If there is a perfect match between a belief and Brown and Caldwell, it is the one we celebrate in this report – sustainability. From our sole business focus on water and the environment to the passion of BCers to make positive impacts both personally and professionally in the communities where we live and work ... this, simply, is Brown and Caldwell. It is easy for me to say that sustainability is the heartbeat of this company.

From this comes our commitment to a clean and enduring environment, beginning inside our own office walls, then translating to the work we do with clients, and finally extending to communities around the world. In this report, you will see the measures we take to use resources responsibly and reduce waste. We share project stories where we take great pride in their socially-responsible outcomes. And, you will see the great lengths we go to as individuals and as a company to help developing countries gain access to clean water and sanitation.

We hope the story of our people, projects and deeds presented in this report serves as a brief glimpse into the ways we’re helping to make a difference for our world – a starting point in the discussion that we look forward to continuing with you.
In the 1970s, the big-picture thinking we have come to associate with preserving water and the environment was just coming into focus.

With the founding of Earth Day and the EPA in 1970 and the establishment of the Clean Water Act in 1972, a whole new world was opening up for environmental engineers to make a difference across the United States. Suddenly, there was a push for more responsible methods for dealing with stormwater runoff, more efficient ways to treat wastewater and innovative approaches to preventing pollution in estuaries, lakes and rivers.

Ken Brown and Dave Caldwell had already been in business for 25 years when environmental conscientiousness was emerging into the national zeitgeist.
Brown and Caldwell founded their company in 1947, and soon after designed one of North America’s first wastewater cogeneration systems in 1948.

Moving into the 1960s, Caldwell had already begun to espouse the benefits of recycling treated wastewater, carving out BC’s place in history as a company that sees sustainability through a wide lens and crafts new and unique solutions.

With our holistic view, wider environmental problems have come into focus. Solving them continues to be our passion and our purpose.
It starts with our people

Brown and Caldwell’s values can be traced back to two men who had a vision: 100 percent environmental. It’s who we are, it’s what we’ve always been and it’s who we’ll always be.

BC has 1,500 employees throughout the United States, all working toward a common goal: to leave this planet a better place than we found it.

We do this through social responsibility in our own business practices, shaping sustainable communities with our clients, applying One Water approaches for greater reliability and resiliency, adapting and changing to our clients’ needs and always tapping into our passion for improvement.
In an effort to reduce food waste, many BC offices maintain an office composting program. In Charlotte, N.C., the local BC Green team installed an organics composter, which feeds their thriving office garden.

BC Green

We realize that to act socially responsible, we must encourage our employees to live out our values in the way we do business every day. Our efforts are organized around five Sustainability Principles that form the core of our commitment to improving business operations, the communities we serve, and the environment.

1. Reduce paper consumption
2. Lower energy use
3. Recycle and minimize waste
4. Reduce carbon footprint
5. Increase corporate social responsibility
Sustainability Grant Program

BC's Office Sustainability Grant Program was created to promote grassroots innovation for sustainable practices. All offices are encouraged to submit proposals for environmentally sustainable ideas, large and small, that they would like to see implemented in their local offices. Since 2013, over $12,000 has been awarded to BC Green teams around the country to help make their visions a reality.

Earth Day Challenge

In the lead-up to Earth Day every year, BC offices compete to come up with new ways to give back to their communities, improve the environment, and conduct daily business operations more sustainably. Offices exchange their ideas and activities through a company-wide blog feed, and a panel of judges selects a winner based on employee participation and overall impact to sustainability in their office or their community.

Leadership in Environmental Actions and Programs (LEAP)

Brown and Caldwell’s unique LEAP certification program was developed to track sustainability progress in our offices. Using a rating system similar to the Leadership in Energy and Environmental Design (LEED) building certification program, LEAP is customized around our five Sustainability Principles and geared toward the nature of our offices and our work.

Offices are awarded basic, silver, gold or platinum certification based on the number of metrics achieved. Since the program launched in 2009, we have seen an increase in the number of offices attaining higher LEAP ratings – speaking to the effectiveness of their sustainability efforts.

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Reduce paper consumption

We are continually developing measures to reduce printing companywide, such as using electronic files for internal reviews of draft client deliverables and expanding employee education regarding paper consumption.

BC has doubled our recycled paper content since 2009.

