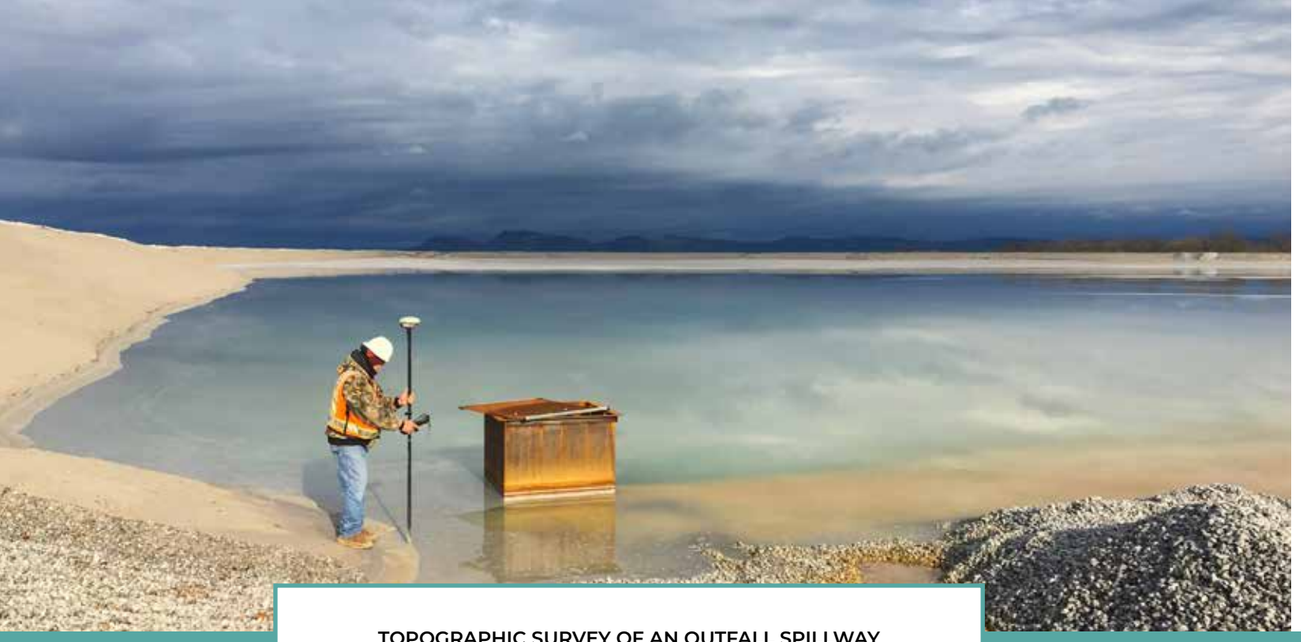
ELEMENTS

THE FUN ALSO RISES p. 4

Three recreation projects take the spotlight

2020 Vol. 1



TOPOGRAPHIC SURVEY OF AN OUTFALL SPILLWAY
Photo Credit: Austin Cline, Survey Technician I, Sevierville Office

CEC was hired to place elevation stakes on a sediment dam and to perform a topographic survey of an outfall spillway. The client plans to raise the sediment pond dam another 10 feet for storage capacity.

CEC sponsors a photo-of-the-month contest encouraging employees to submit photos from their work sites. Winning photos are published on CEC's internal website and social media pages. One is selected for Elements.

Elements is published by Civil & Environmental Consultants, Inc. for clients, business partners, and other associates.

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ON THE COVER: The Island in Pigeon Forge, courtesy of Derek Cress Photography
See "The Fun Also Rises," p. 4

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WELCOME

We hope you will enjoy this edition of *Elements* in its new and expanded format. Our new writing and design team has assembled what I think is an informative and visually attractive newsletter that will update you on many of the things that are happening at CEC.

