

## My 'Last' Message from the President

by Tom Tracey, CIC, CID, CLIA, IANY President



Well, it looks as if this will be my last newsletter column as president of the Irrigation Association of New York. I took office in the spring of 2013 and after four years, my term is almost up. Boy, how the time flies.

In March, we will be electing new officers for the association. As long as there is no Russian hacking attempted to interrupt our elections, the time has come to pass the baton to our current vice president, Robert "RB" Boyle. I get to stay on as past president. I'm confident that RB will be able to continue the work we have started, and handle any new issues that arise. All of us on the board will still be around to help him with the transition.

A lot of things have happened over the years. This year was full of a lot of "lasts" for me. Such as, this was the last time I went to the Irrigation Association's Trade Show and Conference as the president of IANY. The show in Las Vegas this past December was a great venue for its annual meeting. I hope that more IANY members can make it to next year's show, in Orlando.

Another of the "last" things I got to do this year as IANY president was to attend this year's Long Island Water Conference Water Symposium. The main topic of discussion was water used for irrigation systems. Of great concern to the public and the water purveyors is the amount of water that is used during the peak summer irrigation months. Studies show that approximately 50 percent of the water used for irrigation is wasted and not necessary for a healthy landscape. I would say that our message of water conservation through efficient irrigation practices fits in very well with the public's concern of sustainable water systems.

I thank Paul Granger, superintendent of the Port Washington Water District and past chairman of the Long Island Water Conference, for inviting us to speak at meetings of the LIWC and Long Island Commission of Aquifer Protection.

Big on my list of "lasts" for the year is my involvement with recent legislation that passed in Nassau Country requiring irrigation systems to be controlled by a weather-sensing device. A rain sensor, moisture sensor, or a smart controller is required to curtail watering when irrigation is unnecessary due to natural rainfall. The Nassau County Office of Consumer Affairs

is drafting the requirements to enforce the law and our input is vital. Our late lobbyist Tom Shanahan (see page 2), Rich Silverman and I have met with Commissioner Madalyn Farley to express our concerns and to help draft sound policy. Our goal is that this Nassau County legislation can be used as a template for other counties across the state to pass laws regarding water conservation and irrigation.

Over the last few years, I think IANY has created a lot of momentum in getting the word out. The Irrigation Association of New York and its professional members are ready to help conserve our most precious resource. We can help provide sustainable solutions for irrigation, while still enjoying all the benefits that healthy and vibrant green spaces provide.

## UPCOMING ACTIVITIES

### ANNUAL GENERAL MEMBERSHIP MEETING

Wednesday, March 15, 6:30 p.m.

Carlyle on the Green

Bethpage State Park

Farmingdale, N.Y.

Dinner Cost \$80; Cash Bar

Election of Trustees

Guest Speaker: Bob Dobson, former IA president,

on Nassau County Weather-Sensor Legislation

RSVP: [info@IANY.org](mailto:info@IANY.org)

### NEW YORK METS VS. NEW YORK YANKEES OUTING

Thursday evening, August 17, 2017, at Citi Field

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Details to follow.

### IANY ANNUAL GOLF OUTING

Wednesday, August 23

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Driving range, putting green, lunch, 1:00 p.m. shotgun start

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Full details and registration forms to follow



# Remembering Tom Shanahan

By Rich Silverman, CIC

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*TOM SHANAHAN*

I am saddened to report that Tom Shanahan, IANY's lobbyist, passed away Monday, Jan. 16, 2017.

Tom was our lobbyist since 1999. He helped us put together and introduce our New York State Landscape Irrigation Contractor Bill and was instrumental in opening doors and introducing us and our industry to the New York State Assembly and New York State Senate.

Tom was a very knowledgeable and truly understood the process of working with legislators and the committees that a bill, such as ours, must work through before it can be voted on and passed.

Once a year he organized a day in Albany that I and others could attend to meet many of the legislators and gathered support. On several occasions, we were accepted by the many committees and gather enough support to pass. Unfortunately we were never able to get to the voting floor.

