

2019 ANNUAL REPORT



**POWERFUL SERVICES.
SUSTAINABLE SOLUTIONS.**



POWERFUL SERVICES

Charah® Solutions delivers essential services and superior results for the power generation industry.

SUSTAINABLE SOLUTIONS

We share our customers' commitment to environmental responsibility by providing proven environmental remediation and byproduct recycling services.



Charah®
Solutions

FELLOW SHAREHOLDERS



The Charah Solutions Board is pleased to have completed a successful second year with significant strategic gains that position the Company well for the future.

As your Board Chair, I am very pleased with how our management team, led by President and CEO Scott Sewell and CFO Roger

Shannon, successfully navigated a year marked by industry, market, and company challenges. 2019 was also a year of great opportunity as we demonstrated our unique ability to deliver the spectrum of remediation and compliance services, maintenance and technical services, and byproduct sales to leverage the growth and complexity of market demands for our nuclear and fossil utility customers.

Together we charted a course for us to reach significant milestones. We completed a highly successful amendment to our credit agreement and an equity financing to strengthen our balance sheet, reduce total debt, and put us in a stronger position to continue to meet our customers' growing remediation needs and to capitalize on expanding market opportunities.

In addition, during an industry-wide difficult market year, we more than proved our leadership by winning a record-setting number of large new contracts with a diversified set of customers.

The current business and global environment also brings new challenges for 2020 as a result of the COVID-19 crisis. Our highest priority remains the safety of our employees and customers as we continue to operate during these uncertain times, and we have taken a series of actions to keep our company moving forward and our teams safe. Designated an essential business to support the mission-critical operations of our utility customers as they provide power to the country, we are following CDC and other federal and state-level guidance and have implemented new safety protocols and procedures across our entire organization and with our customers to minimize the impact on our employees and our business.

Our success in navigating the current COVID-19 challenges, combined with our strategic gains, set the stage for Charah Solutions to take advantage of exciting growth opportunities ahead:

- Expectations for federal and state regulatory and public policy trends are increasingly driving the needs of utilities for mandated remediation solutions, which are raising the size and scope of bids. Our service bundling advantage, combining ash remediation, ash beneficiation, and byproduct sales, puts us in a better position than anyone else in the industry to capitalize and provide cost-effective solutions.
- Through our Allied Power division, we continue to provide mission-critical nuclear outage maintenance services on time and on schedule.
- The ongoing market increase in demand for fly ash and other supplementary cementitious materials (SCMs) as an environmentally friendly substitute for cement in the production of concrete is a critical need to expand our nation's vital infrastructure.

While pursuing these timely market opportunities, we will continue to deliver our uncompromising and relentless commitment to safety and the environment. These are core values that we are known for as a company, that our customers expect, our investors value, and our employees believe in.

As a company, we are ready to capitalize on current market conditions and opportunities to extend our leadership position in serving the power industry. Our deep Board experience across the power generation industries, combined with our management team's unparalleled knowledge of operations, our diversified customer base, our broad spectrum of service offerings, and federal and state regulatory trends, position us well to take advantage of opportunities to grow our market share.

Thank you for your investment in Charah Solutions. Working together with Scott and the talented Charah Solutions team, we are committed to delivering value for our shareholders.

A handwritten signature in black ink, appearing to read "ST Tritch", written in a cursive, flowing style.

Stephen Tritch
Chairman of the Board of Directors
Charah Solutions, Inc.

DEAR INVESTORS



2019 was an important year of transition for Charah Solutions, marked by milestone events in favorable regulatory and legislative rulings and record-setting new business awards, as well as many challenges across the market as a new public company. Though our financial

results for the year were disappointing and not up to our expectations, our team was able to overcome these challenges and better positioned the Company to leverage increasingly favorable market trends moving forward. We are poised to take full advantage of our breadth of services, capabilities, and domain experience to capitalize on these market opportunities in 2020 and beyond. We are committed to increasing shareholder value through our unmatched service offerings that provide compelling, environmentally sound solutions for our customers.

The world has changed dramatically since the beginning of 2020 as a result of the COVID-19 crisis, so before I reflect further on 2019, I want to share with you how we are responding to this unprecedented health crisis. Our commitment to safety has always been a core value and an integral part of our culture. The health and well-being of our employees and partners is of utmost importance to us as we monitor developments daily and work closely with our utility customers as they implement new protocols for their sites.

Our ability to quickly adapt has made Charah Solutions successful, and our field and office teams have adapted exceptionally well during this challenging period. The mission-critical nature of our customers' operations made it imperative to immediately initiate a series of contingency plans to ensure ongoing operations for our customers, the vast majority of whom are highly regulated and must continue operating to provide power.

We have implemented measures to manage through possible service interruptions, and we are maintaining real-time communication across our entire organization and with our customers to ensure our business remains steady during this crisis.

During 2019, federal and state environmental regulations and public policy trends across the U.S. combined to dramatically drive the needs of electric utilities for larger and more complex remediation solutions, which increased the size and scope of bids. Our operational strategy to bundle our core strengths of ash remediation and byproduct sales with our proprietary MP618™ Multi-Process fly ash beneficiation technology and mission-critical maintenance and technical services is a compelling value proposition to our utility customers as they address the more than 1,000 regulatorily-mandated surface impoundments in the U.S. In addition, expectations for increased investment in our nation's vital infrastructure drives the increased demand for fly ash and other supplementary cementitious materials (SCMs) critically needed in the production of concrete.

