkerboard koi. Learn how to identify these beautiful swimmers sprinkled with patterns of white, red or yellow.

34 Don't Be Shocked!

You don't have to be an engineer to be able to have a frank, effective conversation with your clients about electrical safety in their pond or pool. **Larry Carnes** highlights some of the basics of the trade, with a special look at submersible water pumps.

43 Nature's Ultimate Bio-Assassin

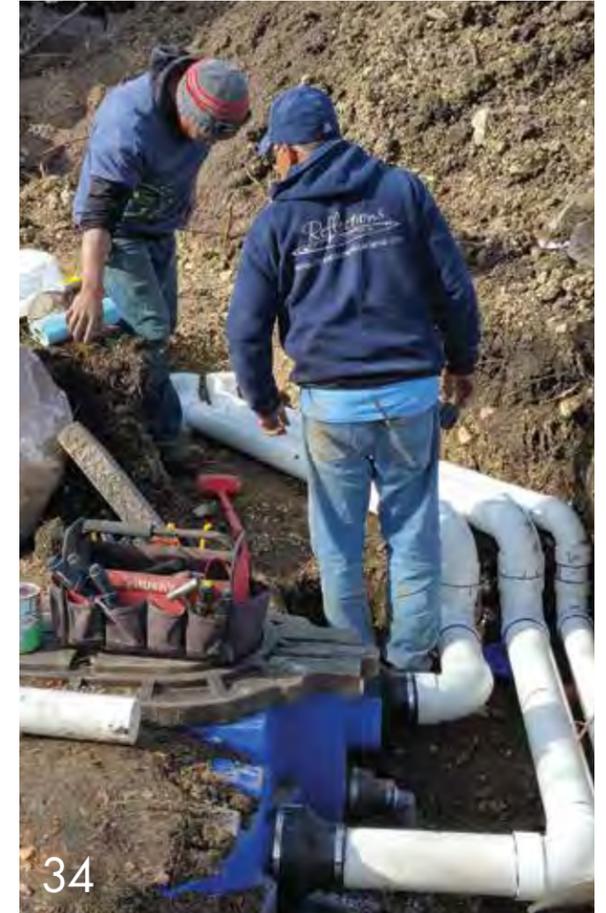
In almost no time at all, a harmful algal bloom can kill a pond, slowly turning it into swampland. **Patrick Simmsgeiger** explains how aeration and other essential tools can repair a domestic water feature before it goes downhill.

50 Circulation Nation

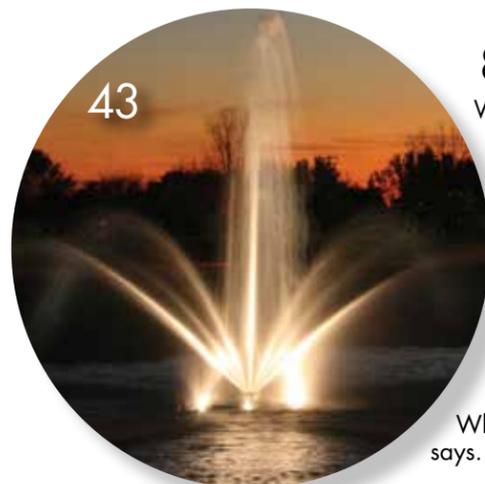
Some years ago, **Kent Wallace** developed the vertical pond return drain as a new circulation method for his clients. In this issue, he sorts through some other popular methods of moving water and invites feedback from other inventive minds out there.

55 Water Garden Expo Wrap-up

At February's WGE, our own **Lora Lee Gelles** was proud to present the awards to the winners of our Water Artisans of the Year contest — and snap a few photos along her way.



FEATURES



8 For Your Viewing Pleasure POND CONSTRUCTION

Why bother bingeing on Netflix when you can catch a glimpse into the world of koi live on the big screen — with no streaming required? **Alan Koontz** shares his story about a one-of-a-kind water feature construction project.

15 Biosafety Basics

Mike Gannon tackles one of the world's hottest topics — personal safety and protection while on the job. You won't want to miss his timely tips for professional perseverance in a post-Coronavirus world.

20 The Bigger They Fall COVER STORY

When it comes to building waterfalls, "Go big or go home," **Landon Malave** says. Check out his do's and don'ts surrounding rock and boulder selection.



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Upcoming Events

2020

May 5 – 7

National Hardware Show

Las Vegas Convention Center
Las Vegas, Nevada
www.nationalhardwareshow.com

June 27 – 28

Pond-O-Rama Tour

20th Annual Garden and Pond Tour
St. Louis, Missouri
www.slwgs.org

August 11 – 13

IGC Show

McCormick Place / Lakeside
Chicago, Illinois
www.igcshow.com

August 26 – 29

Pondemonium

The Q Center
St Charles, Illinois
www.aquascapeinc.com/professionals/
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September 9 – 11

Atlantic-OASE Professional Conference

Cleveland, Ohio
www.atlantic-oase.com

October 21 – 23

GIE+Expo / Hardscapes North America

Kentucky Exposition Center
Louisville, Kentucky
www.gie-expo.com

November 8 – 13

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www.poolspapatio.com

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POND Trade Magazine is published bi-monthly, starting in January, for \$41.70 per year by LG Publishing, Inc., POND Trade Magazine, PO BOX 2721, Orland Park, IL 60462. Qualified applicants may subscribe at no cost at www.pondtrademag.com. Postage is paid at Orland Park, IL and additional offices. For new subscriptions, additional copies and address changes, please call 708/873-1921 or email llgelles@pondtrademag.com.

POSTMASTER: Send address changes to POND Trade Magazine, PO BOX 2721, Orland Park, IL 60462 © Lora Lee Gelles, 2020

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Publisher's Perspective

We'll Get Through This!

As I write this, we are in the middle of a lockdown because of the Coronavirus pandemic. This is such a strange, unprecedented time. We hope you've all been practicing social distancing and are feeling healthy.



How have you been staying busy? It appears that each state has created its own set of rules as to whether pond and water feature construction are deemed essential. If you've been forced to sit at home, hopefully you are catching up on paperwork, working on future business plans, and, of course, learning and brushing up on your skills as you browse this issue and catch up on our archives on the web at www.pondtrademag.com.

Whether you're holed up at home or carefully working out in the field, always remember that we at POND

Trade will always be here. In addition to our bimonthly print issues, we offer continuous content and interaction on our website and social media platforms. Add us on Facebook and Instagram, interact with fellow aquatic enthusiasts, and otherwise stay in touch. We will get through this!

You will probably notice that this issue is slightly smaller than a typical May/June issue, but don't let that fool you. We're still jam-packed with articles you won't want to miss.

Safety seems to be on everybody's mind right now, and we're all over the subject. Check out Mike Gannon's very timely article on biosafety ("Biosafety Basics," pg. 15) to make sure you've made the proper precautions with your crew and employees as they relate to COVID-19. It might not be a bad idea to share it with your staff, too. Larry Carnes contributed an informative piece about electrical safety around water ("Don't Be Shocked," pg. 34). If you work with pumps and swimming ponds, this article might be of particular interest.

We typically don't do this, but we would like to give a quick shout-out to our advertisers in this issue. We know that the economy is a bit uncertain right now, but we couldn't be here without your wonderful support. Thank you!

Keep your chin up and remember — this too shall pass.

Happy PONDering!

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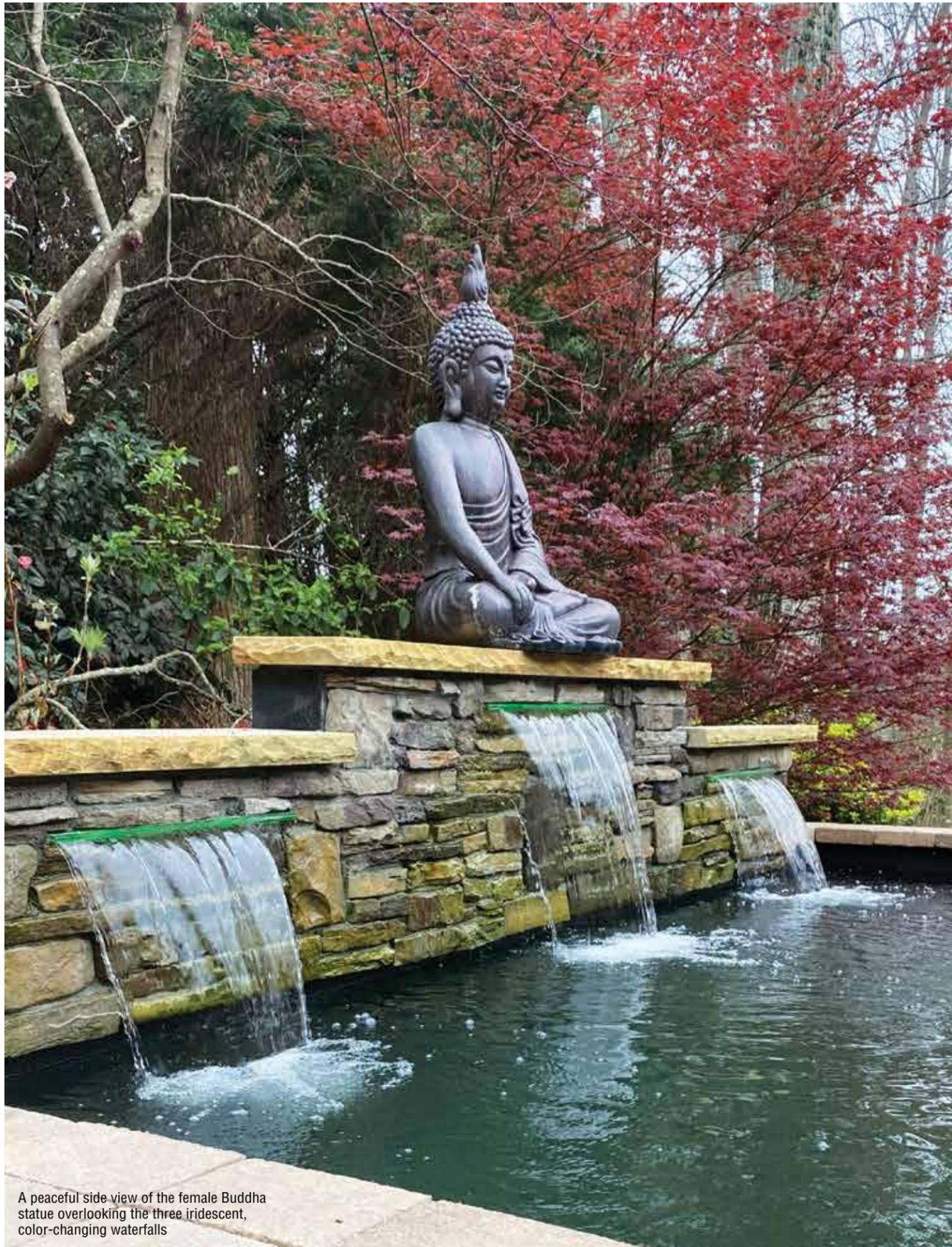
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A peaceful side view of the female Buddha statue overlooking the three iridescent, color-changing waterfalls



The 8-foot-wide viewing window is 36 inches tall and 2 inches thick.