When a state or local legislator wanted to introduce an unfavorable piece of legislation Tom was on it, meeting with that person, and providing the correct information about our industry. We never gave up and Tom was able to get us introduced to the Long Island Commission on Aquifer Protection, where we have been received positively. Just before Tom passed away he was able to help us improve the requirements of the Nassau County Consumer Affairs License. Tom represented other industries, including some of the Long Island water suppliers as well as his pro bono work with Guide Dog Foundation. Tom was a history buff and produced several documentaries. I will miss working with Tom as he was one of the brightest and most energetic persons I have ever met. He always had ideas and solutions for any problem we ever incurred and did his part to advance and legitimize our industry.

## Call for Nominations

To maintain the proper balance of experience and new faces on the IANY board of trustees, the association's bylaws require rotating membership. This necessitates elections each spring. At the March 15 general meeting, elections will be held to fill the positions of Tom Tracey, Robert "RB" Boyle and David Lambert, whose terms of office expire.

IANY also is soliciting nominations to fill vacated positions. If you would like to serve on the board or to nominate someone to run for a position on the board, please submit to [info@iany.org](mailto:info@iany.org). As soon as possible after the elections, the board will convene to elect officers for the year ahead.

# Landscapers and April 1, Don't be Fooled And Don't Forget LINAP

by George Iannaccone



It's the winter and already every landscaper and lawn-care applicator that applies pre-emergent crabgrass control has this one date marked on their calendar – April 1. Many of them will also call on you to have their client's water turned on and operational by then. There could be a half foot of snow on the ground the week before, yet these guys and gals are adamant about

having that irrigation system running on April 1st. So what gives? Is this some crazy April Fool's Day joke?

Unfortunately, not at all. Here's why it's such a big deal. April 1 is the first day of the season to legally apply fertilizer in New York and most pre-emergent crabgrass control products are combined to that fertilizer. But, in order for it to work, that pre-emergent control needs to be activated before crabgrass seeds can germinate and historically that happens by late April.

How is it activated? With about one-half an inch of water after application. If that fertilizer just sits there for weeks with no rain-fall or irrigation, it loses its effectiveness. Why not just wait for a rain storm? Well that too has its shortcomings. Too little rain won't activate the product correctly and too much could wash the product through the root zone or off the lawn and that's not such a good idea. I'll touch on that in a moment.

So why should you care? Because, believe it or not, irrigation systems and irrigation professionals play a huge part in the effectiveness of these pesticide applications. You really can't have spec-

tacular results with just one and not the other. Let your customers know that too. Use this info to get help those spring turn-ons actually turned on in the spring.

## WHAT'S A LINAP?

You what else happens in April? It's usually the start of all the negative publicity that the Green Industry gets thrown our way, right or wrong. This year some of that publicity is going to be about nitrogen contamination of our bays and ground water. This is a very big issue, especially in Suffolk County where most residences are still using cesspools and not hooked up to sewer systems. Fertilizers used in our landscapes are also part of the contamination. It is such a big issue that the New York Department of Environmental Conservation, the Long Island Regional Planning Council and Nassau and Suffolk Counties are developing the Long Island Nitrogen Action Plan (LINAP).

More info on LINAP can be found at: [www.dec.ny.gov/lands/103654.html](http://www.dec.ny.gov/lands/103654.html)

I am happy to announce that the Irrigation Association of New York is taking an active role in being part of the solution. IANY is proud to be part of the LINAP Fertilizer Management Workgroup. The workgroup consists of representatives from all the agricultural, horticultural and turf grass industries on Long Island, top scientists from the USGS, Stony Brook University, Cornell University and more; environmental groups such as the Nature Conservancy; Suffolk County Water Authority and other water districts and of course the counties, DEC and the Long Island Regional Planning Council.

The workgroup's role is to advise the DEC and Regional Planning Council as they develop fertilizer-management recommendations. The initial meeting was in December 2016, and was an introductory event. As the workgroups work commences, we will keep everyone informed.

*George Iannaccone, an ISA Certified Arborist, is a turf specialist at Atlantic Irrigation.*

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# Signs Your Pricing Strategy Needs Work

by Jeff Carowitz



Pricing is the most important element of the marketing mix. It can have a profound impact on a company's viability. Any fool can lower prices and go broke. It takes effort and strategy to price correctly and profitably.

Every company worries about pricing too high. When was the last time you worried about pricing too low? In working

with clients, I look for pricing problems that can be quickly corrected for significant impact to a company's long term results.

Here are a few that I've seen recently:

You haven't adjusted your pricing structure in 10 years. You've absorbed increased costs in and materials. The market has changed. Stop anchoring to old pricing out of fear.