We delivered a record year for new business in 2019 with \$583 million in new awards, representing a 450% increase from our prior year. This growth demonstrates both the increased pace in customer responses to environmental regulatory requirements and the confidence our utility partners have in us to deliver on their environmental remediation and sustainability initiatives. Our customer base, our suite of service offerings, and our geographic reach are all expanding as customer motivation for our customized solutions to recycling and remediating ash byproducts increases across the country. Additionally, our expanded geographic footprint into new states enables us to access additional opportunities for future development driven by changing state regulations.

Some of our most notable achievements in 2019 include:

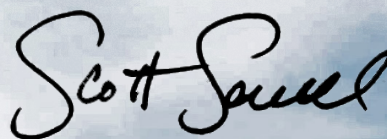
- Strengthening our executive and management team with new appointments in key leadership positions.
- Successfully completing a third amendment to our credit agreement and raising new capital to enhance our liquidity, financial flexibility, and growth potential.

- Achieving our most successful year of winning new business with \$583 million in new contracts, which represented a 450% increase over 2018 and provided a higher average gross profit margin contribution.
- New Environmental Remediation and Compliances Services contract wins, including a 30-acre landfill construction contract in Central Florida; CCR handling and landfill management contract extension at two power plants in southern Ohio; and a five-year landfill operations and site maintenance contract for three plants in Louisiana and Arkansas.
- Completing ten nuclear outage maintenance projects through our Allied Power division on schedule and continuing to expand our service offerings with our largest nuclear customer.
- New Byproduct Sales contract wins and expansion of our MultiSource® materials network, including a new ash marketing contract to market ash in Oklahoma and northwest Arkansas; a new fly ash storage terminal in Central Massachusetts; a contract extension for plants in southern Ohio; and, a five-year contract for marketing over 2 million tons of ash at plants in Louisiana and Arkansas.
- A #11 ranking in the Top 20 list of Power Sector Contractors by Engineering News-Record (ENR).
- Award recognition for our unrelenting focus on Safety Leadership with the AGC Willis Towers Watson Construction Safety Excellence Award for the third straight year; seven Employee Gold-Level Certificates of Safety Achievement from the North Carolina Department of Labor; Construction Safety Leader Award from Coalition for Construction Safety for our proprietary Basin Excavation Strategies Training (BEST) program; and our Event-Free Safety Award from Duke Energy for the Crystal River Energy Complex in Citrus County, Florida.

We are optimistic about our business going forward, and we anticipate that the growth in contract awards in 2019 will contribute to results in 2020 and more so in 2021 and beyond. We are experiencing strong tailwinds in remediation and byproduct sales – with a multi-billion dollar backlog of remediation work that needs to be completed at the utility level on a timely basis across the industry. We see 2020 as a tipping point, and we believe we are better positioned than our competitors to take advantage of these opportunities through a solid foundation of strong and embedded industry relationships with a more diversified set of customers throughout the country, and an unmatched ability to strategically bundle our services.

I am honored to lead such a highly capable and accomplished team as President and CEO. The leadership of our team and our strong relationships with our customers were key for us during this challenging year. Working together with our Board of Directors and our excellent management team, I look forward to building upon our strong foundation and accelerating our success as we capitalize upon the new opportunities that are being created. Charah Solutions is well-positioned to leverage the growing demand for environmental remediation services across the power generation industry as we continue to provide mission-critical maintenance and technical services for nuclear and fossil utilities. We see greater things to come for Charah Solutions that will benefit our customers, expand our business, and drive attractive returns for our shareholders.

Thank you for your continued support and your investment. We look forward to sharing our future successes with you in the years to come.



Scott Sewell
*President
Chief Executive Officer
Charah Solutions, Inc.*

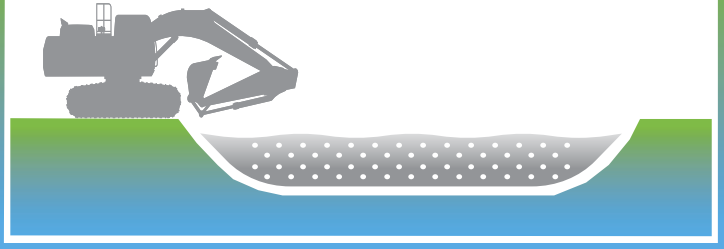


2020 | Key Growth & Profit Drivers

We expect to see continued growth for our core business and increased demand for our new technologies in the coming year as utilities look to meet challenging federal and state regulations. Charah Solutions today, more than ever, is well-positioned to capitalize on this growing need for Environmental Solutions and Maintenance and Technical Services across the power generation industry.

\$75B REMEDIATION MARKET OPPORTUNITY

There are more than 1.5b tons of coal ash stored in 1,000+ ash ponds & landfills requiring EPA-mandated remediation



GROWTH OPPORTUNITIES

Remediation Contract Acceleration and Services Bundling Advantage

With over 1,000 ash ponds and landfills in the U.S. requiring EPA-mandated closures or remediation and growing state legislation across the country, utilities are facing additional pressure as the legislation is becoming increasingly prescriptive in remediation mandates and timing that go beyond the scope of EPA guidance. This continues to drive the utilities' needs for creative remediation solutions while bids are increasing in size and scope, including where beneficiation, or recycling of ash, plays a significant role. With over 30 years of experience, we are the only company in our industry offering the full suite of environmental remediation, ash management and recycling, and ongoing maintenance and outage services to power generation companies.