For Your Viewing Pleasure

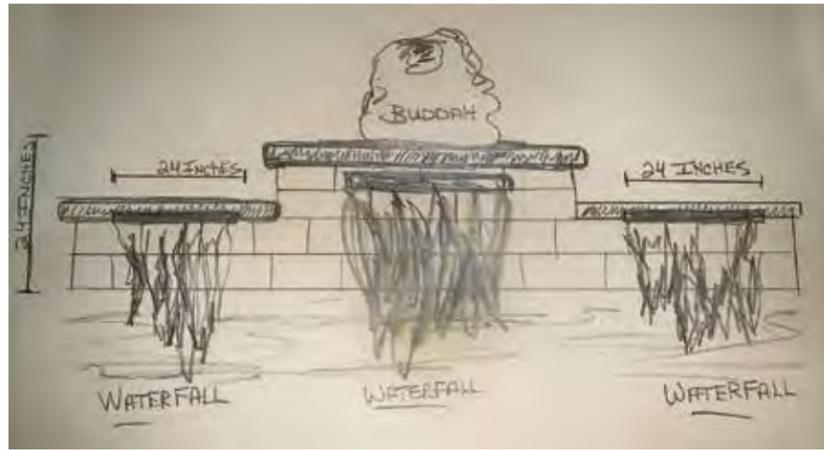
Unveiling a window into the world of koi

by Alan Koontz,
Carolina Pondscapes Inc.

We were two years into a maintenance contract for a natural water garden built by another contractor. It featured a large, 25-foot waterfall cascading down a hillside. As we continued to maintain it, we found that the sides of the stream in the waterfall were settling, creating many leaks that

would require continued adjustments. Because the liner had been cut too short, it could not contain the water. Boulders had to be lifted and moved inward to correct the leaks.

The pond was lower than grade, so it captured runoff from the concrete patio above, which consistently washed debris into it. The previous contractor had attempted to install a drain beside the pond to capture the runoff, but it only lasted for so long. It was clogged with dirt and



debris, and at this point, its functionality was a thing of the past.

Starting Anew

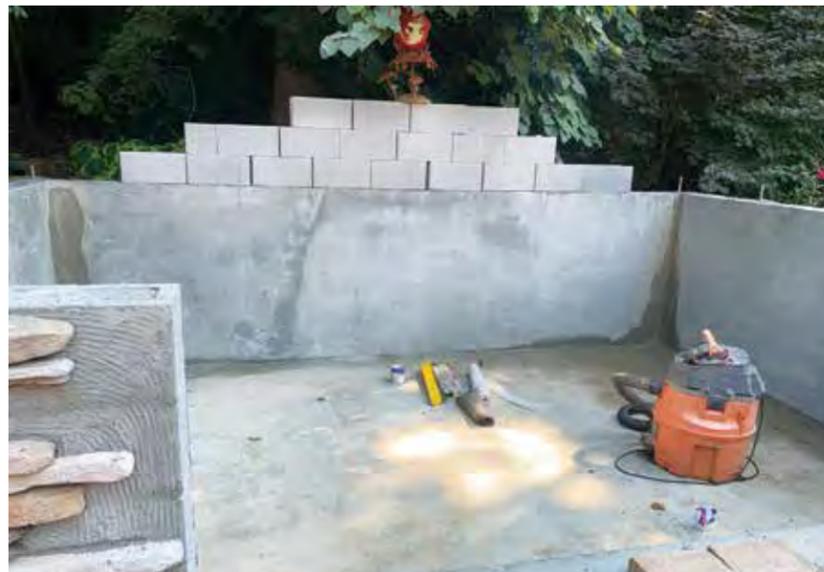
Fast-forward to 2019, and the customer had become long irritated with all the costly upgrades required to maintain the feature. She pulled us to the side and asked us if we could make a water feature that she could actually enjoy and see her fish — something different, but awesome!

We began with the design of a new koi pond with a viewing window to see the fish swim back and forth. After sitting down with her and going over the plans, designs and layout, we began removing the existing headache and started constructing the new koi pond for her.

We removed the old water garden, and with the boulders set aside, we got busy. Once we got started, the customer ended up redesigning her entire backyard, including a new liner for her pool, a new whirlpool, an outdoor pergola, a new deck on the house, new lighting and much more.

The initial design consisted of a waterfall that flowed down the hillside and into the main

A quick rendering on paper (top) helped us keep track of the design as it progressed. The main basin (middle) was constructed out of concrete blocks filled with fast-setting concrete and ½-inch rebar, parged with a thick coat of Portland, and then rendered with waterproofing membrane. We smoothed out the base for the color-changing waterfalls (bottom, left) and plumbed in a Renegade skimmer (below).



After removing the entire feature, I found that the existing slope would not work for the design we were after. For it to work, we would have to lower the formal pond, and the viewing window would not be visible from above. There would have to be a major step down below grade to see the fish.

pool area. She wanted to combine natural elements with a formal feature at the same time. After removing the entire feature, I found that the existing slope would not work for the design we were after. For it to work, we would have to lower the formal pond, and the viewing window would not be visible from above. There would have to be a major step down below grade to see the fish.

With that being the case, I decided to keep the feature at the same grade as the existing patio around the pool area. That way, the customer's family could be on the patio and see the koi swimming back and forth without having to change levels. We also made it the proper height so that viewers could walk right up, lean over and touch the fish.

We leveled out the entire pond area and started with a clean slate. After fighting rain and mud for several weeks, we were finally able to lay down a crush and run base, compact it down as tightly as possible and let it set for several weeks. This needed to be done since the area was very muddy, and loose mud tends to shift.

Ready to Pour

After several weeks of compaction, we laid out the main base of the fountain,

The entire construction site was viewable from the customer's porch (top). The use of rebar and high-strength concrete (middle) made the structure solid and robust. Once the outside was completed, we began installing paver caps on top of the walls (bottom).





Buddha keeps an eye on the koi. Crystal clear water flows thanks to the use of proper filtration and circulation.

which was 12 by 16 feet. The concrete was poured by one of our existing subcontractors at a depth of 6 inches, with a fiber mix and wire mesh inside. This base didn't need to move, and it

in the middle of the Gulf of Mexico is rarely reliable. Since the walls were ready to be constructed, and I didn't want to wait until our eight-day cruise was over, I found a way to communicate with

The 8-by-3-foot glass viewing window is tempered and 2 inches thick. We did our research, discussing the load capacity with several engineers and consulting with a local glass company.

had to hold approximately 5,000 gallons of water. Once the base was poured, we again let it sit for the proper amount of curing time.

A 'Virtual' Twist

Now, it gets interesting. We had already scheduled our yearly cruise during this construction period. How would we get the walls laid and constructed in time? Well, as you may know, the internet connection on ships

our brick masons over Facebook and WiFi at a Wendy's when we docked in Curacao. Drawing out all the dimensions on paper, we were able to communicate with everyone on the design and construction. In more ways than one, these guys rocked!

They sent me photos of the job, and when I finally got back to the job site, it looked great. It met my expectations, and we were ready for the remaining work.

The Heart of the Feature

All walls were constructed using cinderblocks and filled with concrete and 1/2-inch rebar every 24 inches vertically and horizontally. This provided additional strength for the walls. On both sides, we had to apply a parge coat for a smooth finish. On the outside, we covered it with Bucks County Southern LedgeStone by Boral.

The 8-by-3-foot glass viewing window is tempered and 2 inches thick. We did our research, discussing the load capacity with several engineers and consulting with a local glass company. The window was placed and secured in a steel S-channel, which was constructed by local welder Adam Burton of Burton Builders. Holes were drilled every 12 inches, and 4-inch lag bolts were screwed into the concrete. All metal was sealed with a waterproof sealer, including Dowsil 795 architectural-grade silicone sealant around the glass window. We used two coats Masterseal 550 cementi-

tious membrane for waterproofing.

For pump and filtration, we used an Aqua Bead pressurized along with two pumps. One pump circulates 7,000 gph for the Atlantic Water Gardens Color Changing Waterfall Spillways, which require approximately 2,200 gph each. These waterfalls not only provide aeration of the water but also create a relaxed feeling of serenity. The other pump is sized at 4,000 gph and circulates through the aqua filter. We plumbed Jandys 3-Way valves onto the lines to provide water in the directions we needed and included several locations for additional aeration lines.

A Waterway Renegade Skimmer was attached to the side of the feature to skim the debris on the water surface, and a bottom drain releases water from the pond during cleanings.

For lighting, we used Jandys

LED Lights inside the feature to highlight it at night.

A Swimming Success

We learned a lot from this project, as we had to meticulously ensure everything was above and beyond expectations. This new koi pond will provide movement and serenity in our customer's backyard and create future opportunities for family and friends to become mesmerized by the large koi swimming back and forth.

Our customer is very successful, so we are especially proud of the combination of the female Buddha, which represents the Mother of Liberation and the virtues of success in work and achievements. The koi fish, too, are associated with perseverance in the face of adversity, strength of purpose and, perhaps most importantly, good fortune. 

About the Author

Alan Koontz, born and raised in Thomasville, North Carolina, has been co-owner of Carolina Pondscapes with his wife Sherry for more than 20 years. After a combined 21 years in the U.S. Army and separate stints in the corporate world, they welcomed their first child, Zak, and soon found themselves back closer to home with a common mission — building water features. Alan and Sherry (the Boss) have since installed hundreds of natural and formal water features throughout North Carolina and other parts of the country.



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Pond interiors can host numerous pathogens. Precautions should be taken to protect service technicians.

Safe & Sound



Biosafety Basics

A pond professional's guide to a COVID-19 world

by **Mike Gannon**,
Full Service Aquatics

Biosafety. We all know that word by now — it's becoming the new norm on a worldwide scale. Due to the COVID-19 pandemic, the issues surrounding biosafety at all levels have become an essential daily concern. Sticking to our industry's best practices is a must as we move into the "post-Coronavirus" world.

As pond professionals, biosafety has always had an important role in our profession. Although not always a front-and-center matter, the protocols surrounding biosafety will begin to see a more prominent position throughout the many facets of our industry. How we individual pond professionals handle it will reflect back on the industry as a whole. Right now seems to be the perfect time to refresh and refine our systems and protocols when it comes to a healthy pond and work environment, while always being mindful of how they affect our clients and customers.

Dangerous Waters

Our species is no stranger to the transmission of waterborne illness and disease. Pathogenic microorganisms have looked to humans to build and host their communities since the earliest of times, often with deadly results — especially as they tend to pop up during wartime, in the middle of natural disasters and at other inopportune moments.

Pathogens really like to kick mankind, especially when we are already down. Some of these pathogens sit quietly below the waters we work in, just waiting for the right time to take the stage.

We pond professionals potentially face the full gamut of pathogens coming into our lives via bacteria, parasites,

viruses, protozoa and even some algae we encounter. All these pathogens are just looking for a pond pro to give them any opening to mount an offensive — a small cut on the skin or a splash that gets in the

toms. It is essential that every professional have a protocol for biosafety, especially those who on the ground (or in the pond, as it may be). Such a protocol is directly linked to financial safety, as you

Pathogens really like to kick mankind, especially when we are already down. Some of these pathogens sit quietly below the waters we work in, just waiting for the right time to take the stage.

mouth or eyes is all bacteria need to gain some ground on their human host.

Parasites are happy to burrow into any unprotected skin or tract system. Blue-green algae would love an excuse to knock you on your ass!

An exposed pond professional could experience a wide range of symptoms, including eye and ear pain, respiratory problems, headaches, gastrointestinal issues, itchy skin, sores and flu-like symp-

tom. It is essential that every professional have a protocol for biosafety, especially those who on the ground (or in the pond, as it may be). Such a protocol is directly linked to financial safety, as you

Protective Measures

Pond professionals can do quite a bit to keep their workplace, employees, clients, and, by extension, many others a bit safer as we look toward the post-Coronavirus world.

