

elements



Inside

Everything

Falls

Into Place



Inside

1



3



4



4



4



1 EVERYTHING FALLS INTO PLACE
A True Visitor Experience

3 HARVESTING FROM THE FARMS
Enabling Renewable Energy Generation

4 IN THE NEWS
Principal Lauren Parker Appointed to Task Force

4 SPOTLIGHT
CEC Co-Founder Jim Nairn Retires

4 AWARDS AND RECOGNITION
People and Project Accolades

On the Cover:

Ohioyle Falls provide a natural focal point within Ohioyle State Park, Pennsylvania's most visited state park and the southern gateway into the Laurel Highlands.

A Positive Impact

There is always a lot to look forward to at CEC: new challenging technical opportunities; completed projects coming online every day; new services and staff being added to help us better serve our existing clients; and new clients who are discovering the many high-quality services and integrated solutions we provide. And while my sights are generally focused on the future and on ways to continuously improve upon all that we have built, reflection on those who have been instrumental to our success is appropriate. Recently, many of us have been reflecting on the foundation that was laid more than 25 years ago by my colleague and CEC co-founder Jim Nairn, who retired at the end of 2014.

When you read the article about Jim in the Spotlight, I hope it will help you begin to understand and get a sense of the tremendous impact he made—not only within CEC, but also for the hundreds of clients he so diligently worked for throughout his impressive career.

On further reflection, I know the three engineers who co-founded CEC surely needed the one geologist for CEC to be successful. We thank Jim for all of his immeasurable contributions and wish him all the very best.

Kenneth R. Miller, P.E.

President and CEO

July 31, 2015

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Everything Falls Into Place

Launching a true visitor experience in the heart of Ohiopyle State Park

The cantilevered visitor center and exhibit wing required creative geotechnical and structural engineering solutions.

As the rushing waters of the Youghiogheny River approach the inevitable precipice, they eventually submit to the pull of the drop, seemingly enjoying the ride.

Youghiogheny is an Algonquin word meaning “a stream flowing in a contrary direction,” but there was nothing contrary about the direction in which things went leading up to the grand opening of the new Ohiopyle State Park Office/Laurel Highlands Falls Area Visitor Center in southwestern Pennsylvania.

Much like the unpredictability of riding the challenging white waters of the rugged river, this project would challenge designers to streamline an abundance of moving parts within an environmentally conscientious facility.

The 20,500-acre Ohiopyle State Park is one of the most visited state parks in the United States, welcoming more than 1.5 million people annually for whitewater rafting, biking, hiking, and other passive activities—not to mention the exquisite natural beauty of the Laurel Highlands. The centerpiece of the park is the Ohiopyle Falls on the Youghiogheny River (pronounced yah-kuh-gainy).

“This is the big hurrah.”

— Stacie Hall, Assistant Park Manager at Ohiopyle State Park

Naturally, the hub for activity at Ohiopyle has always been right near these captivating falls—trail entrances, concessions, multiple commercial operations, a boat and kayak launch permit facility, public restrooms, a parking lot, a small visitor center offering brochures—yet despite all of the activity occurring in the central falls area, there was nothing “centralized” about it; no true visitor experience at the park’s core.

“This project began because we were severely lacking in a public contact point for visitors,” said Stacie Hall, Assistant Park Manager at Ohiopyle State Park. The location of the park office—a couple miles from the falls area—had always been an issue. “As state employees, we needed to be accessible to the people. We were barely scratching the surface on communicating available services and information.”

As part of a professional services agreement with Pennsylvania’s Department of Conservation and Natural Resources (DCNR), CEC was the prime consultant for what was

Continued on page 2



A soft launch of the facility took place shortly after Labor Day 2014, allowing park staff to ease into the new operations during the off-season.