Our competitive advantage in strategically bundling our services and core strengths of ash remediation and byproduct sales with our proprietary MP618 technology and maintenance and technical services is unmatched in the industry, positioning us to provide cost-effective solutions to meet the demands of our customers while preserving our natural resources in an environmentally conscious manner.

Byproduct Sales and International Raw Materials Sales

According to the American Coal Ash Association (ACAA), over 60% of all coal combustion products (CCPs) produced in 2017 were beneficially used in the production of concrete. With expectations for more significant infrastructure spend and other market demands, we expect this percentage to increase, resulting in higher demand for our ash byproducts and raw materials. We will continue to strategically expand our MultiSource materials network of nearly 40 nationwide locations into regions where there is a high demand for SCMs as well as broaden our portfolio of Class C and Class F fly ash, bottom ash, pozzolan, gypsum, and other SCMs to ready-mix producers in order to meet their growing demand for the production of concrete.

We also continue to grow our International Raw Materials Sales and Services business as we see and expect higher global demand for the use of raw materials and SCMs in quality cement manufacturing materials.





MP618 Multi-Process Fly Ash Beneficiation Technology

The availability of fly ash to support construction and infrastructure projects is requiring innovative solutions to recover and process more fly ash for the production of concrete. The increased demand for beneficially used fly ash provides an opportunity for utilities to meet the needs of concrete producers while providing for more economical cost control of mandated pond closures and reducing the amount of ash stored in landfills.

Our proprietary MP618 technology provides utilities with an effective solution that allows them to meet federal and state mandates for ash pond closures and offset some of these costs through the sale of the beneficially used fly ash. MP618 technology beneficiates both wet and dry fly ash at a significantly lower cost profile than other competitive technologies and can be permitted and deployed much faster while the modular design provides superior scalability at a lower cost. We continue to make significant progress and receive strong interest in this proprietary technology from utility customers, both domestically and internationally.

Maintenance and Technical Services

We currently operate in 27 states with 27 utility customers at over 90 different job sites throughout the country, which provides us with a unique opportunity to leverage our embedded onsite presence to identify new service offerings at these site locations in order to increase our Maintenance and Technical Services business. Our concentration includes expanding our growing business with the coal-fired power plants while continuing to provide excellent service through our Allied Power division to existing nuclear plant customers.

Environmental Leadership and Safety

We remain a partner of choice for the power generation industry because of our outstanding quality, safety, and compliance records, as well as our shared commitment to the environment. Environmental sustainability and safety are Charah Solutions core values, and our commitment to each is integral to our culture and the results we deliver for our customers. We are dedicated to preserving our natural resources while safely meeting the needs of our customers. Our sustainability efforts conserve virgin resources and water, reduce greenhouse gases, and decrease landfill disposal, all while providing essential byproducts that contribute to the growth of our national economy.



Charah Solutions At A Glance

The Integrated Story

Charah Solutions is an undisputed industry leader. With over 30 years of experience, we are the only company in our industry providing a fully-integrated suite of ash management, byproduct recycling and sales, environmental remediation, and ongoing maintenance and outage services to power generation companies – for both fossil fuel and nuclear power plants. We employ over 3,500 employees to support our work in the power generation industry and currently work with 27 utility customers and operate at over 90 job sites in 27 states throughout North America, with international materials sales throughout Europe and Asia.

WHAT WE DO

Our Ability To Bundle Multiple Services Is A Significant Differentiator

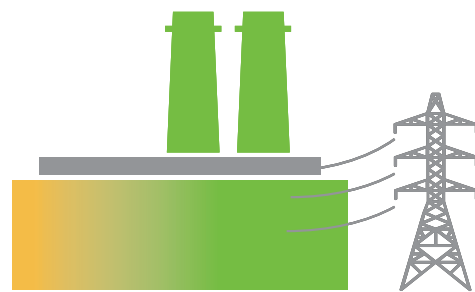
Our unique ability and experience in bundling our proven traditional environmental ash remediation, byproduct sales, and maintenance and technical services with our proprietary MP618 Multi-Process technology gives us a competitive advantage in meeting the larger and more complex environmental needs of utility customers. We can provide them with one efficient and experienced partner for creative, cost-effective solutions. We make the complex simple.

We fulfill a critical customer need to ensure operations continue to run smoothly, and utilities count on us to deliver safe, clean, and effective onsite solutions for the management and beneficiation of ash byproducts generated from coal combustion, plus the quick and efficient completion of power plant maintenance and nuclear outages.

With over 500 large-scale power generation facilities and more than 1,000 ash ponds or landfills in the U.S., these complex facilities have specialized environmental remediation and maintenance service needs – and we are well-positioned to handle them.

LEADING PROVIDER OF ENVIRONMENTAL & MAINTENANCE SERVICES TO THE POWER GENERATION INDUSTRY

*Over 3,500 employees; Presence in
27 states; 27 utility customers*



Our full range of services and capabilities enables us to support utilities who face tightening federal regulations and state closure laws to responsibly remediate and recycle coal ash at their power plant sites. The current number of plants needing remediation services will only increase in the near future, so the already high demand for our bundled services is expected to continue to grow.