When we began discussing the content for this edition of *Elements* earlier this year, we thought readers might find our growing list of projects performed for the amusement and recreation industry interesting. We are quite proud of our work with the industry and realized that much of our diverse client base was unaware of our work on those types of projects. We did have second thoughts about featuring the industry once the COVID-19 pandemic hit with its severe impacts to the industry. However, we are confident that our amusement and recreation clients will adapt to the challenges and operate effectively both during the remaining time of the pandemic and beyond.

I highly recommend reading the article about Greg Quatchak, one of CEC's four founders whom I had the privilege to work with for 41 years. Greg is the most talented land development engineer I've ever encountered. Beyond Greg's engineering talent was the enthusiasm and excitement that he brought to every project, consistently ensuring that a high-quality and effective design would be developed. As much as we at CEC miss Greg, I am sure his clients miss him just as much.

We hope all of you and your families remain healthy and have a fun summer.

Ken Miller, President & CEO

CONTENTS

THE FUN ALSO RISES

Extreme or unique topography—or the transformation of a flat site *into* such a site—along with an extreme and unique experience for visitors: These are the challenges that CEC staff face for amusement and recreation projects.

CEC staff on site at Topgolf's Glendale, AZ, facility

How do you make sense out of such a large, complex project? In addition to the services that virtually all land development projects need, CEC staff also understand the importance of visitability (that is a word!), visibility, the drop-off/entrance experience, emergency ingress/egress, "not in my backyard" (NIMBY) concerns, and specific utility needs. Cost and schedules are always of paramount concern to the client, and CEC's expertise has helped to expedite plan review and permitting on highly sensitive projects. Many clients are out-of-towners; CEC's combination of expertise and strong personal relationships with all involved entities, especially relationships with the local municipalities, facilitates the project.

CREATING A NEW PROTOTYPE IN GOLF

Topgolf is a global sports entertainment enterprise with more than 50 facilities throughout North America, Australia, and the United Kingdom, entertaining 13 million guests annually. Guests hit golf balls equipped with computer chips toward 11 giant dartboard-like targets on a 215-yard outfield that registers accuracy on a specific target.

A team from CEC Phoenix was chosen to provide site planning and stormwater retention services, among other services, for the Topgolf location in Glendale, Arizona.

Project design and permitting was completed within six weeks and was the fastest that any prior Topgolf facility had accomplished.

The biggest challenge for CEC was acquiring the ability to provide five-year, two-hour stormwater retention as opposed to 100-year, two-hour stormwater retention. A study was performed for the Arizona Department of Transportation (ADOT) to determine correct flows in an adjacent ADOT channel. This was coordinated with the City of Glendale and the Arizona Department of Transportation (ADOT), as an existing channel was already in place adjacent to the site that would accept excess stormwater volumes. A drainage analysis was prepared for ADOT that quantified the ability to allow excess site stormwater to enter the existing channel. The reduction of the stormwater retention allowed the site to reduce the footprint of the retention basins and provided additional parking for the project. This was a huge cost savings as underground retention pipe would have been required to meet the standard on-site retention requirements.

At one point, a classified challenge emerged and CEC was asked to perform three weeks of design rework in just one week. The team delivered.

Additionally, CEC increased the building's capacity and increased the overall participant experience by including the potential for large-scale TV billboards in the outfield and expanded capabilities for dining and entertainment into the design.

"CEC was a fantastic resource throughout the project. At the beginning stages, the team (led by Jeff Erickson of CEC Phoenix) took the time to understand our goals and go out of their way to help us achieve them. They knew that we had an aggressive timeline, and worked to find technical solutions to meet our goals as well as being an advocate for those solutions to the City of Glendale," says Tom Boerman, P.E., of Arco/Murray National Construction Company, Inc., the master design builder that handles the design and construction of all TopGolf facilities.

"When we find someone who works, thinks, and delivers like we do, we stick with them! Our work takes us all over the country, so finding trusted partners that we can count on is very important to our business."

Topgolf Glendale is now being used as a prototype—the first of a new generation of Topgolf facilities—that is being rolled out throughout the U.S. and internationally.