Continued from page 1

slated to become the new Ohio State Park Office/Laurel Highlands Falls Area Visitor Center. The project design was launched in 2008 and would be CEC's fourth under that agreement. CEC led design discussions for the facility and provided site civil engineering, geotechnical engineering, surveying, and landscape architecture services—with a goal to have the facility achieve LEED® Gold certification.

"From day one, the design discussion had to factor in a certain amount of sensitivity because of the view of the waterfall and general visual landscape," said Jim Kalp, Architectural Designer and Project Coordinator for DCNR's Bureau of Facility Design and Construction. "We wanted to make sure the project had minimal impact on the viewshed."

Between the mountains, the river valley and floodplain, there was limited level ground to work with without disturbing nature. But developing a sensitive site was only one piece of the puzzle. "The team would need to find a way to pull all of the various uses of the park into one central design, accommodating vehicular and pedestrian circulation and a number of differing interests through one narrow, linear site development envelope," said Michael Takacs, CEC Principal and head of the firm's Landscape Architecture practice. These included the new state park office, four commercial rafting operations, kayak and boat launch permitting, and general river

access, not to mention that desired public contact point for visitors to learn more about the area.

A number of sustainable features were included in the design. A closed-loop geothermal well system relies on consistent temperatures found 300–400 feet below the ground to pre-heat or pre-cool the building before using the HVAC system, and the state park office wing is actually below grade, using the earth as an insulator to prevent thermal loss. Additional cooling and stormwater retention and management are achieved through two green roofs: one over the exhibit wing and one over the state park office wing. Stormwater is filtered by the green roofs and collected in a tank to supplement irrigation, minimizing the use of potable water. Because the state park office wing is below grade, there is a seamless transition between standing on the ground and standing on the green roof.

Around this time, Ohio State Park Office was experiencing a capacity issue with its municipal wastewater treatment facility. Park officials didn't want to exacerbate that situation, so the decision was made to treat wastewater produced by the new building on site, significantly reducing sewer usage. CEC designed a biological wastewater treatment system consisting of a primary treatment tank that then flows to a constructed wetland, and indoor tanks containing microorganisms and tropical plants to polish the water, which is then



The building, designed by SMP Architects with MEP design by LLI Engineering and geothermal system by CJL Engineering, is positioned to achieve LEED Gold certification.

reused to flush toilets. The specific system that the project employed is known as an Eco-Machine™.

"We were trying to utilize the greenest technology available, but use it where and when it made sense, not simply to say we used it," said Hall.

The project was put on a shelf for several years due to lack of funding, until a grant from the Federal Highway Administration's National Scenic Byways Program was obtained. The submission played into the project's location along Route 381, considered a scenic byway, and U.S. Route 40, also known as the National Highway, just a couple miles from the park. The \$4 million grant also helped to direct interpretive aspects highlighting key components of the facility.

"We always planned for interpretive exhibits to highlight the building's features," Hall notes. The indoor treatment tanks where biological polishing takes place and the green roofs have educational signage. Outside displays showcase flora and fauna, the historic aspects of the region, and the roles played by transportation in the area—rail, rafting, and the arrival of the automobile.

The official grand opening and formal dedication ceremony took place on June 11, 2015. "Our goals were to create as green a facility as possible, yet still be functional; to get people excited about the region, not just the park; and also to get people back out and exploring more," said Hall. "We've been thrilled not only with the way the green aspects function, but also with the reaction we've been getting from the public. From what we can tell, we've been successful in what we set out to do." ■



The "extensive" green roof built over the exhibit wing has a thin profile of soil media (3"–6") and uses a tray system pre-grown with a variety of sedums and plants.

Harvesting from the Farms

Enabling the development of renewable energy generation sites

At multiple wind farms in Indiana and Ohio, CEC used mist-net surveying to identify Indiana bats and radio telemetry to discover more about their migration routes and foraging areas.

Incorporating solar and wind as renewable energy resources in our nation's power supply portfolio has become more and more prevalent, due in part to renewable portfolio standards (RPS) requiring electricity generators to produce a specified percentage of their electricity from renewable energy sources, and also in response to growing public demand.