<table>
<thead>
<tr>
<th></th>
<th>FY09</th>
<th>FY16</th>
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<tbody>
<tr>
<td>31%</td>
<td>61%</td>
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BC is continuing to decrease paper usage for every dollar of total revenue.

<table>
<thead>
<tr>
<th></th>
<th>FY11</th>
<th>FY16</th>
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<tbody>
<tr>
<td>62lbs</td>
<td>36lbs</td>
<td></td>
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</table>

Our efforts to reduce paper use and increase recycled paper content help save*:

- 2.3 million liters of water
- 49,100 pounds of solid waste
- 142,000 pounds of CO₂e
- 747 trees

*Compared to FY09. Environmental impacts were estimated using the Environmental Paper Network Paper Calculator Version 3.2.1.

Lower energy use

We strive to decrease energy usage by being mindful of our office environment and the energy used in our everyday operations. A few of the steps we take include:

- using LED lighting
- salvaging and reusing existing materials
- partnering with building ownership to increase energy efficiency
- conducting office energy audits
- building with low-VOC and recycled materials
- employing timers and motion sensors on lights and appliances

Our BC Green teams develop creative methods for encouraging employees to save energy. For instance, the Atlanta, Walnut Creek and Seattle offices have implemented “Lights Off, Computers Off” (LOCO) campaigns. The team designed stickers for light switches and labels for monitors. They also put up reminder posters on exit doors.
Recycle and minimize waste
To divert waste from landfills, BC Green teams have initiated a variety of reuse and recycling programs, such as:

• sending electronic holiday cards
• recycling electronic waste
• supplying reusable and compostable kitchen items
• composting food waste
• donating surplus electronic equipment
• providing filtered tap water in lieu of bottled water

Offices take it upon themselves to initiate waste reduction and recycling programs not offered by their cities. For instance, our office in Nashville started its own fluorescent light bulb recycling effort.

Reduce carbon footprint
We take measures to reduce our company’s overall environmental footprint. Some of our efforts include:

• encouraging bike commuting
• supporting flexible work schedules
• reducing business travel through video and desktop sharing
• providing incentives for alternate commuting
• driving hybrid fleet vehicles

In 1 out of 4 offices, more than 50% of employees regularly use alternative transportation
1/3 of BC offices offer subsidized transit/public transportation passes

Over 70% of BC offices have participated in Better Way to Work Week over the last 5 years
85% of BC offices operate an office recycling program

1/3 of BC offices offer subsidized transit/public transportation passes

In 1 out of 4 offices, more than 50% of employees regularly use alternative transportation

85% of BC offices operate an office recycling program
Social responsibility

We are active in our communities and support local environmental and charitable efforts through volunteer programs, sponsorship opportunities and fundraisers. We also contribute to global organizations like Water For People and Engineers Without Borders, which are creating innovative and long-lasting solutions to the water and sanitation problems in the developing world.

Making a difference at home

BC employees take local action and support organizations that are helping to make their cities and towns healthier, safer and happier places to be.

20,000
Employee volunteer hours outside of work

2,000
BC-sponsored volunteer hours per year

Here are a few examples from BC offices around the country:

- **Boise**
  - Works with community members in the Boise River Sweep, the Nampa Community Cleanup Day and Rake-up Boise

- **Portland**
  - Gives to the Neighborhood House, Boys and Girls Aid, and the Oregon Food Bank

- **Honolulu**
  - Partners with Community Huki and Hawaii Community Foundation to clean up invasive algae from Maunalua Bay

- **Denver**
  - Sponsors a family during the holiday season through Laughing Giraffe

- **Cleveland**
  - Supports Toys for Tots and serves as a public toy drop-off location

- **Upper Saddle River**
  - Participates in a food drive for the Community Food Bank of New Jersey

- **Miami**
  - Provides college scholarship opportunities for Coral Gables High School seniors

- **Houston**
  - Participates in annual Back-to-School drives for Houston public schools

The Portland office has adopted a green street planter through the City’s Green Street Steward Program. The office is responsible for regular maintenance, which includes removing weeds, leaves, or trash and replacing plants.
Safer water around the world

As a long-time partner of Water For People (WFP) and Engineers Without Borders (EWB), we give to them in many ways: through service trips abroad, office fundraisers and our highly successful employee workplace giving challenge.