Nuclear And Fossil Planned Maintenance

The routine technical and maintenance services we provide through Allied Power for both nuclear and fossil power plants are critical to the ongoing functionality of each facility. Without these regular maintenance outages, power plants cannot maintain operations and risk more costly, unplanned service interruptions. This is particularly true for nuclear power generation, where power demands are more acute than other energy sources. Nuclear power plants typically run 24/7 over 12- to 24-month cycles, with outages typically occurring during fall and spring. We estimate the total addressable market for these nuclear services to be in excess of \$5 billion annually. Our recurring planned maintenance of nuclear reactors provides an attractive long-term market opportunity given the seasonal predictability of outages and expected longevity of nuclear power.



The Partner Of Choice

With an industry-leading record of quality, safety, and compliance, we are the partner of choice for solving our customers' most complex environmental and maintenance problems and a destination employer for some of the industry's most talented professionals. We challenge ourselves to continuously anticipate our customers' evolving environmental needs and leverage our embedded, onsite presence to identify new service offerings to add to our portfolio.

Proven Ash Beneficiation Expertise Becomes More Essential Every Day

The current pressing need for environmental remediation comes at a time when there is also a growing demand for our beneficially used fly ash at the concrete producer level – creating opportunities we are well-positioned to leverage. These market conditions, the national scale of our customer base, our experience, and the dedication of our teams, explain why 2019 was the best new business year in the history of the Company and why we expect to see continued growth in 2020 and beyond.



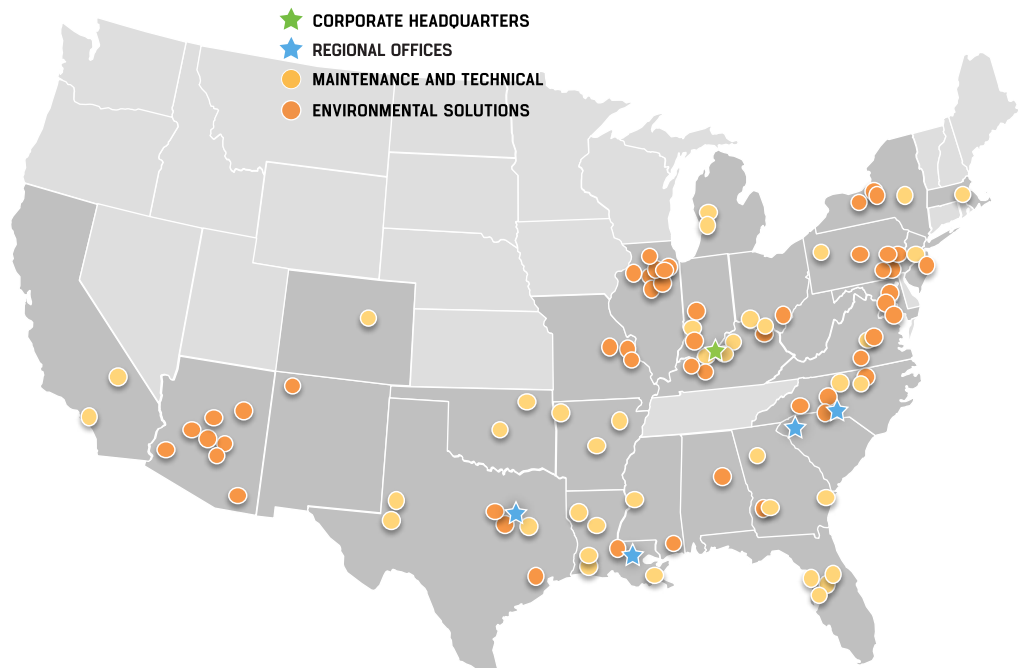
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RANKING

IN THE TOP 20

list of Power Sector Contractors by

Engineering News-Record (ENR)



Charah Solutions At A Glance

We provide our services through two business segments:

- **Environmental Solutions**
- **Maintenance and Technical Services**

Environmental Solutions

Our Environmental Solutions segment includes Remediation and Compliance Services as well as Byproduct Sales.

With a highly skilled labor force, we provide sustainable solutions for:

- **Ash/gypsum pond management and closure**
- **Landfill construction**
- **Structural fill projects**
- **Ash beneficiation**
- **Environmental Liability Transfer**
- **SCM sales and marketing, including fly ash, pozzolan, and others**
- **International raw materials sales and services**

Through our Remediation and Compliance Services, we help our power generation customers design and implement multi-year environmental and sustainability initiatives to meet their goals as well as regulatory requirements. With proven results for complex projects across the country, we handle more than 20 million tons of coal ash and SCMs annually.

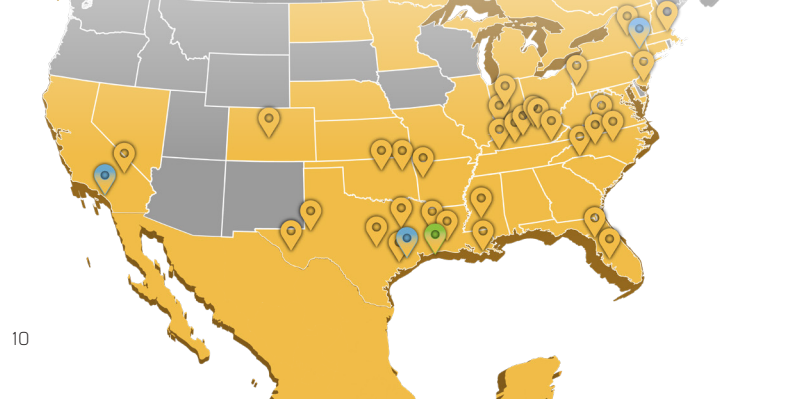
We also help our power generation customers profitably recycle recurring volumes of coal ash through Byproduct Sales of cost-effective raw material substitutes for concrete producers, which is enhanced through innovations like our proprietary MP618 technology, which provides a competitive advantage to increase our market share with existing customers while attracting new customers.