In the workplace, intermittent disinfecting of workspaces, desktops, keyboards, door handles and vehicle

interiors should become company protocol. Consider distributing “bio-kits” with hand sanitizer, disinfectant wipes, a pocket-sized First Aid kit and some vitamin C chews to each employee every quarter. Add hand sanitizer dispensers at entrances to your business. Post signage encouraging hand washing and sanitation. Discuss biosafety at your the company meetings, and let the company germophobes make suggestions, too. I'd bet they have some good ones!

In the field, implement new norms for interacting with clients and customers. Keep them limited to a wave, a smile and a friendly hello from a healthy distance. The days of handshake greetings, hugs and close-talking formalities may be behind us. We can still discuss the weather and ask about family from a safe distance. Leave behind a service report for the client instead of giving them a verbal rundown. After all, service reports are more professional and are great for social distancing!

When performing pond services such as cleaning and maintenance, make sure your employees are wearing the proper gear. Eye protection and gloves should be required equipment for any pond servicer. Many pond professionals perform pressure-washing services for pond interiors. Wearing protective covering from head to toe should be required, given the nature of this procedure — the rapidly accelerated, wide dispersion of water droplets. Don't be that pond pro cleaning a pond in shorts and a T-shirt, but understand that you don't have to wear a scary hazmat suit, either. Be comfortable, but be protected, too. Cover your skin and set a professional example.

Remember to clean and disinfect handling equipment such as tanks, nets and buckets. Treat intermittently with a light bleach solution and rinse all equipment after use — especially if you're going from pond to pond. Do the same with gloves, waders, boots,



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Although it looks like clean, clear water from above, a pathogen's playground lies just below the surface.

eyewear, head gear and ear protection used by field technicians. Perform monthly deep cleaning and disinfecting of all field equipment. Equip vehicles with portable eyewash kits and a very good First Aid kit. Keep extra plastic sheeting in your vehicles for everything unforeseen. Refine disposal practices for dead fish (burial) and infected plant parts (burning).

Spread the Word (not Germs)

With these new measures in place, take time to let your clients know about your biosecurity efforts in your newsletter or email blast. Your clients will be impressed and will appreciate your interest in their well-being. Just as important, take time to

keep yourself healthy. This business can involve long periods of intense working conditions that can cause fatigue, so take the time to rest and recover with some scheduled days off, even during the busiest of times. The push for improved biosafety for pond professionals will certainly be an evolving process as new conditions, problems, issues and challenges arise that require all of us to adjust and adapt. Taking a few small steps toward improving how you operate within these post-Coronavirus parameters can impact everyone who is touched by your business. Hopefully it leads to large-scale, industry-wide improvements that result in a greater level of professionalism and safety. ☞

About the Author



Mike Gannon is the owner of Full Service Aquatics (FSA) based in Summit, New Jersey. Mike has been a lifelong pond enthusiast and fishkeeper. Mike began Full Service Aquatics after working as a fish dealer and a stint at the New York Aquarium. FSA has been specializing in pond and water feature design and services since 1995. Mike is the host of The Pond Hunter Radio

Broadcast, which is available on iTunes. His Pond Hunter videos can be found at www.youtube.com/theponhunter, and his Love Your Pond blog can be found at www.fullserviceaquatics.com.

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| **Cover** Story |

The Bigger They **Fall**

Waterfalls balance rock,
water & air

by Landon Malave,
LCM Landscape & Design

Waterfalls, while challenging, can be a very rewarding undertaking. It is crucial that they are built with both integrity and sustainability in mind.

Getting Started

The first step in building a waterfall is understanding the needs and wants of the client. This is the most crucial element for me. Don't let their budget dictate the quality of products you use; instead, let the numbers dictate the actual size of the feature itself. Do they want a pondless waterfall or an open basin? What kind of maintenance, filtration, koi, recreation, and viewing points does the customer want?

The point is, there are so many kinds of water features nowadays, and it really depends on what the client's budget will allow. This directly determines the size of the boulders you use, because rock is sold by the ton. When using large boulders, it is hard to determine the weight of each rock individually, so underestimating how much you need is a common mistake. It can be devastating after a build if you had planned on using 10,000 pounds of rock and ended up using double that amount. (But at the end of the day, it doesn't matter so much if I spend a little more money on boulders, because I ultimately want every project to be extra special.)



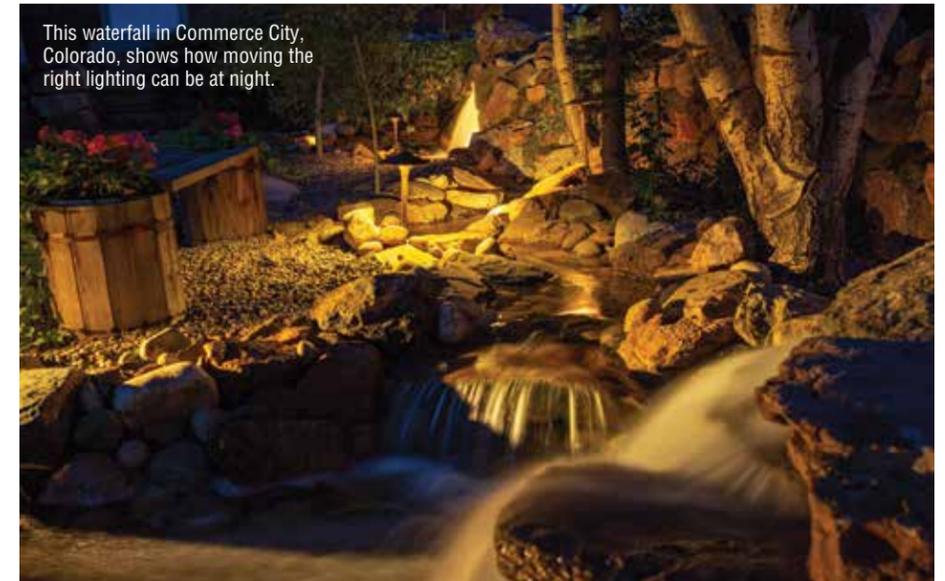
A covered stone seating area (top) uses large rock to make a natural waterfall, stone bridge and fire pit from native rock harvested from the surrounding property in LaPorte, Colorado. A waterfall maximizes viewing angles (left), which can be seen from the patio or the house, with a beautiful mountain backdrop in Arvada, Colorado. Another massive 8-foot waterfall (right) is fed by an almost 40-foot meandering stream to utilize the structure from a previous waterfall.

After the client and I are on the same page, my next step is doing the 3-D design to understand the location, elevation and the overall waterfall concept. This helps me plan out how I want to stage the project, what the access is like and where I need to start and finish the project. This design process also helps me determine all the required materials, head heights, pipe sizing, liner or underlayment type, filters and rock orientation. Once we have it all specced out and agree on a price, the fun begins!

Sizing pumps, pipes and basins and setting the head height are critical when it comes to making a waterfall an overall success. I build them at maximum capacity to ensure no water loss in streams, waterfalls and basins. I tend to use more water, because with the variable speed controller on the Atlantic Water Gardens TT-Series pumps, you have total control over the water flow. Whether you want a subtle, relaxing background for a pondside chat, or you want to hear crashing from your living room 40 feet away, you can have the best of all worlds and adjust the flow as needed.

Rock Selection

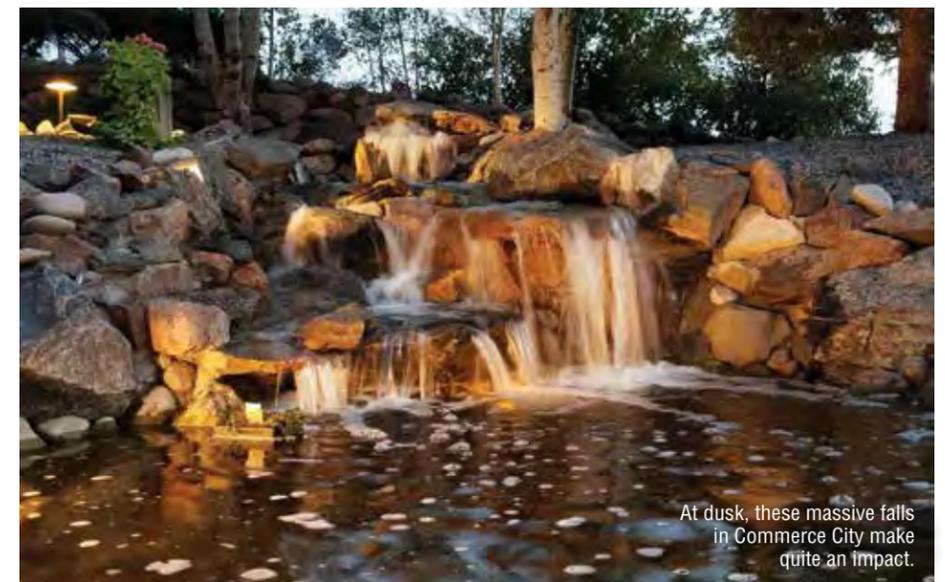
Sometimes we get to pick out the rock that we want to use, and other times we have to order a semitruck load of rock from the quarry. Harvesting rock from the existing land here in the Rocky Mountains has to be one of my all-time favorite ways to build, even though I've only gotten to do it a few times over eight years. This experience allowed me to handpick my boulders for the waterfalls, character rocks and even the filler rocks. Whenever I have to use a truckful of unknown boulders delivered from a quarry that I have never seen, I have to use whatever comes and just try my best to transform it into a masterpiece. This is a little more of a challenge — but a challenge I always take head on. It doesn't matter if they give me undesirable boulders that I may not have personally selected. I take them and make them into something that I can be



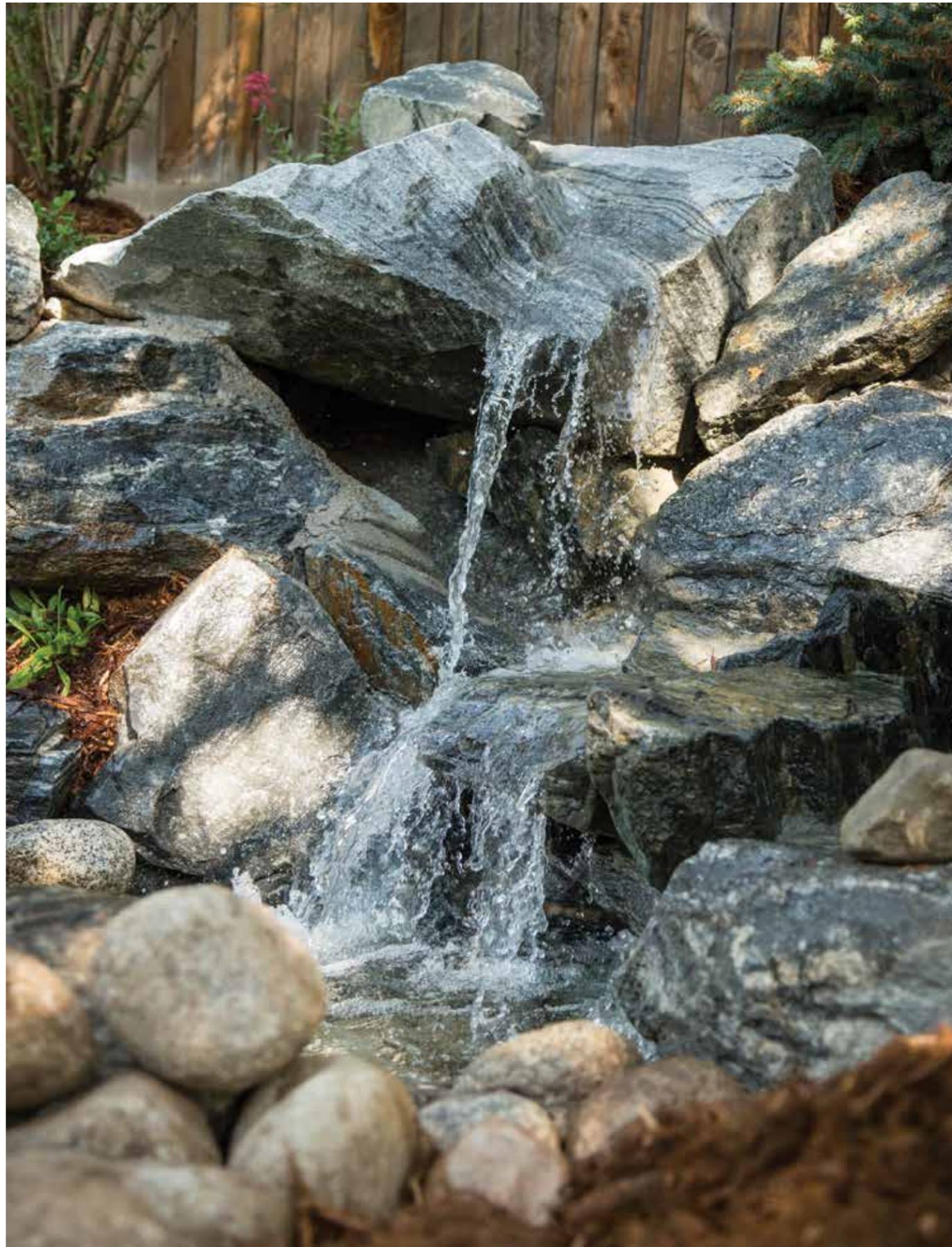
This waterfall in Commerce City, Colorado, shows how moving the right lighting can be at night.