Your "best customer" is your lowest net-margin account. Isn't it funny how the so-called "best" account has negotiated himself the deepest deal and gets a free round of golf every week?

You're tempted to match the prices of the dumbest guy. Every market has poorly run firms that offer substandard results. Resist the temptation to sell your high-quality product or service at their prices. Instead study where the high performing firms are pricing and benchmark your efforts to theirs.

Your team says competitors are "killing you on price," but nobody has any data. Demand data and don't move until you have the facts. Never make year-long pricing decisions on hearsay. Get copies of competitive quotes. Monitor competitor pricing and delivery times. Often your team would benefit from more training on managing customer objections. They need help on what to say when the customer flinches, and training costs much less than a price adjustment!

You aim for zero customer complaints about pricing. One of my clients made the bold move of increasing his hourly rates by 15 percent last year. How many customers did he lose? Zero. How many customers did we calculate he could lose? 23 percent. Yes, almost a quarter of the accounts could have walked, and he still would have been equally profitable. Don't invest too much emotion into the one or two customers who screech at a price increase. (The screamers often stay anyway.) Let a couple of your price shoppers become your competitor's accounts!

Your base package is too rich. It's well established that many buyers feel a sense of victory if they can get the seller to give a little. They're the ones who want the free floor mats to sign on a new car. Over time, firms come up with sweeteners that they throw in to make the sale. Less skillful sellers start conceding these up front and then have nothing else to offer at the close. Example: the irrigation contractor that includes a "free full-year service plan with purchase of every system." That's an optional adder, not something to be given automatically.

*Jeff Carowitz is a respected advisor to leading landscape industry firms. Start a conversation by email at [Jeff@StrategicForceMarketing.com](mailto:Jeff@StrategicForceMarketing.com)*



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**Bennett Tristano**  
Account Manager  
Deer Park, NY

## Our strength is our people.

Bennett Tristano has 35 years in the Green Industry. His extensive experience, comprised of working in five different states throughout his career, provides our customers with a unique set of problem solving skills. Specifically, Bennett is known for successfully assisting companies diversify their business. Enabling them to grow even when the industry doesn't. With his genuine and committed support, he is building the kind of life long relationships that Atlantic Irrigation has become known for.

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# Number One Annual Industry Gathering Shatters Last Year's Attendance Numbers

The largest trade show for the irrigation industry continued its steady growth in 2016.



In December, the Irrigation Association wrapped up its 2016 Irrigation Show and Education Conference in Las Vegas, Nevada, where the association welcomed almost 9,000 participants and 600 exhibiting companies from around the world, nearly doubling last year's numbers.

The jump in attendance was largely a result of a co-location with the National Ground Water Association's Groundwater Week. The partnership allowed attendees to access both show floors, the joint keynote presentation, opening night party and more.

## SHOW HIGHLIGHTS

- The Irrigation Show saw a 5 percent increase in registrants who attended over last year.
- The new product contest displayed 46 product entries that were analyzed by judges with technical knowledge and professional experience within various aspects of the industry.
- Over 40 educational seminars were offered covering agriculture, landscape and groundwater topics.
- Pitcher's Mound debuted at this year's show. Modeled after ABC's popular reality TV show "Shark Tank," Pitcher's Mound was designed as an avenue to help inventors, entrepreneurs and business people in the irrigation arena bring new products to market.
- The CAD Learning Lab returned to the show floor, offering attendees complimentary classes on how to use CAD-based software for irrigation design.
- In addition to agricultural and landscape irrigation presentations, show floor sessions included an update on the Smart Water Application Technologies and the U.S. Environmental Protection Agency's WaterSense program in the Oasis area.

## LOOKING AHEAD

Planning for the 2017 Irrigation Show is already underway. The show will be held in Orlando, Fla., from Nov. 6-10. The show floor will officially open to all attendees on Nov. 8. Online registration will be available in early 2017.

# A 2016 IA Show: Personal Perspective

By Tom Tracey, CIC, CID, CLIA



The show began for me on Monday with an entire day focused on contractors. Green Industry consultants and educators Chris Pine and Jim Huston hosted the Contractors Common Interest Peer Group. Contractors from around this country and Canada met to discuss problems and solutions we all face. I thank our own Rich Silverman, who chaired last year's Contractor Common Interest

Group, for setting that up. Rich will be going into this with more detail in his newsletter article.