Alternative energy guidelines vary from state to state, with some states requiring power generators to reach percentages of alternative resources as high as 30% by 2020. The Indiana Municipal Power Agency (IMPA)—a wholesale electric power provider for 60 communities—is committed to environmentally responsible power even though the state of Indiana does not have a mandate; IMPA's solar program has progressed due to its member communities' desire to be more sustainable. "Many companies even have alternative or renewable energy goals of their own," said Aaron Hurt, CEC Vice President and Indianapolis office lead.

Most of these projects require a large real estate investment and can require CEC's suite of services, including due

diligence, GIS, surveying, land acquisition coordination, civil and geotechnical engineering, ecological, cultural resources, permitting, and construction administration. When certified renewable energy generators are in the market to develop new or expanded locations for solar or wind farms, land acquisition, entitlements and permitting can take years, according to CEC Detroit Principal Kirt Andersen. "After wind and solar feasibility studies have been conducted, developing a Critical Issue Analysis (CIA) is typically where the developers start in order to develop the base map that can direct the land acquisition team on land value," Andersen said.



The development of this 30-megawatt solar field project required site engineering and permit assistance.

For solar farms, site layout and engineering plans for the earthwork, grading and drainage are critical. Geotechnical investigations and engineering are completed for the pilings used to support solar panels and power stations, and landscape architecture services help to

buffer adjacent properties. Stormwater management is also a key design component to address water quality and runoff. Archeological and ecological services are typically required to get any project permitted and online, and they can dramatically alter a project's anticipated timing.

Bat and avian studies are a big part of wind development not simply because trees must be cut to position and construct the turbines, but also because these species often come into contact with those turbines, and of course this includes endangered species, too. Both pre- and post-construction studies and monitoring are required for new wind farms. For instance, CEC performed bat mist-netting to determine the presence of Indiana bats at several wind farms across the Midwest. When they were identified, radio telemetry provided vital data regarding their roosting habitat and foraging behavior. "We use that data in the siting process to mitigate impact. We can adjust accordingly with a different configuration or site location," said Ryan Slack, CEC Indianapolis Principal and a U.S. Fish & Wildlife Service-approved bat surveyor.

"The migration of bats, endangered species, eagle nests, and new setback regulations are just some of the issues related to the development of sites for alternative energy generation," said Anderson. ■

IN THE NEWS:

Principal Lauren Parker Appointed

In June, Pennsylvania Speaker of the House of Representatives Mike Turzai (R-Allegheny) announced the appointment of CEC Pittsburgh Principal and civil engineer **Lauren Parker, P.E.**, to Pennsylvania Governor Tom Wolf's newly created Pipeline Infrastructure Task Force (PITF). Governor Wolf followed with his announcement of the full membership for the PITF in early July.

Because Pennsylvania is slated to undergo a substantial pipeline infrastructure build-out within the next decade, an opportunity emerged for the Commonwealth to engage stakeholders in a collaborative process and ensure that positive economic benefits from Pennsylvania's rich natural resources can more quickly be realized in a responsible way.

The PITF's purpose is to define a series of best practices and recommend ways to plan, site and construct pipelines that minimize environmental and community impacts, improve public participation, make permitting more efficient and ensure the long-term safety of the pipelines. "Lauren's knowledge of the impact of regulation on consumers and businesses in the oil and gas industry is extensive and impressive," said Turzai. "Studios, open-minded and collegial, she will have a positive impact on the PITF's mission."

As Speaker Turzai's Legislative Appointee, Lauren will serve among representatives from state agencies, the legislature, federal and local governments, the pipeline and natural gas industries, environmental groups, agriculture, and natural gas users, with the Secretary of the Department of Environmental Protection as Chairman. The task force will provide a report of recommendations to Governor Wolf by February 2016.