MP618 technology enables us to increase the supply of fly ash to concrete producers nationwide by reducing the carbon in fly ash for significantly improved concrete performance while eliminating ash that would otherwise be stored in landfills or ponds. This technology also complements our sustainability efforts, as each ton of fly ash utilized in concrete production reduces CO₂ emissions by one ton.

Fly ash and other byproducts are delivered through our MultiSource materials network, a unique distribution system of nearly 40 nationwide locations with international sourcing and distribution, serving ready-mix concrete producers and other materials customers. The MultiSource network has grown to become an important strategic advantage of Charah Solutions. For utilities, it helps keep their fly ash moving more efficiently for faster sales and marketing, and concrete producers count on it for a consistently reliable supply of high-quality SCMs – all supported by our Charah Solutions sales and service team.

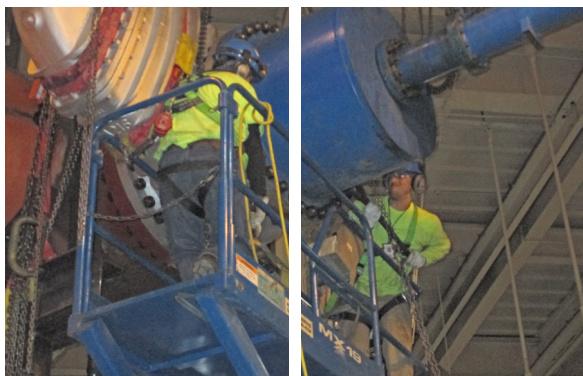
With dedicated resources located in the U.S., London, and Singapore, our International Raw Materials Sales and Services provides customers around the globe with the raw materials that are essential to them maintaining a competitive edge in their global business. They recognize Charah Solutions as the ideal global partner with the sourcing, logistics, and dedicated resources to help them source, move, manage, and better utilize quality industrial raw materials and cement manufacturing raw materials, and to facilitate raw materials transactions around the globe.

**MULTI
SOURCE**



\$8B MAINTENANCE & TECHNICAL MARKET OPPORTUNITY

*\$3B spent on coal ash management
and \$5B spent on nuclear maintenance
and capital projects annually*



Maintenance and Technical Services

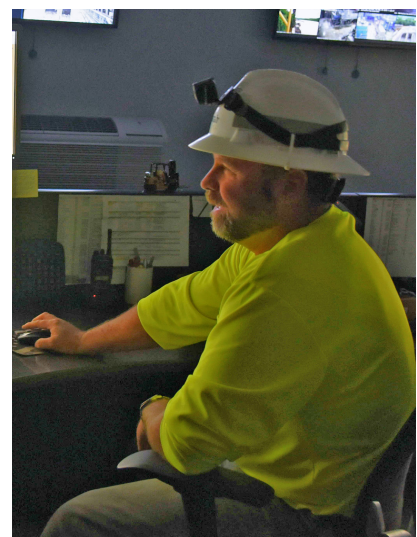
This includes both Fossil Services and Nuclear Services. Fossil Services consist of fossil plant maintenance and daily onsite management of coal ash for coal-fired power generation facilities. We provide maintenance for our fossil utility customers to improve the reliability of power plants to efficiently deliver power to the grid. Additional services include silo management, onsite ash transportation, and capture/disposal of ash byproduct for the utility. Coal ash management is essential to the daily operations of power plants since most have onsite storage capacity for only three to four days of coal ash accumulation.

Nuclear Services, which we market under Allied Power, consists of a broad platform of planned outage services, routine maintenance, facility maintenance, and staffing solutions for the entire asset lifecycle of nuclear power plants. During refueling outages, typical work for our employees includes providing electrical and mechanical services, building scaffolds, welding, materials management, and many other services.

Since the fall of 2018, we have supported 24 refueling outages at 12 nuclear plants with 21 nuclear reactors. By hiring as many as 1,000 employees per outage, we support some of the shortest nuclear outages in the industry.

Service Above All

Our experience working in a wide variety of utility locations and complying with a diverse set of environmental regulations has allowed us to establish long-term, trusted relationships and credibility with customers over the past 30+ years that is hard to match. Our key differentiator as the only environmental service company that can bundle our proven ash management services with proprietary ash beneficiation technology and power plant maintenance provides unlimited opportunities. Our unique, multi-service platform allows our customers to gain unequalled efficiencies working with a single, trusted partner for multiple, required services.



COMMITMENT TO SUSTAINABILITY

Why Sustainability Matters

Our core business is centered on byproduct management, the beneficial use of products, and environmental remediation for our customers – while developing innovative sustainable solutions to complex environmental issues for the betterment of the planet and the people of the communities in which we operate. Charah Solutions is dedicated to preserving our natural resources while meeting the needs of our customers and preserving our environment for the generations that follow.