CELEBRATING RAINWATER AND ITS CONSERVATION IN REAL TIME

The Indianapolis Zoo lies on approximately 64 acres near downtown Indianapolis and serves approximately one million visitors each year. The zoo obtained an $8 million grant from the Lilly Endowment to complete the Bicentennial Pavilion and Promenade, which would provide 40,000 square feet of weather-protected space for up to 1,000 seated guests at an underutilized area of the Zoo's property. The Zoo planned to host concerts; picnics; events such as Christmas at the Zoo, the Halloween ZooBoo event, and Zoobilation (its annual fundraiser); and its new bird exhibition, Magnificent Macaws, at the facility. The Zoo wanted its focus of conservation to be visible in the design of the facility. It just wasn't sure how.

CEC provided surveying services directly to the Zoo and then worked collaboratively with RATIO Architects to extend the Zoo's value of conservation of animals to the conservation of rainwater for the design. After the team identified and accommodated existing utilities in the area, a "canopy" of metal structures with overlapping roofs was developed. Because the facility needed to shield large gatherings of visitors from the sun, rain, and storms, yet be open enough to allow air movement during hot weather and to allow the macaws to fly in from their habitat elsewhere on the property, RATIO Architects performed digital modeling to craft the ideal dimensions of the entire space.

The resulting design captures 100 percent of rainwater, dropping it onto metal panels and funneling it into 35-foot-tall wooden shade structures. To avoid erosion of the soil, the water then travels down a

Bicentennial Pavilion at the Indianapolis Zoo in Indianapolis, IN

Courtesy of Susan Fleck Photography

The Great Smoky Mountain Wheel at night in Pigeon Forge, TN

steel “rain chain” before dripping onto the plants below. Because the Zoo was looking to celebrate rainwater and to create opportunities for visitors to realize the benefits of conservation on their own terms, the team chose to make the rain chain fully visible to guests. The plants underneath thrive in saturated environments and each bed has its own water intake pipes. The water then travels into an aquifer and 14-foot-deep water detention bed designed to accommodate 100-year flood events. Throughout the project, CEC kept the project team apprised of local guidelines and regulations, and worked with the City of Indianapolis for approval of the drainage system.

Tom Gallagher, Principal of Urban Design at RATIO Architects, remarks that he has “gotten spoiled by the CEC folks” since he works with them regularly. “We have a similar approach in mindset. It’s a great teaming situation that is frankly rare as a designer–engineer relationship, and it’s something we don’t take lightly. The CEC team here in Indianapolis is used to working with us closely to take care of everything, including due diligence work that was navigated really well for this particular project. That’s very meaningful to us.”

The Zoo considers the project to be highly successful, and it was well received by the public. It won the **Construction Award and the Landscape Architecture Award at the 2017 Indianapolis Monumental Awards**, and it won the **People’s Choice Award from AIA Indianapolis** in 2019.

EXECUTING AN AMBITIOUS VISION FOR A SMALL ISLAND

The Island in Pigeon Forge has become one of the most recognizable landmarks in Tennessee and the southeast. The 23-acre mixed-use development is located on an island and includes two Margaritaville hotels and more than 80 retail shops, restaurants, and attractions, including a 200-foot Observation Wheel with views of the surrounding Great Smoky Mountains. This destination combines all things fun for families and friends of all ages where you can eat, shop, play and stay. CEC provided surveying and civil engineering support for the redevelopment of this family entertainment center.

This dynamic and ambitious project had a tight schedule and needed to be fast-tracked to meet the goals of the ownership group, LeConte Village, LLC. Based on past experience, the owners had confidence that CEC could lead the dynamic design and construction support process. “We chose VISION Engineering (acquired by CEC in March 2014) based on their reputation in the industry and their strong relationships with all entities involved with the project, including me and my partners, key City employees, and contractors. Their relationships, reputation, and knowledge were keys to the success of The Island,” says Bob McManus, President of LeConte Village, LLC.

As the majority of the site sits on a small river island, dense land use, access, and parking considerations were critical elements of the design. New access to the development required three new bridge designs. CEC also designed the foundation for amusement rides, completed a structural assessment of existing structures for proposed change of use, and prepared conceptual designs for proposed expansions, including elevated building foundations, pedestrian bridges, and retaining structures.