It's been a landmark first half of 2015 for Lauren. In March, she was named the Breitting Energy Future Industry Leader at the Northeast Oil & Gas Awards event in Pittsburgh. The Future Industry Leader award recognizes a young professional who already has shown an inspiring contribution to the oil and gas industry in the region. ■



"I am honored to be Speaker Turzai's appointee and look forward to the opportunity to work with various stakeholders on the advancement of pipeline infrastructure in the Commonwealth in a sustainable and responsible manner."

— Lauren Parker

Spotlight

CEC Co-founder Jim Nairn Retires

When asked about starting a consulting business with three engineers, Jim Nairn, a geologist, will say—with a broad smile on his face—that it seemed about right to him because it takes three engineers to equal the capabilities of one geologist. That may not be true of all geologists, but Jim surely is not a typical geologist.

Jim's career has been remarkable in terms of his contributions to CEC and to significant environmental and waste management projects that have positively impacted the economy and residents of western Pennsylvania. Specifically, Jim was instrumental in the redevelopment of former industrial sites, such as Washington's Landing (formerly Herr's Island), Sandcastle (formerly U.S. Steel's Homestead Works), the SouthSide Works (formerly the LTV South Side Works), and the Pittsburgh Technology Center (formerly the LTV Hazelwood Coke Works). Further, Jim has provided technical consulting services on the Little Blue Run Flue Gas Desulfurization Impoundment for FirstEnergy Corporation (formerly Ohio Edison) for more than 40 years. Little Blue Run is the largest and possibly most complex water impounding utility waste facility in the United States. Jim's efforts on the project have resulted in the construction and ongoing operation of the facility across a constantly changing set of environmental regulations and operating conditions, ensuring the delivery of reliable electrical service to western Pennsylvania consumers.

Elements sat down with Jim to delve into his thoughts on his career and the consulting industry.

Q What are the most significant changes that have occurred in our industry during the 40-plus years of your career?

A Beginning in the 1960s, we started concentrating more on water, air and the general environment. Governments concentrated on a topic such as water and then moved on to something else, like air, then on to solid waste, etc. They then came back and created more water regulations, more air regulations, more solid waste regulations, and fine-tuned what they were doing. As a result, the environment gets cleaned up and we do things differently. It is a cyclical situation, and we keep going back to address issues in a different, improved way.

Q What makes CEC's approach to projects different?

A One of the reasons we started CEC and set it up the way we did is because clients had commented that, traditionally, they saw no participation from senior personnel in the consulting engineering industry. So that was what we

sold when we went out. Instead of a pyramidal structure, CEC has its project managers doing more than just reviewing what their staff works on; CEC project managers have full involvement in all aspects of each project and are identified as someone the client can go to. Without this structure, you cannot enable growth. The only way for staff to move into more responsible positions is to be promoted into those positions. If you're not allowing your people to mature in their technical or other capabilities, you're not helping them to be—as Ken, Jim, Greg and I say—a potential competitor. We want to build consultants who will make good potential competitors, but treat them well enough so they never want to leave and provide opportunities they would not have elsewhere.

Q Has the way you go about building a relationship with a client evolved since early in your career?

A Probably not. It's still a situation where, in order to set up a new relationship, you have to understand what the client's needs are and how you can help fulfill those needs. You can't go in and just tell them what you can do—that would be

AWARDS & RECOGNITION

Paul R. Jenkins, Jr., a Senior Project Manager in our Charlotte office, received this year's CEC Award for Innovation for his Utility Boiler Furnace Gas Analysis project. CEC was brought in to provide gas analysis at 18 locations along the walls of the furnace at a 1,600 MW coal-fired power generation plant. The project was out of our St. Louis office, and Paul received a call from Vice President Chris Dawdy, the project principal, for help. Instead of purchasing or renting 18 sets of continuous emission monitors (CEMs), Paul developed a more economically feasible solution: a switching station to "time share" only two sets of CEMs. His technique resulted in significant cost savings while still providing the exact data needed. ■