Over the next couple of days, I attended several of the technical sessions, meetings and seminars that always help me understand what's happening around our industry. With all the classes and meetings, I still had plenty of time to walk the show floor. There's never enough time to meet up with old friends that I've made from all around the country. All the major suppliers were there to show off all the newest innovations in irrigation.

One particular new event at the show was the Pitcher's Mound. A Shark Tank modeled presentation where inventors and entrepreneurs pitched their ideas to a panel that included CEOs from major manufacturers, distributors, and other industry leaders. The judges, or Umpires, gave their critiques of the new products. One of the pitchers was my friend and former employee Jeff Moskal who pitched his new estimating app, "Evaluator Pro." Jeff got great reviews and even a "Home Run" from Warren Thoma of Warren Thoma and Associates, a premier manufactures representative and former president of the IA. Good luck to Jeff and all the other pitchers, and thanks for being part of this interesting and entertaining presentation.

The trade show this year was co-located with the National Ground Water Association show. With the impending concern of drought across the country, it was a good pairing of industry segments focused on the common interest of supplying and managing water for irrigation. The keynote address was given by Peter McCornick, a water, environment and agricultural specialist who presented his insights for both disciplines.

There was also a screening of the documentary "Thirsty Land" by filmmaker Conrad Weaver. The film examines the long-term effect of the drought in the western United States. I even got a couple of opportunities to meet Conrad personally at the show and discuss his project. I would recommend checking it out online. The show wrapped up with a "Drought Summit" to discuss sustainable future for irrigation. I would definitely say that this year's IA Show lived up to my expectations, and I was glad to be able to attend.

# IA Contractor Common-Interest Group

By Rich Silverman, CIC



I attended and participated in the 2016 Contractor Common Interest Group at the Irrigation Association Conference held in Las Vegas this past December. As always, the IA organizes and creates a five-star conference with more interesting classes, seminars, technical sessions and demonstrations than any one person could possibly attend in the five days. One of my

main goals for attending is to network with other contractors from other parts of the country and throughout the world and share ideas and experiences. This year the IA organized two events that included a tour of the Springs Preserve and the CCIG Peer Group Meeting.

The Peer Group Meeting was facilitated by Jim Huston and Chris Pine. This was a day-long event attended by more than 15 irrigation contractors to discuss the many different aspects of our business and industry. The meeting started off with introductions of each contractor, location, experience and years in the industry. I lost count, but I believe there were over 400 years of experience in the room!

In the morning, we spoke of our employee relationships, hiring, firing, training, company culture, growing our business, additional services, technology, flat-rate pricing vs. time-and-material, sales, networking and more. By the end of the morning, we narrowed down to five topics that we would discuss after lunch, and these included labor, company culture, marketing, scheduling and additional services.

Our industry is dependent on good reliable and trustworthy labor. How to recruit, train, and maintain are crucial to our well-being. The old adage, hire slowly and fire quickly, was mentioned a few times. Use of Craig's List, and other online internet employment sites had some success. Networking and hiring locally was best. Keeping employees happy and busy all year round is a challenge and adding on supplementary services is a strategy that some use with success.

Maintaining a healthy company culture is becoming increasingly important as companies grow and continue to add on employees. We, as owners, would like to see everyone get along and play well with each other and be a team.

Many companies are adding additional products and services that they are offering to their clients such as backflow testing, lawn care, landscape design and installation, Christmas lights, snow plowing, basement and garage renovation, to name just a few. This keeps the company busy during slow times and keeps good employees busy during the off season.

Marketing is essential now more than ever as there are more companies competing than ever before. Note that I did not say irrigation companies as landscape, lawn-care, masonry, construction, plumbing, handyman companies and the like, are also providing irrigation services. Companies need to promote themselves and connect with their own clients often.

Technology is growing and is important in order to stay efficient and be able to manage better. This includes technology for operating the business such as QuickBooks and CRM software.

To sum up the day, we just touched upon all the issues that we share and are of concern. The opportunities and obstacles continue to grow and there will always be challenges. As a group, we all got to know each other by the end of the conference, and were helpful. It always is good to share ideas and solutions. The discussion continues on LinkedIn in the Contractor Common Interest Group.