Due to CEC’s efforts, the development opened on time, despite the strict timeline. “Our project was still taking shape during the early planning stages. James [Tomiczek] (owner of VISION Engineering and now lead of CEC Knoxville) and his staff were extremely flexible and responsive to our evolving needs. They provided clear and intelligent direction to us throughout a very complex and formative stage. It’s that type of support and guidance that we really valued. We trust James’ opinions. He understands our business—not just the engineering—and he provides strategically strong advice, delivered in a way that is clear and understandable to less technically oriented people,” says McManus.

“The team understands the industry, they understand the city, and (most importantly) they understand us,” McManus adds. “We have continued to use CEC on nearly all our new projects and will continue to do so whenever we have the ability to choose the consultants.”

Since The Island opened, millions of visitors visit the destination each year. The year 2019 was the second consecutive year it was ranked **6th Best Amusement Park in the U.S.** and the **9th Best Amusement Park in the World**, according to TripAdvisor. It was also ranked **#6 of the “top 10 amusement parks in the U.S.”** in a 2018 Today Show article, placing The Island in the company of Disney and Universal theme parks.

For such projects, it’s not enough to know technical engineering, costs, schedules, and relevant regulations. You also need to know the local terrain and people, and the customer experience. Your business venture can involve a roller coaster, but the development process doesn’t need to feel like you’re on one! If you approach your project from all of these angles, it will soar—or sing, swim, educate, inspire, or transport—but above all, it will entertain. ■

FOR BLOOM THE BELL TOLLS

A multi-step, multi-partner collaboration to combat a harmful algal bloom in Lake Erie

In 2014, Lake Erie experienced a harmful algal bloom (HAB). Not all algal blooms are harmful, but toxins produced during the 2014 summer season not only harmed the local ecosystem, including fish, shellfish, marine mammals, and birds, but they also contaminated the City of Toledo's drinking water, prompting a "do not drink" advisory for days. HABs pose multiple health risks to humans and local ecosystems, and HABs are also a concern due to their consequent effect on the health of local and regional economies. Communities around Lake Erie held numerous public discussions about what caused the problem and how to prevent it from happening again. But how were they to accomplish this?

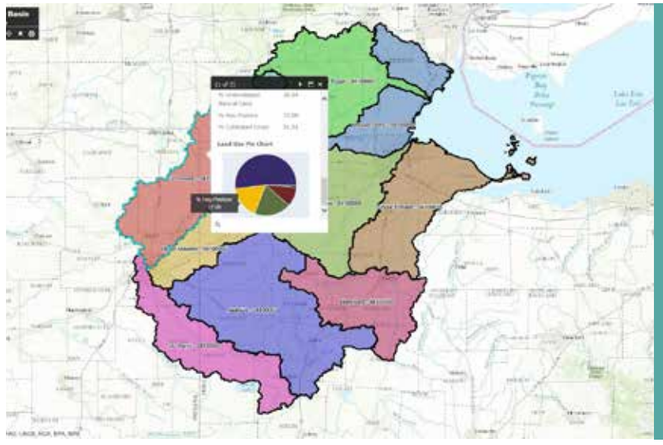
A harmful algal bloom

First, they needed to gather useful data about the sources of the nutrients, specifically phosphorus, which is a large driver for a HAB occurrence, and identify relevant hotspots related to nutrient input throughout the Western Lake Erie Basin (WLEB) watershed. Conversations throughout the planning process identified a crucial need for a tool that the public could access and easily use to understand the nutrient sources. Second, an understanding of the sources could guide stakeholder communities to focus on critical areas and identify the actions needed within those areas to make progress toward nutrient reductions. Third, they'd need to start implementing projects identified in these critical areas in order to begin making progress towards reduction goals and, ultimately, a reduction in HAB occurrence in the WLEB. Most importantly, they knew there would be a long road ahead, as HABs are not easily buttoned up. Finding a long-term solution to the problem would likely take years and require collaboration from stakeholders across seven million affected acres.