We are the second smallest company on Water For People’s Leadership Council, and yet we provide the highest in terms of per capita donations. It’s that important to our people.

—Rich D’Amato, BC President
Water For People Leadership Council Member

$162K
BC donated $162,000 in individual and company contributions to EWB and WFP in 2016

$109
Amount per capita donated by BC and our people to EWB and WFP in 2016

$50,000
BC matches individual contributions up to $50,000

1 in 3
BC employees donate monthly through the firm’s payroll contribution program

Here, BCers share their photos from company-sponsored trips spanning India, Malawi, Rwanda and Nepal.
Shaping more sustainable communities

With each new project, BC measures success by its positive impact on the environment and our communities.

As an employee-owned company, we use our skills and talents in engineering, science, consulting and construction to safeguard water, maintain vital infrastructure and restore habitats to keep our communities thriving.
Planning for stormy weather in Seattle

Brown and Caldwell helped Seattle Public Utilities (SPU) develop one of the nation’s first integrated plans to satisfy NPDES and potential TMDL requirements for combined sewer and stormwater discharges using a combination of green stormwater infrastructure and “active” treatment. SPU is implementing the plan to provide enhanced water quality benefits and potentially save significant costs over traditional approaches.

Advancing Green Infrastructure in Atlanta

While capturing stormwater runoff in bioretention areas and transforming a four-lane street into a two-lane street that shares bicycle lanes running on both sides, the Boone Boulevard Green Infrastructure and Capacity Relief project in Atlanta will not only help the city reduce street flooding and provide combined sewer capacity relief, but also beautify and revitalize an economically distressed neighborhood.

Transforming Brownfields into green spaces

And we are cleaning up highly contaminated Brownfields so healthier communities can sprout up. Some of our remediation work includes a 185-acre former chemical manufacturing plant in Woodbridge, New Jersey. When the project is complete, the local community will gain access to the Raritan River for the first time in more than 100 years and be able to enjoy 100 acres of restored wetlands and boardwalk trails.

Increasing efficiency in Utah

North Davis Sewer District’s $58 million Biosolids Process Expansion is a model for a low carbon footprint, high energy efficiency facility designed to meet the demand of a rapidly growing population and comply with regulations through 2025 and beyond. BC’s design went beyond a routine facility expansion, significantly improving process efficiencies and maximizing the use and reuse of existing facilities without interrupting service.

Delivering a sustainable vision in DC

DC Water’s award-winning Biosolids Program at the Blue Plains Advanced Wastewater Treatment Plant is considered one of the greenest wastewater projects ever conceived. Employing North America’s first and the world’s largest installation of the Cambi™ thermal hydrolysis process, the $470 million facility requires fewer digesters, cuts greenhouse gas emissions, produces renewable energy, and creates Class A biosolids—all combining to save utility ratepayers millions of dollars annually. Brown and Caldwell was DC Water’s program manager, developer, and lead designer for bringing this complex system to fruition.

We choose to partner with clients who have similar values and passions for a sustainable environment.

Cogen improvements allow NDSD to use its digester gas to satisfy up to 75 percent of the plant’s electrical needs and 100 percent of its process heating needs.

<table>
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<tr>
<th>75%</th>
<th>13 MW</th>
<th>1/3</th>
<th>1/3</th>
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<tbody>
<tr>
<td>US Water Prize 2016</td>
<td>Generates 13 MW of green electrical power</td>
<td>Reduces Blue Plains plant’s electrical grid draw by 1/3</td>
<td>Shrinks the utility’s carbon footprint by 1/3</td>
</tr>
</tbody>
</table>
Moving toward One Water

And just like Dave Caldwell, whose ideas about water recycling back in the 1960s seem eerily prescient now, we are imagining what could be possible with One Water. BC experts are helping leaders in water agencies across the country think of water in new ways.
One state that is beginning to see great benefits from utilities taking on a One Water approach to water management is California, where drought concerns dictate state policy and everyday household practices. Southern California imports close to half its water, and maximizing water from local sources – whether stormwater, wastewater or potable water – is essential.

In Orange County, BC played a key role in the design and construction of the original $480 million, 70 mgd groundwater replenishment system (GWRS) – the largest purification project of its kind in the United States. BC recently completed a study that determined how to optimize the flow and quality of wastewater effluent being sent to GWRS for the system’s final expansion to 130 mgd for 100 percent reuse.