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## LIWC Swears in New Board

The new chairman of the Long Island Water Conference is Stan Carey of the Massapequa Water District. The first vice chair is Brian Bruce of New York American Water. The second vice chair is Chuck Savinetti of the Locust Valley Water District. The secretary is Ty Fuller of the Suffolk County Water Authority. The treasurer is Arnold Palleschi of D&B Engineers & Architects, P.C. The corresponding secretary is Susan L. Jannace of H2M Architects+Engineers. General counsel is Michael Ingham of Carman, Callahan & Ingham, LLP.



This is the new board that was sworn in at the 633rd meeting of the Long Island Water Conference, held at the Jericho Terrace in Mineola, N.Y., on Dec. 20, 2016.

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## Water Sustainability

by Paul J. Granger, P.E.



Over 3 million residents of Nassau and Suffolk counties obtain potable water from a federally designated sole-source aquifer. This determination made by the U.S. Environmental Protection Agency, pursuant to the Safe Drinking Water Act, (42 U.S.C. Part 300), established that the aquifer is "the principal source of drinking water" for Nassau and Suffolk counties and that "if the aquifer system were

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contaminated, it would create a significant hazard to public health". [Federal Register Notice, June 21, 1978]. Furthermore the designation underscores the wise and efficient use of our finite drinking water source.

Long Island's sole-source aquifer system consists of three major aquifers beneath Long Island – the Upper Glacial, the Magothy and the Lloyd. The Upper Glacial and Magothy are the significant water supply sources for most of the region. Collectively the three primary aquifers provide over 100 trillion gallons of water of storage that collectively provide on average 375 million gallons of water a day to Nassau and Suffolk county residents.

At present there is no shortage of drinking water on Long Island or in New York state. However, because of changing and more extreme climate conditions, proactive planning and implementation of sustainable measures to reduce water use will ensure that future generations within the community will have a safe and adequate supply of reasonably priced drinking water.

It should be noted that the amount of water we pump also affects how much water is being discharged to our streams and other surface-water bodies. Conserving water and using it efficiently will result not only in safe and adequate supply of drinking water for the future, but will also affect the quality and health of our surface-water bodies.

Water suppliers have the vital responsibility to protect public health and safety. Proactive water sustainability measures have far reaching environmental, financial, emergency preparedness and operational benefits for water suppliers and the communities they serve.

Efficient and sustainable use of potable water will reduce energy demand. This is because the deep-well pumps utilized by the regional water purveyors to distribute water rely on a significant amount of electric power. High-capacity electric pump motors, ranging from 60 to 200 horsepower, provide the primary power required to draw water from the aquifer and ultimately to the home. Efficient and wise use of our precious drinking water supply will lower electric demand on the water district and ultimately on the power system maintained by the electrical energy.

Not only does the reduction in power demand improve electric system reliability, but it also has far-reaching environmental benefits. Less pumpage, particularly under peak conditions, allows water suppliers to better manage pumpage from their supply wells, thereby reducing stress on the local aquifer. This also ensures that an ample supply of water will be available during an emergency. Better pumpage management also assists with addressing water quality concerns. The less stress that is placed on the local aquifer segment reduces the potential for drawing contaminants deeper into the groundwater system.