This display at the 2020 Colorado Garden and Home show showcases a small natural waterfall with an amazing tree trunk that has water slowly flowing through it.



At dusk, these massive falls in Commerce City make quite an impact.



proud of putting the LCM Landscape & Design name behind. This craft takes a lot of time to learn.

“You gotta see it, kid,” my mentor, Rick Pursell, would tell me. “Visualize where the water will be and how it will fall.”

Always be creative when conceptualizing what the water will look like when it’s flowing. Understanding the elevation and being able to manipulate where the water will go while not allowing the water to make the decisions for you — well, it can be tough. Water has the tendency to prove you wrong again and again, so you must have the perseverance to never give up.

There are a lot of factors that come into creativity and rock selection. I am not fond of placing a bunch of small rocks on top of the liner and setting flat pieces of flagstone all by hand. Instead, I prefer to push the limits of my 9,000-pound mini excavator. I like for the rock to hang as far out as possible and make

In my opinion, using large boulders is the only way to build. I’ll still do small projects, but they typically still involve grabbing a 2,500-pound boulder with a Toro Dingo or pushing 3-ton boulders with my mini excavator (without tipping).

me super uncomfortable (while keeping in mind that we will ultimately cement it all in). Counterweight is also huge when it comes to setting large rocks and pushing the limits. This can be achieved by using other large boulders on the back sides of the rocks for balance. This was the style that Pursell taught me, and it’s how I build every project, big or small.

Bigger or Bust!

In my opinion, using large boulders is the only way to build. I’ll still do small projects, but they typically still involve grabbing a 2,500-pound boulder with a Toro Dingo or pushing 3-ton boulders with my mini excavator (without tipping). I can’t tell you how many times my crew has questioned my order to “strap that one — it’s going on top!” Honestly, sometimes I even wonder whether or not the machine can handle it. It might take me three hours to set one character rock, but I’m still going to get it done!

I have personally set every character stone on every waterfall we have ever built. This has allowed me to stay involved in the creative process from design to completion. After taking suggestions from my crew, I always pick out which boulder we are going to use, have the crew strap it, and then strategically place every rock. Sometimes I’ll turn it or flip it seven times if need be. There is a point of production that you

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must be conscious about: Don't spend more time than you originally allotted for.

This is why I no longer offer cheap bids on jobs. If my customer wants my true abilities and creativity, I don't need to feel rushed and have to set rocks as quickly as I can. I want to be able to go at my own pace and make sure each rock is in its perfect spot at the ideal angle. We have gotten very efficient at building waterfalls over the past eight years, but still I won't allow myself to feel rushed or to set rocks just to set them — each one has a purpose. You have to ensure you are making the water go exactly where you want it to go, always thinking about the next set of falls. Whether it's a massive waterfall or a stream, you have to always keep in mind what is coming next.

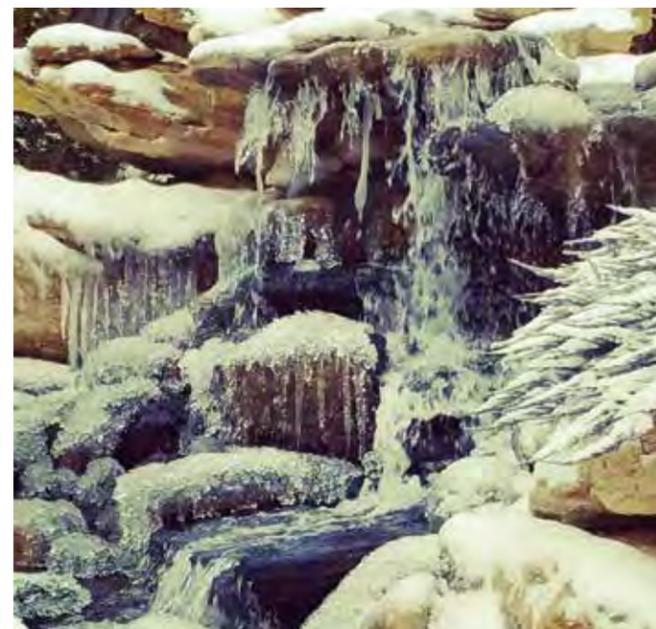
Design Do's & Don'ts

Any waterfall that uniformly faces the same direction can be a design fail, in my opinion. The waterfall should have twists and turns, different elevations of fall and areas of visual interest, in addition to the sounds. Too often have I seen three falls of the same size that are all facing the same direction at the same angle on the same flat piece of flagstone with the same elevation changes.

I try to think of every angle from which people can view the waterfalls and where the vantage points might be. People face waterfalls in different directions from different heights and at different angles. I like to ensure that everyone gets a good view of the feature, not just from the kitchen window, but from the living room, the gate, the patio, the upper deck, the bedroom window and from every possible other angle I can think of.

Adding lighting elements as the final stage can really help enhance your waterfall. Place spotlights on large character rocks, or add underwater lights to the pool. Hanging lights along the falls allows enjoyment of the feature day and night. Another thing I try to do is add driftwood pieces as natural accents to a feature. Let's face it: The ultimate goal is to make it look like it came from the Rocky Mountains!

Remember though, proper testing



Icicles (top, left) form in the winter, creating a unique seasonal attraction. A granite boulder waterfall (top, right) makes a big impact with its height and water flow. Different elevations and drops (bottom, right) make these falls look so natural, with water flowing over the driftwood. Large blue spruce and natural driftwood (bottom, left) create a scene straight out of the Rocky Mountains.

and ensuring there are no leaks or unwanted evaporation takes patience and time.

In the end, it comes full circle back to the client. I want to ensure that they are happy and give them the peace of mind that their feature will last. I also make sure to educate the client about proper care and maintenance of the waterfall, leaving them with all the knowledge they need to take care of it. Having a waterfall is a truly special element in your landscape, and I always take pride in knowing that I have built something unique and of the highest quality that my client can enjoy for years to come. ☞

About the Author

Landon Malave is the owner of LCM Landscape & Design LLC, which operates out of Elbert, Colorado. He services all along the Front Range and travels across neighboring states to build waterfalls. He grew up on a farm in Eastern Colorado, earning his associate's degree in horticulture and a certificate in landscape design from Front Range Community College. He worked as a project manager and designer at a landscape company for two years before deciding to start LCM Landscape & Design in 2012. In 2014, he met his mentor, Rick Pursell, who shared his knowledge from 50 years of experience building waterfalls all over the world. Landon lives on a tree farm with his wife and three small children.



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| Language of **Koi** |



Shiro Utsuri (left) Hi Utsuri (middle) and Ki Utsuri (right)

Checkerboard Koi

Play a new game with Utsurimono variations

by **Ellen Kloubec,**
 Kloubec Koi Farm

Utsurimono is a class of koi that, by definition, is a non-metallic black color combined with a secondary color. It is one of the classifications considered for judging purposes. Shiro Utsuri is the most common type in this class, and it is held in very high regard. At some koi shows in the United States, the Shiro Utsuri competes alongside the go-sanke: kohaku, sanke and showa.

Shiro Utsuri is a black and white koi with a checkerboard design. Most koi enthusiasts can correctly identify a Shiro Utsuri with its bold,

two-colored block pattern. But, did you know that there are other varieties in the Utsurimono class? The Hi Utsuri and Ki Utsuri variations are often hard to find, but they add great diversity to any koi collection.

Colors of Utsuri Variations

The Hi Utsuri is a black koi with red as its secondary color. *Hi* is the Japanese term for red on the Utsuri. However, the color is generally not a true “fire-engine red” — *hi* appears as orange or reddish orange in this variation.

A Ki Utsuri is a black koi with yellow as its secondary color. *Ki* is the Japanese term for yellow on the Utsuri. More often than not, the

The Colors of Utsuri

Shiro Utsuri	<i>she-row oot-sir-ee</i>	Black & White
Hi Utsuri	<i>hé oot-sir-ee</i>	Black & Red
Ki Utsuri	<i>ké oot-sir-ee</i>	Black & Yellow



yellow color is slightly muted or drab.

Regardless of which variation you are looking at, both Hi Utsuri and Ki Utsuri have black (*sumi*) as the base, which may not be straightforwardly apparent, because the pattern and colors develop as the fish ages.

Patterns of Utsuri Variations

The pattern on all Utsuri koi, regardless of color, is a wrapping style. Two colors appear as large segments or blocks of color. Each color wraps all the way around the fish to its belly, or below the lateral line along its sides. The pigments form wide swaths of color. Black is the primary

color. The secondary color of either red or yellow alternates with the black *sumi* areas. The colors intertwine to form an interesting wraparound pattern. This bold, banded design is commonly referred to as a checkerboard. The blocks of alternating colors resemble the design of game boards we have been familiar with since childhood.

Utsuri variation patterns are held to the same standards as that of the Shiro Utsuri. Along with the requirement of being a “wrap” style, the pattern should begin on the head and continue to the fish’s caudal fin, or tail. Ideally, the patches of color should not be marred with random specks of the other color. Specks or freckles can be distracting or

can make the koi seem messy or dirty. These blemishes are called *shimis*.

Markings on the head are

cheeks or join with patches of *sumi* on the fish’s body. A well-balanced pattern from front to back and side to side

The pattern on all Utsuri koi, regardless of color, is a wrapping style. Two colors appear as large segments or blocks of color. Each color wraps all the way around the fish to its belly, or below the lateral line along its sides.

also expected on Utsuri variations. *Menware* (men-war-ē), or a lightning strike, is the most popular head pattern. *Sumi* forms a zigzag design from the tip of the nose through the head to the shoulder region. It may continue to spread down the

on either Hi Utsuri or Ki Utsuri is ideal.

Scales & Fins on Utsuri Variations

Sumi in the fins is also customary on all Utsuri. A blend of the two colors adds

to the beauty of the pattern, and it can actually help to balance a lopsided one. Stripes of *sumi* on the pectoral fins are common instead of a concentrated spot of black at the base, which is commonly seen on Shiro Utsuri (*moto-goro*). *Sumi* stripes are usually present on the dorsal fin and caudal fin as well. Solid black fins are often common on young Utsuri.