HARNESSING DATA AND DEVELOPING A TOOL

The government of Lucas County, Ohio, which abuts Lake Erie on its western edge and is the fourth-largest county in Ohio by population, was compelled to take action. In June of 2015, the County's Board of Commissioners and the Toledo–Lucas County Sustainability Commission engaged CEC to identify nutrient sources, as controlling these sources would help reduce algal blooms in the basin. The County Commissioners wanted the data to be specific and apolitical, allowing science to back up the processes to help people living in the basin. Tim Murphy, CEC's Corporate Public Sector Market Group Lead, based in CEC's Toledo office, helmed the effort. Murphy had previously served as the Environmental Commissioner for the City of Toledo for seven years and steered the city through the 2014 "Do Not Drink Advisory," rendering him an ideal project lead.

CEC helped compile and present publicly available data through a user-friendly, interactive Geographic Information System (GIS)-based mapping tool called the Nutrient Source Inventory (NSI). The tool made location-based nutrient source information available to elected officials, stakeholder groups, and the general public so they could holistically understand the status of their watershed and make informed decisions about potential action items. CEC elevated the inventory by modeling the existing data to estimate the amount of nutrients coming from the potential identified sources, including wastewater treatment plants, National Pollutant Discharge Elimination System (NPDES)-permitted industries, combined sewage overflows, unsewered areas and failing septic systems, row crop agriculture, urban runoff, and livestock farms. The models helped identify smaller, sub-watershed areas within the larger watershed that may contribute larger amounts of nutrients than other land areas. The NSI also incorporated models that simulated nutrient reduction best management practices (BMPs) for agricultural lands (the dominant land use) in these sub-watershed areas to demonstrate the potential for nutrient reduction if landowners were to adopt those specific practices.



NUTRIENT SOURCE INVENTORY (NSI)

The tool allows users to zoom to a specific location, turn various data sets on and off, measure distances, and highlight points of interest. Maps can be printed or shared with others electronically. All of the sub-watersheds have summary tables of their respective data, and users can zoom further in for more specific data. Clicking on icons brings up details about permitted locations, permitted outfalls, and monitoring locations, while also providing access to spreadsheets or useful websites.

"CEC was open to our team of individuals from both the non-profit sector and government; both rural and urban communities. And CEC worked with members of the entire basin, not just people within the county. It was a representative group," Lucas County Commissioner Tina Skeldon Wozniak says. "The NSI is comprehensive and easy to use, and has high-level policy-related components—it teaches people that this bloom is a factual problem and that something must be done about it. This is a tool to begin doing something."

Murphy has given presentations on the NSI's functionality at various events with the Mayor of the City of Toledo, County Commissioners and other elected officials, private entities, and interested community members present. The NSI has been used in local schools so that kids can explore it and learn from it. Lucas County hosted a webcast with all counties in the United States to showcase the tool's features. The County Commissioners are using the NSI as a springboard for conversations with other municipalities to discuss its results and potential assistance in implementing BMPs where needed most. The overall nutrient reduction project is beginning to deliver on the need for HAB education, both locally and nationally. You can check out the NSI on Lucas County's website at www.lucascountygreen.com.

WRITING GRANT APPLICATIONS AND DEVELOPING WATERSHED PLANS: A ONE-TWO PUNCH

The City of Defiance marks the halfway point between the headwaters of the Maumee River in Fort Wayne, Indiana, and the mouth of the Maumee River in Lucas County. The Maumee River has the largest watershed of any river flowing into a Great Lake, and it is the sole source of the City's drinking water. Like Lucas County, the City knew it needed to take action to protect its drinking water and reduce the potential for HAB development both in the Maumee near its intake and in its reservoir. Located in a rural area and centrally within Defiance County, the City identified itself as being in a unique position to be able to

work with County officials and agencies, as well as with local farming communities.

CEC's watershed planning team, led by Deanna Bobak, also of CEC Toledo, focuses on utilizing watershed-based planning tools to leverage state and federal grant funds to outline and implement a water-quality improvement strategy. Bobak's extensive experience in watershed planning and restoration has included helping clients secure more than $2.2M in planning and implementation funding.