By handling or beneficially using more than 20 million tons of ash and SCMs each year, we dramatically reduce the amount of waste sent to landfills. We also beneficially use ash in structural fill projects where we return the land to the community for recreational or commercial use.

Providing Sustainable Solutions Isn't An Option. It Is Vital.

Beneficial use materials provided by Charah Solutions are contributing to the long-term durability of concrete used in America's network of roads, bridges, and infrastructure while also preserving our raw materials and resources. Through our Byproduct Sales of beneficial use products, we deliver raw material substitutes such as fly ash to concrete producers who have a growing need for cement alternatives that reduce carbon emissions, reduce costs, and increase durability. Our proprietary MP618 Multi-Process fly ash technology beneficiates ash – making formerly unusable fly ash stored in ponds or landfills immediately marketable, reducing the need for landfills, ponds, or other disposal methods.

PROCESS. PRODUCTS.

Our “Ability to Sustain” conserves virgin resources and water, reduces greenhouse gases, and decreases landfill disposal, all while providing essential byproducts that contribute to our economy and the building of infrastructure.

On an annual basis, our beneficial use of ash prevents over 5 tons of CO₂ from entering the atmosphere and saves enough energy to power 10 million American homes for 12 days.

It is essential that our ash management services make a positive environmental impact and that beneficially used materials from Charah Solutions provide long-term durability in the concrete used in America's network of roads, bridges, and infrastructure while also helping to preserve our raw materials and natural resources for the betterment of our communities in the years ahead.



On an annual basis, our beneficial use of ash prevents over 5 tons of carbon dioxide from entering the atmosphere and saves enough energy to power 10 million American homes for 12 days.



PROFITS. PLANET.

Charah Solutions' management and employees share a strong commitment to environmental responsibility, and we demonstrate that commitment daily. Sustainability is a Charah Solutions core value, and we are committed to preserving our natural resources for the betterment of our planet, our communities, and our customers.

Scott Sewell
President
Chief Executive Officer





Stephen Tritch
Chairman of the Board



Scott Sewell
President and CEO



Brian Ferraioli
Director



Dorsey "Ron" McCall
Director



Robert Flexon
Director



Jack A. Blossman
Director



Mignon Clyburn
Director



Mark Spender
Director

BOARD OF DIRECTORS

**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549**

FORM 10-K

☒ **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the fiscal year ended December 31, 2019

or

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the transition period from _____ to _____

Commission file number 001-38523

CHARAH SOLUTIONS, INC.

(Exact name of registrant as specified in its charter)

Delaware

State or other jurisdiction of
incorporation or organization

82-4228671

I.R.S. Employer
Identification No.

**12601 Plantside Drive
Louisville, KY 40299**

(Address of principal executive offices)

40299

(Zip Code)

(Registrant's telephone number, including area code: (502) 245-1353

Securities registered pursuant to Section 12(b) of the Act:

<u>Title of each class</u>	<u>Trading symbol(s)</u>	<u>Name of each exchange on which registered</u>
Common Stock, par value \$0.01 per share	CHRA	New York Stock Exchange

Securities registered pursuant to Section 12(g) of the Act:

None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ☐ No ☒

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or 15(d) of the Act. Yes ☐ No ☒

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☒ No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer ☐

Accelerated filer ☐

Non-accelerated filer ☒

Smaller reporting company ☐

Emerging growth company ☒

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act). Yes ☐ No ☒

As of June 30, 2019, the aggregate market value of the registrant's voting common stock held by non-affiliates of the registrant was \$45,994,996. The registrant has no non-voting stock.

As of March 11, 2020, the registrant had 29,624,335 shares of common stock outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's definitive proxy statement to be filed with the Securities and Exchange Commission in connection with the registrant's 2020 Annual Meeting of Stockholders are incorporated by reference in Part III of this Form 10-K to the extent described herein.

CHARAH SOLUTIONS, INC.

ANNUAL REPORT ON FORM 10-K
For the Fiscal Year Ended December 31, 2019

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CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

The information in this Annual Report on Form 10-K (this “Annual Report”) includes “forward-looking statements” within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended (the “Exchange Act”). All statements, other than statements of historical fact, included in this Annual Report regarding our strategy, future operations, financial position, estimated revenue and losses, projected costs, prospects, plans and objectives of management are forward-looking statements. When used in this Annual Report, the words “may,” “will,” “could,” “believe,” “anticipate,” “intend,” “estimate,” “expect,” “project” and similar expressions are intended to identify forward-looking statements. However, not all forward-looking statements contain such identifying words. These forward-looking statements are based on management’s current belief, based on currently available information, as to the outcome and timing of future events.

Forward-looking statements may include statements about:

- our business strategy;
- our operating cash flows, the availability of capital and our liquidity;
- our future revenue, income and operating performance;
- our ability to sustain and improve our utilization, revenue and margins;
- our ability to maintain acceptable pricing for our services;
- our future capital expenditures;
- our ability to finance equipment, working capital and capital expenditures;
- competition and government regulations;
- our ability to obtain permits and governmental approvals;
- pending legal or environmental matters or liabilities;
- environmental hazards;
- industrial accidents;
- business or asset acquisitions;
- general economic conditions;
- credit markets;
- our ability to successfully develop our research and technology capabilities and to implement technological developments and enhancements;
- uncertainty regarding our future operating results; and
- plans, objectives, expectations and intentions contained in this Annual Report that are not historical.