Most of the Hi Utsuri and Ki Utsuri that you come across will be fully scaled. Gin Rin scales (sparkly light reflecting scales) are a rarity, as well as Doitsu (scale-less) types.

For more information on correctly identifying koi varieties, be sure to check out illustrations of the varieties

at the Kloubec Koi website: www.kloubeckoi.com/ellen-sumi-koi-education.

About the Author

Ellen Kloubec and her husband Myron began their aquaculture business in 1981, and their farm consists of 80 acres of mud ponds. Together with their son Nick, they raise and supply healthy and hardy koi to wholesale customers throughout the USA and Canada. Ellen loves all things koi.



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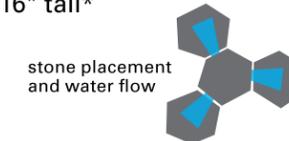


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DON'T BE SHOCKED

Electrical safety always comes first

by **Larry Carnes**, Reflections Water Gardens



This submersible pump runs a large waterfall near a front yard driveway entrance.

Pond professionals come from a wide range of backgrounds and interests and often wear many different creative and technical hats. With an artistic background in design and a team of landscape architects to put the vision together, a pond professional can easily overlook some of the electrical issues or assume that the electrician will take care of them. However, there are numerous benefits to obtaining electrical knowledge for yourself and keeping it current.

All pools, ponds and spas must include an electrical component. Some projects require more electrical attention than others, but regardless of scope, clients expect the pond professional to understand the options. Should your client turn out to need an electrical component that costs more than the pond itself, it's better to understand and communicate this before construction begins in order to maintain healthy customer relationships.

Electrical knowledge for ponds and pools is highly specific and not guaranteed to be common knowledge among all electricians. By learning about the necessary electrical requirements, pool professionals can ensure that their clients are building safe ponds and structures, permitting water and electricity to meet in a safer way.

Submersible Water Pumps

Despite their ground-ready, durable, insulated construction, submersible water pumps still present severe hazards for homeowners and should never be used in ponds meant for swimming or human immersion. The problem is simple: electricity and water do not mix. Installing an electric submersible water



A concrete well (top) houses submersible pumps for a 1-acre pond. From the beach view (middle), one might not guess that this ½-acre swimming pond has an electrical system. Six external pool-rated pumps (bottom) are plumbed for a 3,000-square-foot turtle pond — although the client wanted to swim in it, too.



To ensure safety, everything is properly bonded and grounded in this pump pad (top) for a ½-acre swimming pond. When built correctly, swimming ponds are a safe environment (bottom) for families to enjoy and interact with. There is simply no reason to cut corners — electrical safety is crucial to human life.

pump for water gardens, natural ponds or pools requires great skill and experience to avoid electrocution.

It cannot be stressed enough to your client: No one should ever swim or wade in a pond or pool with a submersible water pump. Even though these pumps are designed with many safety features, it is not worth the risk. There are special pumps designed for swimming pools and ponds that do not carry this risk. If someone needs to enter a pond or pool that is equipped with a submersible water pump to retrieve something or perform routine maintenance, it is critical that they turn off the electricity to the pump and enter with caution. If the client can foresee a situation where people might wade in the pond, a submersible pump is simply the wrong option.

Manufacturers design submersible pumps to be safe. They encase them in cast-iron housing designed to isolate the electrical and working parts of the unit. All cables are shielded and sealed by standard rubber. However, the casing and the rubber shielding do not guarantee that the submersible water pump will never have any contact with water.

Water & Cable Seals

The rubber water seals on a submersible pump contain no adhesive. Instead, they form the seal using a crimping method that tightens components within the pump. The seal insulates the inside of the pump from water, humidity and outside air.

While this produces a high level of insulation, occasional seal failures can occur. A tiny malfunction can bring the inside of the pump into contact with the water garden or natural pond water. The result of this malfunction would be electrified water inside the pond.

Like the main components of the pump, manufacturers also go to great lengths to properly seal the cables. For instance, they will fill gaps with epoxy to prevent water from invading the unit. They also wrap the cables in a neoprene, which is both air and watertight.

Epoxy is incredibly effective at

Since most natural ponds or water gardens contain rocks, plants, sand and other objects, it is also important to ensure that they do not come into contact with the water pump. When placing your pump, be sure to isolate it from any heavy rocks, sharp objects or metal objects.



A set of pumps is ready for the electrical work to be completed for a swimming pond.

forming a waterproof seal. This seal will not fail unless it is subjected to some form of impact that would cause it to crack. If the seal cracks, water might get into the cable. The same is true for neoprene.

Connect Wisely

Both the National Electric Code (NEC) and the Occupational Safety and Health Administration (OSHA) require that all homes now contain ground-fault circuit interrupter (GFCI) receptacles in areas where water exists or potentially exists. These areas include bathrooms, kitchens, utility rooms, garages and anywhere outside. GFCI receptacles prevent electrocution by cutting off the power source when an unusual increase or “leakage” in power is detected — when water comes into contact with electricity, for example.

Unfortunately, many older homes do not have GFCI receptacles. As a result, plugging an electric water pump into a

regular outlet can make it vulnerable to a power surge. It can also increase the risk of electric shock. Therefore, if you use an electric pump, you must make sure that you plug it into a GFCI receptacle or replace your old outlet.

During the winter, it is a good idea to remove the water pump from your water garden or natural pond. Depending on your location, winters can produce frigid temperatures that can plummet below zero. As a result, the water in a natural pond or water garden may stay frozen throughout the season.

Frozen water can take its toll on a submersible water pump. Just one freeze can cause the casing or cabling to crack open, exposing the electrical parts. You may not notice the cracks due to the multiple layers of the casing. Therefore, when you turn on the pump in the springtime, you may be vulnerable to electric shock.

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gardens contain rocks, plants, sand and other objects, it is also important to ensure that they do not come into contact with the water pump. When placing your pump, be sure to isolate it from any heavy rocks, sharp objects or metal objects. Also, if you use sand, position the pump so that it is filtering the least amount possible. Since sand is abrasive, it can damage the inner parts of the pump over time.

It Bears Repeating ...

Again, one should never swim or wade in a pond or pool with a submersible water pump, despite any safety features. It is not worth the risk. It is imperative that you communicate with the client as to their potential uses for their new pond. If the risks are too high, an external pump is the better choice.

There are special pumps designed for swimming pools and ponds that do not carry this risk. If you need to enter your pond or pool with a submersible water pump to retrieve something or perform routine maintenance, it is critical that you turn off the electricity to the submersible pump and enter with caution.

Educate Yourself

Numerous pool professionals work with a separate electrical engineer to wire the submersible water pump while they continue to focus on design and other related construction items. While an independent electrical engineer will undoubtedly be well versed in the right safety standards and protocols, it's important for the pool professional to be able to follow the necessary conversations and ask the engineers the right questions about techniques used to keep the entire project safe for their client.

It's possible that you have heard your electrical engineer speak about grounding. This is the reference point from where voltages are measured. Remember, though, even at a low voltage, considerable safety concerns may arise. In this case, any insulation failures will allow exposed metal

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Many electricity safety measures come down to common sense. Did you turn off the power before your construction team started work on the pool? Did you lock up the electrical power box to keep anyone from accidentally turning it on? Did you remember to only stand on dry, insulated surfaces?

to trigger a fuse or circuit breaker to cut power to the water pump.

Equipotential bonding is another layer of safety with which you and your electrician can protect yourself, your team and your clients. By properly installing and maintaining this bonding system, the pool will have improved safety via an alternative path to the ground for any stray currents. With a thorough install of the pool, deck and wiring equipment, equipotential bonding can keep overall voltages low in order to significantly reduce the potential for shock hazards.

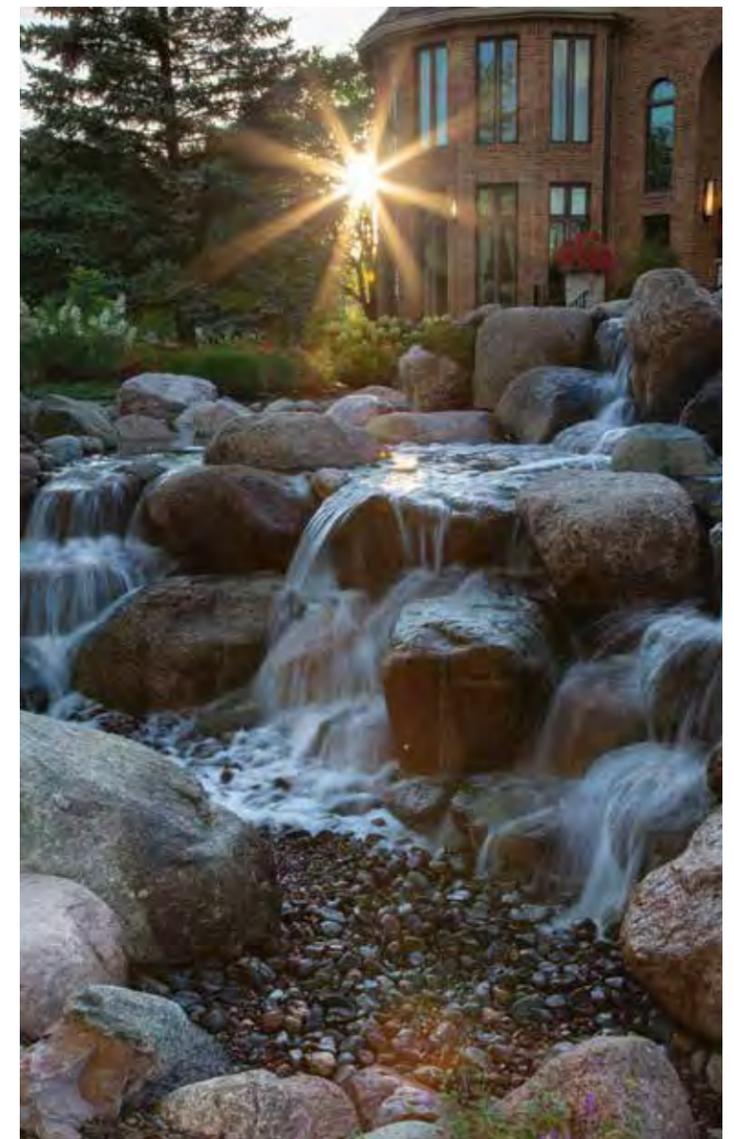
Awareness is Key

Many electricity safety measures come down to common sense. Did you turn off the power before your construction team started work on the pool? Did you lock up the electrical power box to keep anyone from accidentally turning it on? Did you remember to only stand on

dry, insulated surfaces?

While electrical safety might not be your No. 1 interest or a point of excitement when it comes to installing a pool or natural pond, by observing the most basic of safety precautions, communicating with your electrical engineer and learning the basic nuts and bolts of how electricity works around water, you can provide the best level of service and knowledge to your clients.

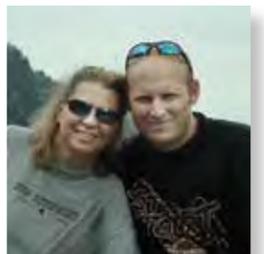
There is always an inherent danger when working with electricity near water, but if well planned through continuously maintained knowledge of electrical systems and safety protocols, the likeliness of electrocution or electric shock will remain extremely low. By communicating transparently and knowledgeably with your client, it is possible to almost entirely minimize these risks so that they can safely enjoy their pond for years and years to come. ☞



Submersible pumps can help to achieve the desired water flow in a lot of situations, but remember: Such features are simply not intended for human immersion.