Bobak worked with the City of Defiance to develop a grant application for planning funding for a key sub-watershed directly upstream from the City. In partnership with the City, Bobak facilitated the development of a Nonpoint Source Implementation Strategy (NPS-IS, also known as Nine-Element Plan) for the Platter Creek watershed. The NPS-IS developed with the City is just one of 38 approved plans for which Bobak has served as lead technical author—more than any other Nine-Element Plan writer based in Ohio.

NPS-IS plans are the key to opening the door to grant funding. Projects contained within approved plans become eligible to receive nonpoint source grant funds from Section 319 funds and other resources, such as the Great Lake Restoration Initiative. With a focus on nutrient reduction, the Platter Creek NPS-IS received approval in January 2020. The City—along with its partners the Defiance Soil and Water Conservation District (SWCD) and The Nature Conservancy—has already submitted one grant application for a BMP project contained within it.

Bobak and Melissa Greene Hopfer of the Board of Lucas County Commissioners present to engaged citizens and stakeholders.

IMPLEMENTING PROJECTS IN THOSE WATERSHED PLANS

"Because we've worked with so many organizations to get plans in place, once a plan is in place, they are already primed to go after implementation dollars for their improvement projects, a process that is fairly competitive," said Bobak. Municipalities, SWCDs, and Non-Governmental Organizations (NGOs) across Ohio are key partners to implementing projects, and Bobak and Murphy applaud those entities they've been privileged to work with so far in aligning their needs with funding opportunities.

"We're confident that we'll see positive changes in our watershed after we can begin implementing projects in our Nine-Element Plan, but it also depends on participation levels with farmers signing up for programs," said Jennifer English, MS4 Coordinator for the City of Defiance. How would they compel the region's independent-natured farming communities?

"We'll need to make sure farmers understand there are financial incentives to get on board," said English. Projects that focus on BMP implementation help reduce the financial risk for producers to make changes within their operations for the benefit of nutrient reduction and improved water quality. In partnership with the City, the Defiance SWCD is a direct link to helping identify appropriate BMPs and enrolling landowners into these programs. SWCDs are the trusted advisors to the agricultural community and provide valuable advice in agricultural land management practices.

"Helping farming communities understand the benefits of working with us on this is a generational issue," English noted. "It won't be solved overnight—in addition to education about the issues, we also need to do more future-friendly farming and regional food economy. We'll need measurable impact with the blooms as well as participation from the farming communities in order to see the greatest impact. We'd like to get to the point where they ask, 'How can I be part of this? How can I help?'"

CONTINUED WORK

The HABs in Lake Erie aren't an isolated incident. According to the National Oceanic and Atmospheric Administration, HABs have been reported in every United States coastal state. They've also been reported in the Gulf of Mexico and elsewhere in the world, including Japan. "Because algal blooms are weather-driven, they'll be a perpetual problem, especially with climate change," English emphasizes. "This problem will need adaptive management—we need to work collaboratively, not only regionally, but also globally."

At the state level, Ohio Governor Mike DeWine announced the $172 million H2Ohio program in November 2019. This initiative to ensure safe and clean water for all Ohioans over the course of two years includes a goal of reducing nutrients. The State of Ohio, through its Domestic Action Plan, has a set goal of achieving a phosphorus loading reduction of 40% to the WLEB by 2025. The NSI, the Nine-Element Plans, and the ensuing projects are important steps in the process of reaching those goals, and collaboration across the entire WLEB watershed will remain a critical component to propelling additional progress. ■

WATERSHED MANAGEMENT: HOW CAN CEC HELP IN YOUR AREA?

CEC remains involved with the NSI as necessary, updating the tool as new information becomes available. In 2019, the NSI was updated with additional models covering other sub-watersheds within the WLEB. These models can help identify areas that are most in need of watershed planning, and CEC has used this information to help others determine where they would like to focus their efforts. CEC's experience in the WLEB with the NSI and the development of Nine-Element Plans can be applied to find solutions for nutrient issues in other areas.