And in San Diego, BC is part of the Program Management team for the Pure Water recycled water program that is expected to produce one third of the city’s drinking water by 2035.

Going north, eight of the San Francisco Bay Area’s largest water agencies are working together through the Bay Area Regional Reliability partnership to improve water supply reliability and resilience for more than 6 million residents and thousands of businesses and industries in the area. The motivation for this unprecedented partnership is to cooperatively develop regional solutions that better leverage existing resources and assets and explore new operations strategies.

Communities across the country are taking great measures to prepare for the certain – and uncertain.

In Paulding County, Georgia, the BC-led Richland Creek Reservoir Water Supply Program will allow the county to create and independently manage a drinking water supply to serve residents of the quickly growing Metropolitan Atlanta region, who will use 36 million gallons per day over the next 50 years.

In Kitsap County, Washington, BC is working with the County and a Native American tribe to use reclaimed water and potable water more thoughtfully and strategically. Currently, the tribe is irrigating a large golf course it operates with potable water. The opportunity for the tribe to instead use reclaimed water from the Kingston Wastewater Treatment Plant carries the added benefit of diverting wastewater away from a sensitive marine discharge environment.
The Water Research Foundation and Brown and Caldwell collaborated on Project 4660, which included a study to learn more about utilities’ experiences with One Water or Integrated Water Management planning. The project leveraged best practices and lessons learned from utilities across the country to develop a user-friendly blueprint that utilities can rely on to help develop their own actionable One Water plans.

The One Water Cycle
Adapting and changing

BC is always looking toward the future. As climate change threatens the status quo, we work with our clients to get ahead of problems and plan for the inevitable – and in some cases, plan for a changing climate by looking at multiple futures.
With support from the Water Research Foundation, BC is assisting the Honolulu Board of Water Supply to understand how rainfall and temperature changes will affect future groundwater supplies and how infrastructure may be impacted by sea level rise. This project is incorporating scenario planning and uncertainty to assess the reliability and resiliency of the water system, including developing adaptive management strategies.

BC helped the Mid-Ohio Regional Planning Commission and other agencies create Sustaining Scioto, a proactive, science-based study to ensure that Central Ohio has clean and secure water resources for current residents and businesses, and to sustain future growth needs during changing climatic conditions including extreme drought or flood.

To help Madison (Wisconsin) Metropolitan Sewerage District move toward its goal of net-zero status, BC evaluated MMSD’s energy consumption at its Nine Springs Wastewater Treatment Plant and 17 major pumping stations, identifying opportunities to improve facility performance and develop alternative energy sources. The project employed the Envision™ Self-Assessment checklist developed by the Institute for Sustainable Infrastructure to holistically evaluate alternatives and identify key sustainability attributes.
Passion for improvement

Never content with good enough, we are always searching for better, more sustainable solutions.

We work with pioneering research organizations like the Water Research Foundation and Water Environment & Reuse Foundation to uncover breakthroughs in integrated water management, advanced nutrient treatment, resource recovery, energy efficiency and greenhouse gas reduction.

We also recognize that ideas can come from anywhere and even small ideas can expand into widespread and scalable solutions. BC’s Innovation Grant Programs encourage our engineers to take chances and dare to be great – providing them with time, funding and leadership support to move their technical ideas forward for broader application.

We strive to foster opportunities to innovate for all BCers because we know the next great idea could come from anyone.

— Cindy Paulson, Chief Technical Officer
A history of firsts

The City of Lake Oswego needed an affordable long-term solution to ensure reliable sewer service to its 37,000 residents. Its original 1960s lake interceptor was undersized and corroding and would collapse in an earthquake. Brown and Caldwell designed and replaced the two-mile sewer pipeline beneath Oswego Lake with the world’s first buoyant, flexible gravity sewer that is expected to serve for a century or more.

Forward thinking, with our commitment to sustainability at the forefront – that’s who we are.

BC has been expanding the boundaries of what can be done for seven decades, facilitating more sustainable communities and relentlessly searching for ways to make our environment better. Our story began with two men in San Francisco whose worldview and vision has swelled to more than 50 offices around the country – and we’ll continue to build upon the progress we’ve made.