About the Author

Larry Carnes began his career as a student of art and developed an interest in landscaping. He worked for several companies, gaining knowledge in tree care, patio design and installation, and landscape architecture. He renders concepts for his clients, which are pieces of art as much as they are working designs. After assisting a pond builder in creating a unique in-ground pond for his family, Larry's landscaping interest turned to water features. Reflections Water Gardens focuses on high-end residential and commercial natural pool construction projects with naturalistic water shaping.





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| **Aeration** Effects |

Nature's Ultimate Bio-Assassin

Defending ponds against harmful algal blooms & other pond killers

by **Patrick Simmsgeiger**,
Diversified Waterscapes

Aeration introduces oxygen into an aquatic ecosystem through various methods. Air compressors, waterfalls and fountains inject small oxygen bubbles, increasing the dissolved oxygen (DO) level of the water feature. DO is one of the most important facets of a healthy body of water, since it affects overall water quality, fish and plant health, not to mention many other more subtle processes. Low DO in ponds often results in sick or dying flora and fauna, accelerated muck accumulation and foul odors.

The inevitable result of low DO is the reduced efficiency of bacterial use of organic matter. Accumulated organic matter thickens at the pond's bottom, reducing overall depth. Additional decaying matter exacerbates health challenges, causing the biosphere to slowly destabilize, favoring the abundance of toxic algae and cyanobacteria. When the DO level drops, bacterial species use more nitrates to function. But as nitrates are vital to plant survival as well, if bacteria are utilizing the same resource, the plants start to suffer. When nitrates become scarce, bacteria will start processing sulfates. The waste product of bacteria consuming sulfates is

This Florida lake has a 5-hp Vertex Fountain.



A Vertex AIR-5 aerates a retaining pond.

hydrogen sulfide (H₂S), which is toxic to fish and other aquatic organisms and gives water the smell of rotten eggs.

Harmful Algal Blooms

A vulnerable pond that suffers from a combination of low DO and bio-imbalance only needs a slight push to generate a harmful algal bloom (HAB), which can be dangerous to humans and deadly to smaller animals. HABs tend to accompany shifts in water health. Higher temperatures in recent decades have created an environment well suited to HABs, some of which are not algae at all, but cyanobacteria. Cyanobacteria, the oldest of all life on Earth, are always present and waiting for an opportunity to expand. A large influx of decaying matter allows algae and bacteria populations to expand their colony size. This colony increase will continue past the stasis point, which ultimately depletes the available nutrients. Once the carrying capacity of the water is exceeded, the

algae starts a die-back process, leaving their biomass behind. The pond is then incapable of handling all this decaying organic matter, so buildup continues unabated.

In a healthy ecosystem, bacteria slow the accumulation of solids, help reduce odors and assist in the maintenance of a pond's depth. Maintaining healthy DO is vital to a pond's life and relies on a balance of organisms, many of which rely on a delicate combination of factors such as DO, temperature, nutrients, pH, time of year and chemistry. Maintaining a healthy pond is a subtle art form.

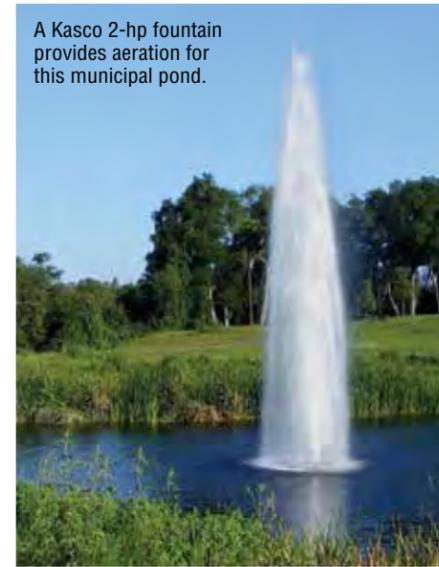
The Aeration Effect

The most effective long-term solution to treat an unhealthy pond is to install an aeration system. Aeration systems, composed of a combination of air compressors, waterfalls and fountains, inject DO while promoting circulation. Each of these mechanisms delivers its own set of advantages, as they mimic nature. Aquatic experts know what

depths, circulation, temperatures and water chemistry work best, which in turn favor fish and plant species.

Stratification, a natural phenomenon that works against pond diversity, occurs when water splits into layers based on depth and temperature. Anyone who has dived down into a body of water has experienced stratification firsthand. As one descends, at a certain depth, the water suddenly gets much colder. Stratification restricts DO and nutrients to particular areas. Aeration is the process of purposely and mechanically causing the different layers to mix. Combining aeration with a proper application of treatments, both biological and chemical, a pond can remain healthy even under dramatic shifts in the environment. Turnover, or the natural mixing of layers, occurs with seasonal changes. This natural mixing of stratified layers due to convection, usually in spring and fall, can cause a dramatic downturn in an already unhealthy body of water.

Mechanical aerators use pumps to pull



A Kasco 2-hp fountain provides aeration for this municipal pond.

water from the bottom of the water column, inject pressurized air using a compressor, and then push this enriched mixture to the surface. Aerators work best below a certain depth. Exchanging the bottom water layer with the surface mixes DO levels, water temperature and water chemistry into a more homogeneous distribution at all levels.

This sharing of water chemistry increases overall organism populations and diversity. This invigorates pond organisms, allowing them to survive a wider range of environmental pressures, such as seasonal changes and increased pollution. Aeration is not a solution for all water problems, but increasing DO is a great tool for boosting an ecosystem's health and invigorating fish and plants.

For a pond that is currently still and stratified, the deepest layer may be devoid of oxygen. This is known as anoxic water. If this layer is mixed suddenly with normally high DO water at the surface, the sudden shift can be deadly for aquatic life. Drastic turnovers tend to cause a kill-off in the pond's biosphere, which is another harbinger for HABs. While oxygen can be sparse in deep water, most of the nutrients are also in this layer. When these nutrients get circulated into the upper layer of the pond, opportunistic organisms begin to multiply. If their natural competitors have simultaneously died off, this multiplication can happen at an astounding rate. As algae decompose

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the solids in the water column, they consume oxygen, which reduces DO levels and causes fish to suffocate. Dead fish are often the first visual sign that the hidden weakness of a pond has triggered an especially bad cycle.

Tools of the Trade

Once the basics of aeration, turnover and biodiversity are grasped, a pond manager would do well to gather all the necessary tools. The most effective are knowledge and patience, but valuable tangible tools include a muck reducer, a clarifier or flocculent, an aquatic pond dye, a low-copper algaecide and an enzyme-mineral-bacterial supplement. Also make sure to have some hardy jeans, goggles and water-resistant gloves.

If fish are to be stocked, one should probably delay their introduction until the pond has reached its new balance. As always, consult a fish expert regarding new stock introduction, especially when upgrading your pond. You also may want to talk to an aquatic expert if landscaping is planned near a water feature, so that you can avoid structural investments that could cause chronic issues like nutrient introduction.

Beginning with the muck reducer is often wisest, depending on the total pond depth. The ratio of muck to water and the muck's composition are both important factors. As is true with most applications, treat about 1/3 of the total area of water at any one time. This allows your fish and other organisms to move away from danger zones while a new stasis is reached. As you shift from one section of the pond to another on successive days, you will be tempted to go all-in as more progress is observed. But, patience is key. As the pond metabolizes each step toward a new balance, the various species can adjust. By reducing the muck first, the pond will have fewer nutrients available to complicate the next step.

Treating the pond with an aquatic-labeled dye is now advisable. Follow the instructions carefully, and remember — you can always add more, but you cannot add less! Owners and guests are accustomed to the historic color of the

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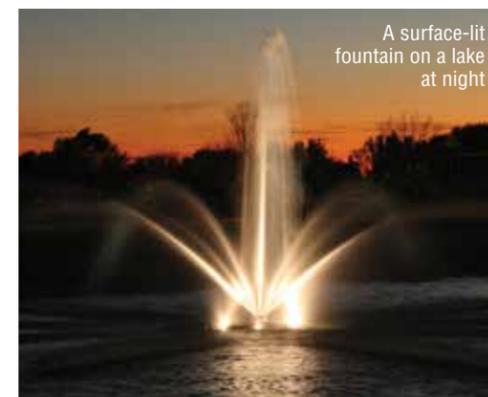


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A surface-lit fountain on a lake at night



A reclaimed water pond in Modesto, California, with an air station pattern

water feature, so this step may be unsettling. The point here is not to create an artificial color, but rather to reduce photosynthetic feeding for the native algae. Allow the pond residents to adjust over a day or two before turning on the pumps. When the pumps are engaged, driving the aerators, waterfall or fountain, the remaining muck will begin to break up and surface. If the temperature is unusually warm and the sun is brilliant, the algae population will increase in the top water layer.

This aquatic dye will impede algal expansion at lower depths where the sunlight is reduced, but not at the surface. This is why an algacide is applied at this stage. For best results, use a double-chelated copper solution in liquid form, such as F-30 Algae Control. Most other products will interact with the water minerals quickly and precipitate into the bottom soil, requiring added product for the same outcome. Again, treat 1/3 of the surface area at a time; follow the product label instructions carefully; and consult an aquatic expert as needed. When applied correctly, the algae or HABs will slow their life cycle at about 0.2 ppm copper. At 0.6 ppm, the process is probably at maximum efficiency. For lower-quality algacides, application may need a full 1.0 ppm, which is the limit for potable water copper toxicity.

Turbidity

If a pond has catfish, they will not appreciate the reduction in muck, but they will love the increased turbidity. Bottom feeders use the muck cover for concealment and avoiding predators. Koi are fine in a certain amount of turbidity, but most pond owners with koi would rather see and admire their fish. The other problems with too much turbidity are filtration issues and blocking the life cycle of non-algal species. To

manage turbidity is more than an aesthetic issue; this stage of treatment fine-tunes the biosphere to encourage diversity.

Less is more. Quality clarifiers and flocculants are highly concentrated, so do not dilute them prior to application. Clean spills and spotting with a dry absorbent or cloth. Many aquatic experts have learned the hard way how messy things can become when this vital tool is mishandled. As the pond is seeking a new, healthy balance, the flocculants bind the materials causing turbidity, returning them back to the bottom, where a now healthier mix of organisms maintain the beneficial layer of muck.

The Big Picture

Humans tend to assume that a pond automatically has all the nutrients, biological species and minerals it needs. In many ways, a pond is just like a human body. Both need “good stress” combined with supplements and rest periods.

The last stage of a pond’s rehabilitation or upgrade is the addition of supplements to allow for a healthy new biosphere. The main concern is to choose the product carefully, as there are nearly as many crazy people selling pond supplements as there are selling human supplements. Technology is useful in weeding out the crazies. Find a long-serving aquatic expert with a good reputation. There are easy-to-use pond kits available that can make this step simple — or, at least, less mysterious.

Admiring a beloved water feature is a privilege, as water is the core of life. Just as all people love water, there is also a universal knowledge gap in pond processes, bio-balance, life cycles, environmental threats and treatments. A still pond will accumulate a thicker covering of plants, which further

conceals and increases the suffocating loss of DO, triggering a slow-motion shift from diversity to an algal explosion. HABs are nature’s ultimate bio-assassin, which kills a pond and then slowly turns it into swampland. We have the tools to repair our domestic water features before they crash and die.