Nationwide, CEC can provide the following services, whether you are reeling from a HAB or you need non-emergency technical assistance with your watershed:

- Geographic Information Systems (GIS) and Data Management
- Grant Writing and Administration
- Nonpoint Source-Implementation Strategy (NPS-IS, also known as Nine-Element Plan) Development
- Watershed Planning and Restoration
- Stream and Wetland Assessments and Restoration
- Best Management Practices Design, Permitting, and Construction
- Total Maximum Daily Load Modeling and Monitoring
- Flood Routing and Inundation Mapping
- Floodway Encroachment Reviews
- Certified Floodplain Management
- Hydrologic & Hydraulic Analyses
- Flood Mitigation Analyses, Design, and Permitting
- Dam Safety Engineering

GREG QUATCHAK, P.E.

Founding Principal of CEC Retires

Quatchak Looks Back on the Beginnings of CEC and Looks Ahead to Its Future

Over the years, Greg served CEC in many capacities: as Chief Executive Officer, as Secretary for the Board of Directors, as Chairman of the Nominating Committee, as the Public Sector and Real Estate Market Group Lead, and as Strategic Business Development Officer.

How has CEC evolved over the years? What has changed and what has stayed the same?

In the beginning years, we four Founding Principals (Ken Miller, Jim Nairn, Jim Roberts, and I) did everything required of a new firm: we performed the engineering work, we billed the work and collected the money, and we marketed the business. Since then, CEC's growth to more than 1,100 employees in 23 locations has been rapid but controlled and strategic; that is, we gave reins to the growth in response to market and client demand. What stayed consistent through all the years was being advocates for our clients. We value our clients as well as our clients' choice of consultant; every good relationship begins with respect. Without our clients, we wouldn't have a firm!

What makes a great consultant and what makes CEC good at it?

Consulting engineering is not for everyone. If you're coming out of college as a new grad or you're coming out of government/public sector work and want to get into consulting, you may have the technical skills and you may know all the latest technology, but you may not necessarily have the interpersonal skills. In particular, most college curricula don't teach the necessary interpersonal skills for a career in consulting. Consulting is problem solving. You'll need to learn how to take those technical skills and apply them in real-world situations, and that includes working with real people! You have to get client feedback; you can't just sit aside and work in a vacuum. There's involvement with regulatory agencies, public agencies, municipalities, local government, and state government. At CEC, in terms of mentoring and nurturing our professionals, we've always emphasized developing a strength in that interpersonal skill set. If you have the interpersonal skills (or the willingness to learn those skills and to be mentored), you can have a great career in consulting.

CEC's four founders *(from left to right)*: Jim Nairn, Ken Miller, Greg Quatchak, and Jim Roberts.

Do any of your projects stand out as particularly memorable to you?

Roughly six or seven years ago, we worked on the North Catholic High School (NCHS, previously known as Cardinal Wuerl North Catholic High School) in Cranberry Township, Pennsylvania, owned by the Catholic Diocese of Pittsburgh, which had been a valued, longtime client. We helped evaluate the site for the school and then provided the full scope of services: surveying, civil engineering, geotechnical engineering, landscape architecture, municipal approvals, due diligence, construction monitoring, and International Building Code Special Inspections. For our ecological permitting, the team involved the high school biology class to help with the monitoring of streams. The project was LEED Silver Certified. Coincidentally, the NCHS was the first high school the Diocese had built since the 1950s. I found that project to be very rewarding.

Another valued, longtime client is CBL & Associates Properties Inc. (CBL). Back in the heyday of shopping center popularity, we worked on seven or eight malls for CBL across the country. One memorable project to me was Southaven Towne Center in Southaven, Mississippi. Prior to development, the site had major floodplain issues, major earthwork and balance issues, and some wetlands and stream impacts. We received permits in record time because of the quality of work. Regulatory agencies remarked that they'd never seen a package so complete and comprehensive. Working in Mississippi turned out to be a wonderful experience; the public wanted to see developments there and were very supportive. CBL was my first client to call me their "trusted real estate advisor," which meant that whenever they had a problem, they'd call me to take care of it. That relationship has meant a lot to me!