Founding principal Greg Quatchak presents Paul Jenkins (left) with the 2015 Award for Innovation.





a big mistake. In the early stages of my career, we didn't have business development people working for consulting engineering firms—it just wasn't done. I was perhaps the first in the area, or one of the first, starting in the late '70s. I was asked to do this full time, but I realized it couldn't be done. Things were changing so fast in the environmental business in the late '70s that one had to keep up with those changes. You couldn't just say "I've read about it," you had to say "I've done it." It's the seller-doer model. It doesn't help your clients or your company to be a total seller. True, there are some people who do that well, but not many—and that's not our model.

Q What aspects of your approach to the investigation and remediation of environmental concerns at former industrial properties (Brownfields) allowed you to be successful?

A Critical to our success was the knowledge of our team concerning the inner workings of steel and other manufacturing facilities. This knowledge of the environmental issues associated with the manufacturing processes, which was unique for consultants, allowed us to remediate root causes rather than their impacts. Another important trait of our team was the ability to develop unique solutions for environmental issues at those properties. For example, at several large former industrial facilities that had contaminated soils, ASTs, USTs, and other components that impacted those properties during more than 100 years of industrial use, CEC would prepare coordinated redevelopment and remediation plans to minimize the disturbance of on-site soils that would otherwise have required disposal at off-site facilities. This, coupled with the use of off-site clean soils to provide a barrier to the contaminated Brownfield soils, allowed commercial, and in some cases even residential, development.

Q What do you think was your greatest accomplishment on the Little Blue Run project over your 40 years of involvement?

A The greatest accomplishment might best be described as our ability to work with our client and many generations of regulators in an atmosphere of mutual trust and cooperation, allowing several rounds of permitting and expansion of a facility that otherwise would have required the creation of other disposal areas on greenfield properties. Because of these relationships, we were able to address complicated issues that arose due to changing regulations as well as new developments resulting from the expansion of the facility. Coupled with this relationship, that atmosphere of mutual trust and cooperation also allowed us to think outside the box and develop unique solutions, such as the use of geotubes to increase the useful life of the facility.

Q What would you say will be the legacy that you leave?

A I hope it's that I always tried to make sure I treated all people in our company with the same level of respect. I realize the importance of all of our people doing all of their various jobs—they all need and deserve a pat on the back at times. I also tried to let them know that they should continue to grow and learn new things.

Although Jim has retired from daily consulting, he continues to contribute to CEC's ongoing success and development as a technical consultant on an as-needed basis and as an active member of CEC's Board of Directors. In addition to his general oversight and leadership as a Director, Jim is also the Chairman of the Nominating Committee and a member of the Compensation Committee. ■



CEC Boston and the full project team for the restoration of Town Brook in Plymouth, Massachusetts, received

the 2015 Nicholas Humber Environmental-Energy Award for Outstanding Collaboration by the Environmental Business Council of New England. ■



Vice President Bill Held of CEC Cincinnati received the 2015 Landfill Gas and Biogas Distinguished Individual Achievement Award for his service

to SWANA and his achievements and dedication to the landfill gas industry. ■



At this year's Northeast Oil & Gas Awards, CEC was named 2014 Consultancy of the Year. ■



The Ironworks at Keystone, a project of CEC Indianapolis, received the 2015 Best Retail/Mixed-Use

Project of the Year Award from the Indiana Chapter of NAIOP. ■

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Back Cover:

PHOTO CONTEST WINNER
MARISA LOGAN / CEC PITTSBURGH

CEC sponsors a Photo-of-the-Month contest encouraging employees to submit photos from their work sites. The winning photo is published on CEC's internal website and social media pages.





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This female wood frog was discovered during the collection of macroinvertebrate, fish, habitat, and water-quality data as part of a biomonitoring program for streams and wetlands above longwall mining sites. Although the protocol does not specifically require ecologists to look for amphibians, it's a good sign when they're present.