Human nature is defined by making our environment more livable, and then more enjoyable. Your pond benefits from slow and deep breaths of oxygen, gradually stretching her stratified layers and cleaning out the accumulated muck. The reward is stronger, ever-renewing biodiversity, which supports the larger animal and plant species, including us humans. ☞

About the Author

Patrick Simmsgeiger is the founder and president of Diversified Waterscapes Inc. (DWI), Patrick Simmsgeiger is a licensed aquatic pesticide applicator, landscape contractor and Certified Pond



Manager. He is an expert in all stages of aquatic treatment, from product development and manufacturing to application and treatment. Patrick is well known on the speaking circuit and puts water health and management first. He founded DWI more than 30 years ago, which provides a full line of pond management products and services that have been developed to be environmentally conscious and in line with modern practices, Pat operates DWI with Maria, his better half. DWI has offices in Palm Desert, California, where Pat and Maria reside.

Best Practices



A proper under-gravel suction grid manifold can do wonders for the health of a pond.

Circulation Nation

Strategies to enhance pond performance

by Kent Wallace,
Living Water Solutions

Circulation is an aspect of design that needs to be addressed early on. Many of us have had to assess a poorly performing pond only to determine that, even with good equipment, one of the main problems is poor circulation. This can be in the form of debris that collects in some areas (either at the surface or on the bottom), sections of the pond that have poor water quality, or just basic water clarity.

SERIES: Best Pond Practices

This is an installment of an ongoing, multi-part series. Be sure to watch for further installments in future issues!

Standard Returns

I have written several articles about the importance

of removing the water from both the top surface and the bottom, where the worst water in a pond calls its home. Good circulation from top to bottom and back to top is an important fundamental. This is accomplished with skimmers and bottom drains to remove the water from the pond, and aeration to move the water from the bottom back to the top. In some instances, a return from the center of a vertical pond return drain is used to move water from the bottom to the top in real time. My pond designs that incorporate vertical pond return drains are some of the best performing projects I've ever been a part of.

Tangential pond returns are used to return water inward from the sides at an angle or tangent to slowly rotate the body of water. Gap returns are used to split water between two drains and form opposite rotating sections of a pond around each drain. Some returns

are used to circulate an odd or unusually shaped area. In-floor returns can spread out the incoming water over the floor when side returns are not possible, like when the walls are part of another structure. Occasionally, I have used a small airlift-operated current jet in a corner or other area that pulls water from the bottom to the top, circulating the water and adding aeration at the same time. This works well when you don't have enough water flow in the design for another current jet, or if you don't need more water flowing through the filters but need more circulation. It's easy to run a small 1/2-inch airline around the pond perimeter to a spot on the edge for an airlift-operated current jet.

Rock Bottom Ponds

As designers, we have many options when it comes to designing a circulation pattern other than just a waterfall or spill return. These all work well on a dedicated koi pond that is free from decorative rocks on the bottom; however, rock bottom ponds pose more of a circulation issue than clean surface ponds. It's no secret that I'm not a big fan of rock bottom ponds, but I have dealt with some over the years as rebuilds. Sometimes the client isn't willing to give up the rock look, or there isn't enough biofiltration to eliminate the rocks without a serious filter upgrade. Whether you're a fan of rock bottom ponds or not, the rocks do provide a lot of surface area

for bioconversion.

The issue for me with rock bottom ponds has always been debris entrapment and circulation. I have used screen-domed bottom drains to keep the rocks out of the drains, and for very small rock bottom

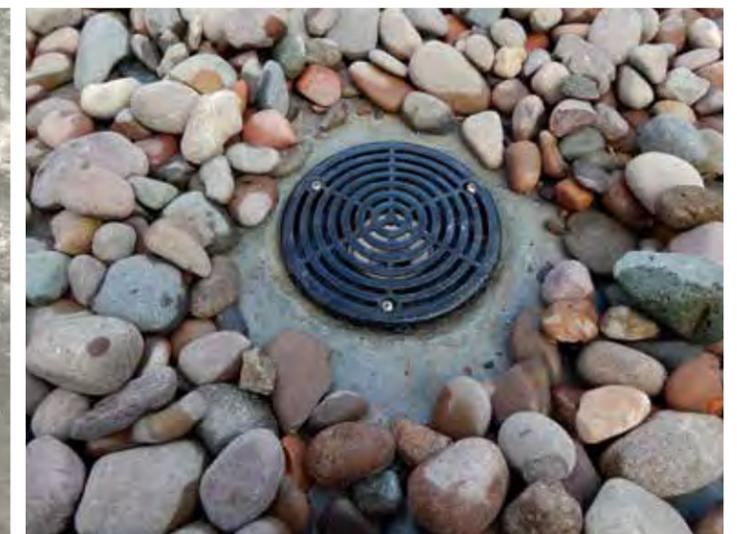
As designers, we have many options when it comes to designing a circulation pattern other than just a waterfall or spill return.

ponds, this works well. Over the years, I have worked with industry professionals like Eric Triplett (The Ponddigger) and others on some under-gravel grid systems. Triplett has had a lot of success with this type of bottom water removal. He and other contractors have operated under-gravel systems with both mechanical pumps and airlifts, which makes me very happy. The key is doing the math with the right-sized main line, with the correct number and placement of properly sized holes in the grid lines. These systems, when coupled with under-gravel aeration and backflush capability, can produce amazing results for clients who want the rock-bottom look.

Up-Flow Ponds

What if we thought about pond circulation a little differently? When I started incorporating adjustable in-floor returns, I started thinking about a completely different flow dynamic. What about an up-flow pond to help with the circulation of rock bottom ponds? If the concept is circulating water from the bottom of the pond to the top or eliminating dead zones on the pond floor, why wouldn't it be a good idea to bring in most of the incoming water through the floor below the rocks and gravel instead of trying to evenly suck the water from all points on the floor through the rock and gravel? Even suction distribution is one of the fundamental issues with an under-gravel suction grid. The water will always take the path of least resistance, favoring the holes closest to the end of the outlet on the main connecting line. This is the reason the math is so important when building an under-gravel grid system.

There are two ways to create an up-flow pond. In the first way, the water exits the pond through the skimmers and mid-water drains placed 1 to 2 feet above the floor around the perimeter of the pond. The water returns through the under-gravel grid along with a waterfall filter or spill if necessary. Without a waterfall or spill, the pond maintains a still-pond look while circulating itself more than one time per hour. A two-speed pump could be used, with the higher speed coming on



Common examples of drains include the vertical pond return drain (left) and under-gravel drain (right, with gravel removed).



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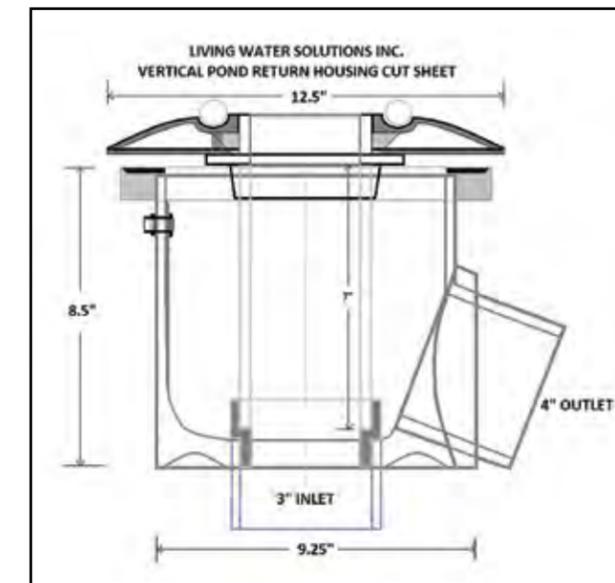
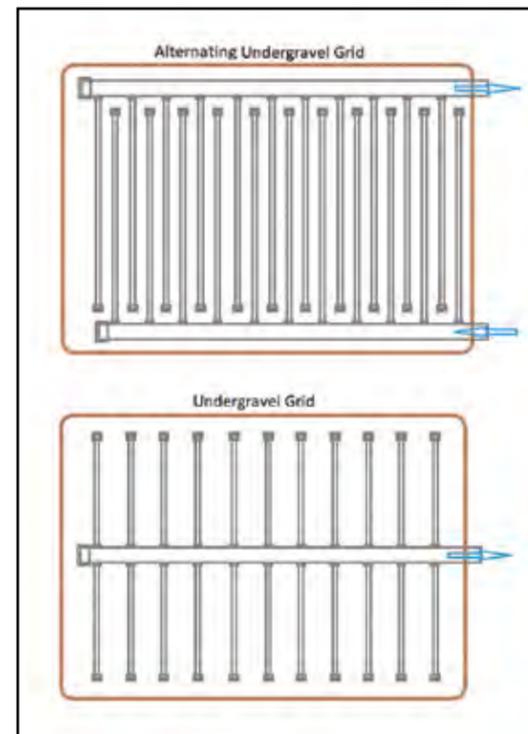


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Left: Diagram sketches of alternating & single under-gravel grids
Above: Dimensions of a vertical pond return drain

occasionally, increasing the flow through the grid at times to keep the buildup of debris from forming over time. In real time, the pond would always look clear, and the water would always circulate in an up-flow pattern. Aeration tubing could be placed in strategic positions under the gravel with the air pump on a timer for better circulation and aeration. Restricting the inlet side of a pump is not a good idea. Intake restrictions can cause cavitation and overheating. Slightly restricting the outlet side of a pump poses no problem at all. This means that slightly smaller calculated hole sizes in an up-flow grid can balance out the flow, creating a more even distribution of the return water throughout the floor area. The rock and gravel bottom would have tremendous bioconversion capacity and be self-cleaning in real time.

Alternatively, you can use a double-grid system. The hole spacing and size would have to be calculated in the same manner as the original under-gravel grid, but there would be two alternating grids lying beside each other, about 1 foot apart. The water would exit the pond through skimmers and one of the under-gravel grids. Water would return to the pond through a waterfall filter or spill as well as through the other grid. The swimming pool industry makes motorized three-way valves

that can be placed on timers in sizes as large as 3 inches. With one of these on the inlet side of the pump and the other on the outlet side, the bottom grids can be switched back and forth every couple of hours, keeping the bottom rock and gravel cleaned and flushed at all times. The valves on each side of the pump would switch at the same time, alternating the incoming and outflowing water from one grid manifold to the other. Aeration under the gravel would have to be placed so that the grid system would not be allowed to pull in any bubbles cavitating the pump.

In both of these systems, good prefiltration for the removal of solids is still important. This may sound complicated, but it's worth the effort.

Several years ago, I developed the vertical pond return drain after a discussion with others about the concept on some koi boards. I haven't done construction in years now; I just design systems and manufacture equipment.

I hope some of you out there will take under consideration the up-flow concept and create a system like I've described. If anyone has interest in collaborating on these concepts, please feel free to contact me. I'd love to work with someone on one or both of these designs. ☺

About the Author

Kent Wallace was

born and raised in Las Vegas. Kent spent most of his adult life in the automobile industry



at independent shops and dealerships, including his own shop as a racecar fabricator at age 24. Then, in 2001, a neighbor asked Kent if he could build her a koi pond like the one Kent's father had.

From that point on, pond building became his new passion. That first pond he built was submitted to Better Homes & Gardens magazine and won Best Courtyard Nationwide in their special-interest publication.

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| **WGE** Recap |

WGE2020

Checking out Pondliner's annual meeting of industry minds

by **Lora Lee Gelles**,
POND Trade Magazine

Another great year on the books at the Water Garden Expo! The theme was "Learn, Network, Re-energize", which really sums up what went on in Shawnee, Oklahoma over this period.

Hands-on sessions kicked off the Expo on Wednesday. There were five rotating sessions that included Evolution Aqua, Keeton Industries, Atlantic-OASE and Firestone.

Thursday began with the presentation of the Water Artisan of the Year winners by yours truly. See pg. 58 for a recap and photos of the proud winners.