Greg is celebrated at a reception in January 2020. Joining Greg on stage are *(from left to right)*: Steve Donaldson, Mary Guinee, founder Jim Roberts, Adele Beaves, and founder Ken Miller. Not pictured: founder Jim Nairn.

What do you see for the future of CEC?

The people I've worked with to transition some of my duties are very capable, and I know they will thrive. These people would be Mary Guinee, Strategic Development Officer, of CEC Pittsburgh; Paul Tomiczek III, Chief Technical Officer, of CEC Pittsburgh; Tim Murphy, Corporate Public Sector Group Lead, of CEC Toledo; and Adele Beaves, Corporate Real Estate Group Lead, of CEC Pittsburgh.

CEC will always maintain a culture for our employees to know there's an opportunity for them to grow and develop professionally. We don't want our people to hit a glass ceiling and say, "I can't go further." We'll be continuing to promote a culture for encouraging people to bring forth new ideas. When a firm is as large as ours, you can't rely on four rainmakers. Innovation to better serve our clients will always be encouraged here. For example, a few years ago, one of our Vice Presidents made a case for using drones, and now we're flying over natural gas pipelines to detect leaks!

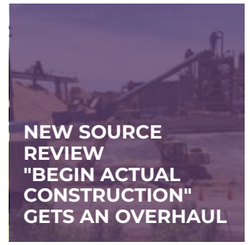
We'll continue to grow in other geographies. We're not on the West Coast or in the deep southeast yet. We'll also grow into different markets in addition to our core seven (manufacturing, mining, oil & gas, power, public sector, real estate, and solid waste). We're bringing in some new capabilities to the firm that are very exciting, so stay tuned! ■

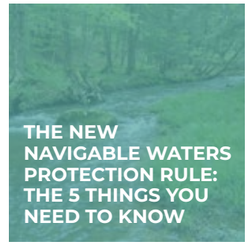
Check out Greg's complete interview, including video segments, at cecinc.com/greg.

MORE STORIES, SAME FOUNDATION

You're used to seeing regulatory news and updates from us on our blog. We've expanded our blog topics to include much more than that, such as feature stories and corporate announcements, but we haven't lost sight of our roots in providing regulatory updates! Here are some of the most recent regulatory analyses we've provided.

See more on our blog!





TRENDING: Per- and Polyfluoroalkyl Substances (PFAS)

What Are They and Why Are They Trending? They're a family of complex synthetic fluorinated compounds that have been in production since the mid-20th century. PFAS compounds either do not break down over time or degrade to terminal perfluoroalkyl acids compounds. As a result, PFAS accumulate in the environment and the human body. Recently, federal and state agencies have begun developing limits on some PFAS compounds.

Click here for PFAS news on our blog!

Where Are They Found?

- Commercial household products, including nonstick products, waxes, paints, and cleaning products;
- Personal care products (shampoo, dental floss);
- Cosmetics (nail polish, eye makeup);
- Some grease-resistant paper (fast food wrappers, pizza boxes);
- Certain types of fire-fighting foams; and
- Production facilities or industries that use PFAS.

Who Is Affected?

- Manufacturers of the compounds and products;
- Wastewater treatment plant owners/operators;
- Landfills that generate leachate;
- Municipal and federal owners of property where firefighting drills using foam took place;
- Public drinking water suppliers; and
- Metal plating facilities.

What Is CEC Doing? Not only are we monitoring technical and regulatory developments—we're actively involved in them. We've joined the Interstate Technology & Regulatory Council Industry Affiliates Program's PFAS team to participate in the development of uniform national guidance and standards and to engage with regulators.

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- RCRA and Solid Waste Regulations
- Maintaining Compliance for the Natural Gas Industry
- Introduction to OSHA Regulatory Requirements

To see the fall course schedule, visit cecinc.com/etc

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