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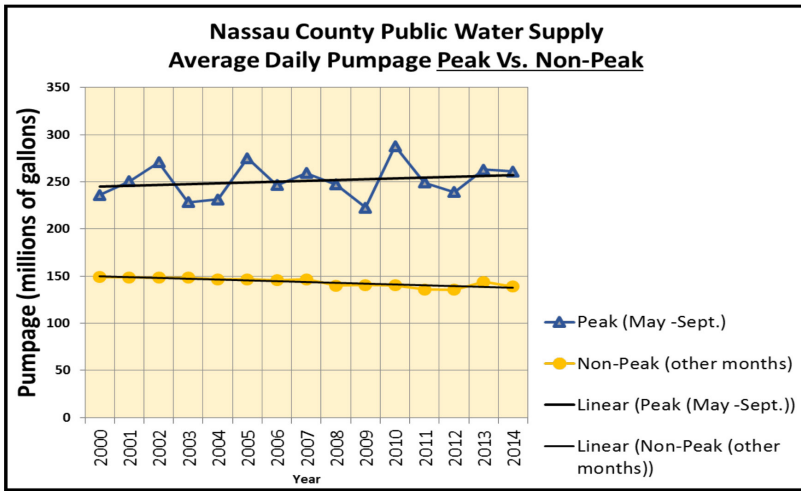
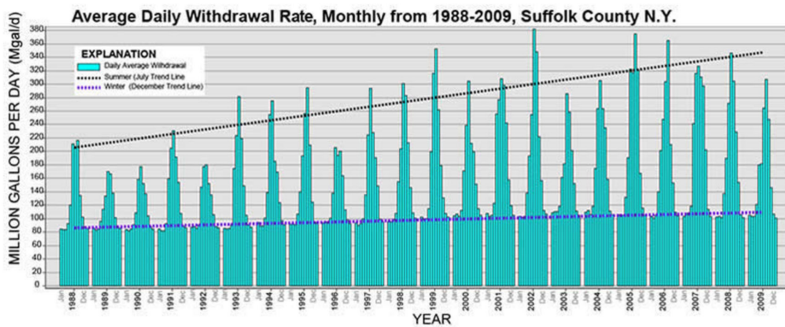


Figure 2 – Water Use in Suffolk County from 1988 through 2009



CONT. FROM Pg 7 Water demand within Nassau and Suffolk counties has been increasing in recent years, due to increased warmer weather water usage, primarily from lawn irrigation as depicted in Figures 1 and 2 (above).

In both Nassau and Suffolk counties there is a clear trend in the increase in peak warm weather pumpage. Non-peak or cold-weather water demand has been in decline in Nassau and relatively flat in Suffolk. This can be attributed to state plumbing code requirements requiring the use of water-conserving plumbing fixtures in new construction and building retrofits.

Figure 3 (next page) illustrates the clear difference between warm (May through September) and cold (October through April) weather pumpage. Water utilization is typically relegated to indoor use during the cold winter months. Remarkably, during the summer, average water use more than doubles compared to winter usage. Peak summer pumpage is more than triple average winter usage for a typical Long Island water system. Therefore lawn irrigation is an area that still should be targeted to prevent annual water demand from continuing to increase in the future.

As the recent data indicate, current warm-weather water demand is significantly influenced by the installation and use of automatic underground lawn irrigations systems. Such systems are more prevalent as real estate values increase and residents and business owners place a higher emphasis on property beautification vis-à-vis landscaping investment and maintenance. The automatic irrigation systems have the poten-

tial to increase maximum day and peak hour demand. Accordingly, the water purveyors must maintain vigilance with respect to public education and conservation ordinance enforcement as it relates to outdoor landscape irrigation in order to mitigate future demand.

Water-efficiency measures must be proactively implemented prior to the onset of drought and emergency conditions. Best practices take time and planning to effectively implement. Effective water-efficiency measures will provide environmental, infrastructure and economic benefits while helping to ensure that a high-quality supply of drinking water will be available to future generations.

Environmental and infrastructure benefits include better water quality, less energy use, reduced strain on the electric grid and improved drought and emergency response/preparedness. The following details the benefits.

**WATER QUALITY**

- Efficient pumpage management assists with addressing water quality concerns.
- The less stress that is placed on the local aquifer segment reduces the potential for drawing contaminants deeper into the groundwater system.

**ENERGY USE**

- Water transmission and distribution require a significant amount of electric power.