There was a wide range of seminars on Thursday and Friday. Speakers included Kevin Dougherty with his all-day Foreman Training Academy. Jeff Dugan, Art Hantla, Frayne McAtee, Rick Weidman and Dave Duensing were just a few to choose from. They also had something new on tap this year. On Thursday evening, we headed to



an off-site venue that featured a lake for a demo and happy hour. The folks at Kasco Marine showed off some of their products and answered questions.

It's always fun to mosey around the booths to check out new products, see the old standards and catch some great prices on show specials. We always love it when you stop by the POND Trade booth to say hello.

As one contractor stated, "The wealth of knowledge you gain from talking with other builders after hours is priceless. The camaraderie that develops over the years is something that no one should miss out on. The willingness of those in this business to share experiences, tips and insights is unlike any other industry. ☞

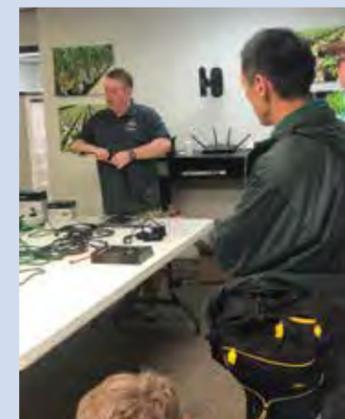


Living the Pond Life

Karrie Lightsey (with her Monster sidekick Lloyd) was busy again this year raising money for the American Cancer Society via her organization, Living the Pond Life. Karrie raised money via a raffle for a Yeti cooler filled with goodies, a celebrity visit from "Kim Kardashian" and a whole lot of equipment donated from vendors at the show. Karrie reported that the total amount she raised at the WGE was \$5,000. You go, girl! ☞



Day One - Hands-on Contractor Training



"Water Artisans of the Year" Winners Show Their Bling



Weston Zimmerman - Most Naturalistic

The winners of the fourth annual Water Artisans of the Year contest were announced at Water Garden Expo on Feb. 20, 2020. The five categories were Most Naturalistic, Best Pondless, Best Hardscapes Combo, Best Under \$15k and a new category, Ponds Revisited.

We'd like to send a big thank-you to this year's judges, pictured at right with Lora Lee Gelles: Randy Stewart (Pondliner), Jeff Weemhoff (Atlantic-OASE), Max Taylor (Magnolia Ponds & Water Gardens) and Mike Garcia (Enviroscape L.A.). Not pictured: Gregg Sawyer (Sawyer Waterscaping), Dan Put (Put's Ponds & Gardens) and Kent Wallace (Living Water Solutions). ☞



Bobby Kenyon - Best Pondless



Shane Hemphill & Heath Webb - Best Hardscapes Combo



Tom Dieck - Ponds Revisited



Ely Ayala & Edwin Scott-Fortuna - Best Under \$15k



Atlantic Pond Lights Offer New Options

Atlantic's popular pond lights are now available in both Color Changing and Warm White LEDs. Flat black, high-impact housings are smaller and easier to hide with replaceable, high-power diodes for longer service life. Both Single and Triple Color Changing light sets include a single outlet InfiColor smart module controlled by a mobile app compatible with both Apple and Android devices. Single lights have a 20-foot cord, while Triple Lights have 12 feet of cord from transformer to splitter, then 8 feet to each light. Both sets include transformers, stakes and light bases, and all can be used in or out of the water.

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Aquascape Inc. Introduces Convenient Smart Control App and Devices

Aquascape Inc., a leading innovator in the water gardening industry, has revealed their new Smart Control App that allows pond owners to automate and manage their water feature settings from anywhere using a smartphone or tablet. The app allows users to organize, automate color-changing lights using the Smart Control Hub, adjust their flow pumps using the Smart Control Receiver, and control any outdoor electronics using the Smart Control Plug.



"Our Smart Control App and devices give customers a simple, all-encompassing experience for managing and monitoring their pond," says Dave Kelly, vice president of product development for Aquascape Inc. "The flexibility it allows is particularly a plus. You can turn your lights on at sunset with ease and schedule them to turn off before you head to work in the morning. The app helps you stay mindful of energy consumption by displaying the energy output for your connected devices."

The Aquascape Smart Control devices feature:

- WiFi pairing
- Easy voice control with Alexa & Google
- Compatibility with Apple & Android operating systems
- Weather-resistant, injection-molded housing
- Hang tab for quick, secure mounting
- Integrated display for pump flow setting
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The Smart Control App and devices are perfect for pond owners looking to control all adjustable aspects of their water features in one easy-to-use app. Automated lighting options remove the need for photocells and timers, while the dynamic scheduling feature allows customers to turn products on and off based on real-time energy consumption data.

For more information about Aquascape and its products, visit www.aquascapeinc.com or call 866/877-6637.

Matala Introduces EZ-Bio 11 Prefilter Plus "Magic Adapter"

The new magic adapter for the EZ-Bio 11 prefilter is compatible with most brands. With easy installation, maintenance and integration, the EZ-Bio 11 can ensure improved pump efficiency and prevent flow reduction that leads to premature clogging. This can extend the lifetime of the pump and improve the energy



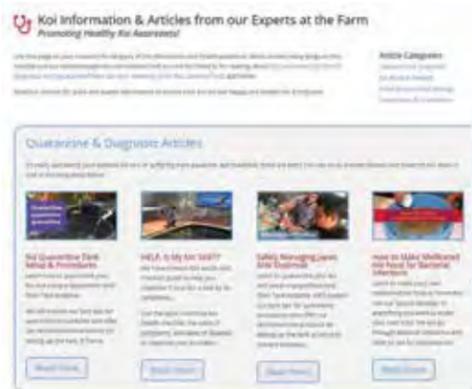
conversion to water flow. Multiple pore sizes and progressive density dramatically reduces clogging, and a large filter volume captures, stores and digests particles. Check out the Matala website for more information.

Matala USA
www.matalausa.com

EasyPro Pond Products Turns 50!

EasyPro Pond Products of Grant, Michigan, is celebrating their 50th year in business. "It's hard to believe that it's been five decades since my parents started our original business of raising fish," said EasyPro owner Dave Ouwinga. "Over the years, we have grown into many different divisions of that original company, and we have far exceeded even our wildest dreams." EasyPro Pond Products, www.easypro.com.





Kodama Koi Farm Introduces New Informational Articles, Videos and Checklist for Koi Health Management

In an effort to promote healthy koi management and success in the hobby, Taro Kodama, owner of Kodama Koi Farm, has unveiled new articles in the Koi Information section of his website: www.kodamakoifarm.com/koi-information/.

"I want to help the community learn from my family's 50+ years of experience and knowledge managing koi health," Kodama explained. "There is so much to learn in successful koi keeping. Without the proper preparation, you can waste money, lose koi, or even worse, lose your interest in the hobby."

The Koi Information section continues to grow with more articles and videos. Most recently, "Benefits of Salt in Koi Ponds" has been published, which is a great example of conflicting perspectives within the hobby on the management of koi health. Each pond owner must create their own set of techniques, and no two ponds will



be managed in the same way. Kodama's information is based on the his family's methods on the farm and retail locations.

To help you with koi symptom diagnosis, Kodama created a koi health and symptom diagnosis checklist, which is a one-page document to reference for a quick pondside diagnosis. The full article features a table with common koi diseases, treatments, symptoms and control methods.

"Safe handling of koi is priority No. 1 for the Kodama team, and we hope that sharing valuable information will lead to the best lives for koi fish after leaving our farm," said Kodama, who has spent his life raising Japanese koi alongside his father, koi master and founder of Kodama Koi Farm, Mamoru Kodama, to spread the positivity brought to the world by nishikigoi.

Contact Kodama Koi Farm at www.kodamakoifarm.com/contact-us/ with questions or to suggest any topics not yet included on the Koi Information page.

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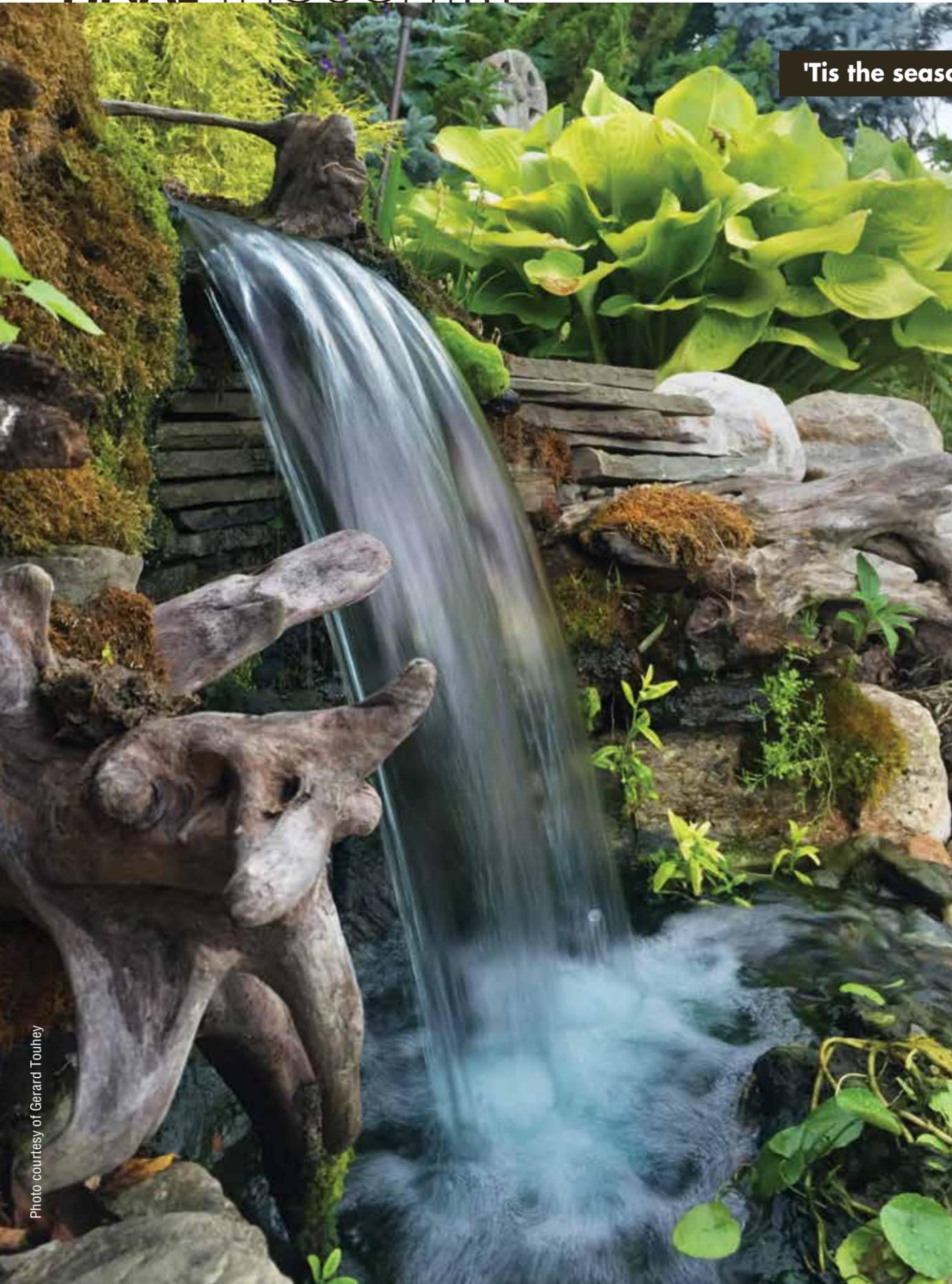


Photo courtesy of Gerard Touhey



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