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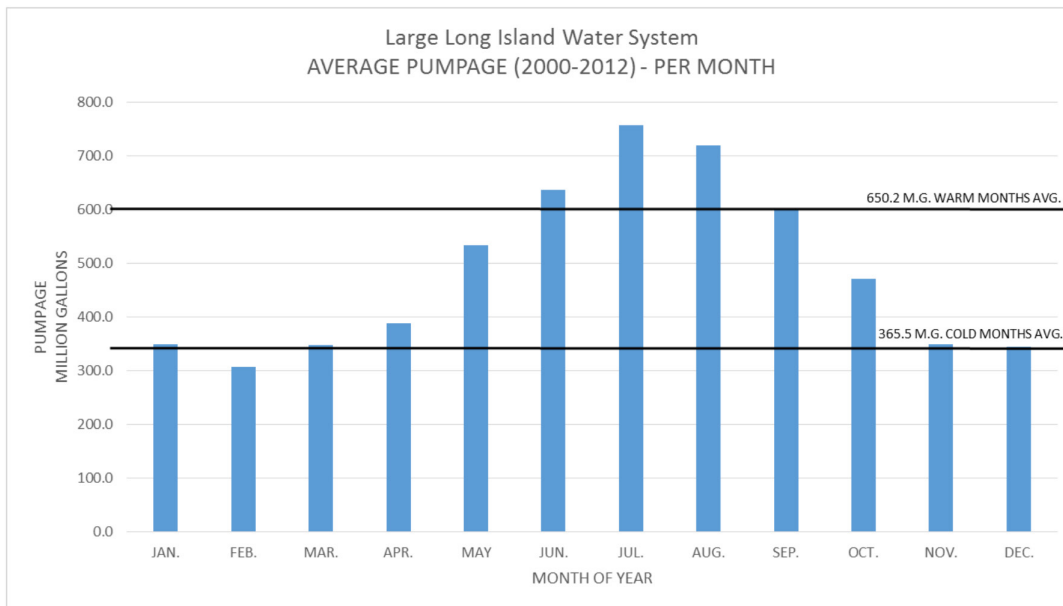
We have earned that reputation for 40 years. Since the beginning, Christy's mission has been to develop solutions that allow professionals to work more efficiently and effectively.

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**Figure 3 – Average Pumpage per Month for a Typical Large Water System**



- High-capacity, electric-pump motors, ranging from 60 to 200 horsepower, provide the primary power required to draw water from the aquifer and ultimately to the home.
- Lower water demand results in lower energy use, reducing potential for local brownouts and blackouts.
- The less energy that is used, the less fossil fuel is used resulting in reduction of greenhouse gas emissions.

**ECONOMIC BENEFITS**

- Less water demand results less water-supply infrastructure for meeting peak demand. Water systems are designed to meet peak day and hour demand.
- Less use of treatment chemicals.
- Lower energy costs. As shown below, energy costs can range from 20 to 30 percent of mid-sized Long Island water system budget.
- For consumers, lower water and energy use equals lower monthly bills.
- Bottom line effective sustainable practices will decrease energy, chemical, maintenance and capital costs.

Challenges to the successful implementation of sustainable practices include lack of public engagement, the proliferation of automatic irrigation systems, aging infrastructure, the low cost of water (under valuation) and loss of revenue through metered water sales.

To engage the public in order to change water-use habits requires proactive public outreach. Outreach and education initiatives to be effective must be implemented through various platforms such as schools (engage the younger population to develop good water-use habits), civic associations, newsletters, press releases and social media.

Changing habits through public engagement is an obvious and important element for promoting sustainable water

efficiently. However an evaluation and implementation of programs and measures that will achieve large scale water savings must be evaluated. Such programs should focus on outdoor water use, aging infrastructure (leakage) and metering.

Studies disseminated by Cornell Cooperative Extension of Nassau County have concluded that lawns on Long Island tend to be over-irrigated. It has been determined that the irrigation of lawns every other day at a rate of one inch per week is sufficient for most areas of Long Island. Because of the significant water use associated with lawn irriga-

tion and the proliferation of automatic irrigation systems that results in the tripling of water use during the summer months, it makes the most sense to focus efficiency efforts in this area.

The proper design and operation of automatic irrigation systems are vital to efficient use of the resource. Having an understanding and using various water application, such as spray versus drip irrigation, can have a profound impact on water use. For spray applications the type of spray head and pattern are critical for optimizing water use. The strategic and proper use of weather sensors (such as solar radiation, temperature, rain, and/or freeze sensors) soil moisture sensors and flow-control devices can achieve water savings. Use of smart controllers and weather sensors on lawn irrigation systems will automatically adjust water usage based on weather and soil moisture conditions. Finally having a good understanding of the watering needs for landscaping is essential to system design. The bottom-line training and knowledge in the area of outdoor irrigation are necessary to achieve sustainable watering goals.

Focused public outreach on outdoor water use, implementation of best management practices for irrigation system design and operation and requiring the certification/licensing of irrigation contractors can pay big dividends.

In summary, outdoor water efficiency can be optimized through restrictions, efficient landscape design, scheduled irrigation (reduce peak demand impacts to water systems), efficiently designed and constructed irrigation systems and the use of technology (rain sensors, tensiometers, etc.).

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