We caution you that these forward-looking statements are subject to risks and uncertainties, most of which are difficult to predict and many of which are beyond our control. These risks include, but are not limited to, the risks described under “Item 1A. Risk Factors” in this Annual Report. Should one or more of the risks or uncertainties described occur, or should underlying assumptions prove incorrect, our actual results and plans could differ materially from those expressed in any forward-looking statements.

All forward-looking statements, expressed or implied, included in this Annual Report are expressly qualified in their entirety by this cautionary statement. This cautionary statement should also be considered in connection with any subsequent written or oral forward-looking statements that we or persons acting on our behalf may issue. Except as otherwise required by applicable law, we disclaim any duty to update any forward-looking statements, all of which are expressly qualified by the statements in this section, to reflect events or circumstances after the date of this Annual Report.

PART I

Item 1. Business

Our Company

Charah Solutions, Inc. (together with its subsidiaries, “Charah Solutions,” the “Company,” “we,” “us,” or “our”) is a leading provider of mission-critical environmental and maintenance services to the power generation industry. We offer a suite of coal ash management and recycling, environmental remediation, and utility plant outage-related maintenance services. We also design and implement solutions for complex environmental projects (such as coal ash pond closures) and facilitate coal ash recycling through byproduct sales and other beneficial use services. We believe we are a partner-of-choice for the power generation industry due to our quality, safety, domain experience and compliance record, all of which are key criteria for our customers. In 2019, we performed work at more than 50 coal-fired and nuclear power generation sites nationwide.

Charah Solutions, Inc. was incorporated in Delaware in 2018 in connection with our June 2018 initial public offering and, together with its predecessors, has been in business since 1987. Since our founding, we have continuously worked to anticipate our customers’ evolving environmental needs, increasing the number of services we provide through our embedded presence at their power generation facilities. Compared to service providers with more limited scope, our multi-service platform allows customers to gain efficiencies from sourcing multiple required offerings from a single, trusted partner.

We provide our services through two segments: Environmental Solutions and Maintenance and Technical Services. Our Environmental Solutions segment includes remediation and compliance services, as well as byproduct sales. Remediation and compliance services are associated with our customers’ need for multi-year environmental improvement and sustainability initiatives, whether driven by regulatory requirements, by power generation customer initiatives, by our proactive engagement or by consumer expectations and standards. Byproduct sales support both our power generation customers’ desire to recycle their recurring and legacy volumes of coal combustion residuals (“CCRs”), commonly known as coal ash, and our ultimate end customers’ need for high-quality, cost-effective raw material substitutes. Our Maintenance and Technical Services segment includes fossil services and nuclear services. Fossil services are the recurring and mission-critical management of coal ash and routine maintenance, outage services and staffing solutions for coal-fired power generation facilities. Nuclear services, which we market under the Allied Power brand name, include routine maintenance, outage services, facility maintenance, and staffing solutions for nuclear power generation facilities. Our Maintenance and Technical Services segment offerings are most closely associated with the ongoing operations of power plants, whether in the form of daily environmental management or required maintenance services (typically during planned outages).

As a result of our comprehensive offerings, the embedded nature of our on-site presence, our domain experience, and our track record of successful execution, we have built long-term relationships with leading U.S. regulated utilities and independent power producers, including Dominion Energy, Inc., Duke Energy Corporation, Dynegy Inc., Exelon Corporation, PPL Corporation, and The Southern Company, among others. These relationships have spanned over 20 years in some cases. The national scale of our operational footprint is also a key competitive differentiator, as many competitors are localized, focusing on a single geographic area (sometimes isolated to a single plant). We operate in more than 27 states, resulting in an overall footprint and density in key markets that we believe is difficult to replicate. We believe our national reach enables us to pursue new business within our existing customer base successfully and to attract new customers while providing consistent quality, safety, and compliance standards.

Our services platform is led by a senior executive team with deep industry experience and supported by a highly skilled labor force. The nature of our work requires employees, particularly our nuclear end market-related labor force, to have specialized skills, training, and certifications for them to be allowed on-site at our customers’ facilities. Collectively, our focus on human capital management enables us to maintain and develop a labor force of highly qualified, well-trained personnel capable of handling our customers’ needs.

Market Opportunity

The U.S. power generation industry is composed of critical infrastructure providing essential electric power to communities nationwide. According to the U.S. Energy Information Administration (the “EIA”), as of 2018, there were over 500 large-scale facilities in the United States with generation capabilities of at least 250 megawatts, including over 155 coal-fired power plants and over 60 nuclear power plants (representing 96 nuclear reactors). With near-constant demand from consumers and industry, continuous operation of these facilities is critical given potentially high economic and reputational costs of downtime. To maintain continuous operations, these complex facilities have specialized and recurring environmental and maintenance service needs throughout their lifecycles. These service needs are particularly significant for coal-fired and nuclear power plants due to the increasing demands of environmental regulation, aging nature of the installed base, and characteristics of the feedstock required to power such facilities. Due to the breadth and scope of these service needs, power plant operators typically do not possess the necessary maintenance capabilities internally and instead outsource these mission-critical and often regulatory-driven requirements

to a fragmented set of service providers. A number of significant dynamics support the continuing need for these specialized services:

Coal-Fired Power Plants Have Significant and Recurring Environmental Management Needs Associated with Their Waste Byproducts

Coal-fired power plants consistently generate various waste byproducts throughout the power generation process. The primary type of these waste byproducts is CCRs. CCRs come in multiple forms, including fly ash, bottom ash, and boiler slag, and are collected throughout the coal burning process. Although not considered a hazardous waste under the Resource Conservation and Recovery Act, as amended (the “RCRA”), utilities have significant regulatory and reputational risks associated with the handling and disposal of coal ash. According to the American Coal Ash Association, more than 102 million tons of coal ash were generated in 2018, the latest year for which data is available. Coal ash management is mission-critical to the daily operations of coal-fired power plants as they generally have on-site storage capacity for only three to four days of CCR waste accumulation. This limited coal ash storage capacity requires continuous daily monitoring, handling, transportation, and disposal to enable ongoing power plant operation. The U.S. Environmental Protection Agency (the “EPA”) has estimated that coal-fired utilities spend approximately \$2.9 billion per year on coal ash management. Power plant operators typically engage specialized service providers to conduct this critical recurring activity on-site alongside their personnel operating the plant.

Large Installed Base of Legacy Coal Ash Disposal Ponds That Require Remediation

Collected coal ash is disposed of or beneficially used (recycled) in a range of applications. According to the American Coal Ash Association, as of 2018, utilities disposed of approximately 42% of coal ash generated. According to EPA data published, approximately 80% of the coal ash disposed of was placed on-site in ash ponds or landfills, and the balance was transported and disposed of off-site at third-party landfills. For many years, coal-fired power plants relied on ash ponds as the primary disposal locations for CCRs. The vast majority of these older inactive and older existing ash ponds were constructed without the design standards now mandated by regulation to prevent harm to the environment, and those ponds will require remediation or closure in the future. The EPA estimated in 2019 that there were over 1,000 active and inactive on-site ash ponds and landfills requiring remediation or closure. These sites will require significant expenditures of capital from their owners as well as specialized environmental expertise to monitor them on an ongoing basis, remediate and relocate the waste, or completely close.

Power Plant Operators Are Increasingly Focused on Environmental Stewardship and Regulatory Compliance

Power plant operators face increasing pressure from regulators, advocacy groups, and their communities to manage the environmental risks associated with their operations and, therefore, the industry is increasingly focused on environmental stewardship. Due to the potentially considerable consequences related to environmental liabilities, spending on environmental liability management has increased over time and is expected to increase in the future.

Additionally, power plants are highly regulated by environmental authorities at the federal, state, and local levels of government, which have recently added compliance requirements. A recent example is the Disposal of Coal Combustion Residuals From Electric Utilities; Final Rule (the “CCR Rule”). The EPA enacted the CCR Rule in April 2015 in response to two significant coal ash spills in Kingston, Tennessee and Eden, North Carolina that caused widespread environmental damage. The CCR Rule regulates the disposal of coal ash as a solid waste, and it established new requirements for the closure and remediation of existing coal ash ponds as well as restrictions on the location of new ash ponds. The CCR Rule will result in significant incremental environmental management costs for many industry participants. In addition, the power generation industry is proactively implementing environmental best practices across their assets, even when not yet required by law. Finally, as the result of a settlement in North Carolina in January 2020, it is estimated that 125 million tons of coal ash will need to be excavated and moved to lined landfills in that state.

Recycling Waste Byproducts Is a Critical Component of the Coal Ash Value Chain

Coal ash can be recycled to produce positive environmental, economic, and performance benefits, such as reduced use of other natural resources, lower greenhouse gas (“GHG”) emissions, and improved strength and durability of materials. According to the American Coal Ash Association, approximately 59 million tons of coal ash, or 58% of generated coal ash, was beneficially used in 2018. The leading beneficial use of coal ash is as a direct and more economical substitute for cement during the production of concrete (approximately 12.5 million tons of CCRs, annually as of 2018). According to the American Coal Ash Association, more than half of all the concrete produced in the United States is made with coal ash, which reduces GHG emissions equivalent to removing 2.5 million cars from the road every year. Coal ash use in various applications has compelling economic benefits as well. Additionally, there are technologies currently available including our MP618™ technology, that improve the characteristics of certain types of coal ash, making them more viable for recycling purposes and ultimately increasing the addressable market of recyclable coal ash.

Coal and Nuclear Power Generation Remain Important Energy Sources

According to the EIA, while renewable sources of energy and natural gas are expected to provide an increasing share of U.S. domestic energy production, coal-fired and nuclear power generation combined are expected to remain key baseload energy sources for decades, providing at least 1.4 trillion kilowatt-hours of energy production annually through 2050. As of October 2019, coal and nuclear power generation combined accounted for approximately 43% of domestic U.S. energy generation, and they are projected to contribute approximately 25% of domestic U.S. energy generation in 2050. Although other energy generation sources, such as natural gas and renewables, are expected to make moderate gains on a percentage contribution basis, we believe the aggregate demand for coal and nuclear power generation will remain robust as the installed base of coal and nuclear power plants are deeply entrenched throughout the U.S. national power grid.

Routine Nuclear Reactor Maintenance Is Non-Discretionary, Specialized, and Predictable

Given the scale, complexity, and operational demands on power plants of all energy types, routine maintenance is critical to the ongoing functionality of each facility. Power generation facilities have similar planned outages and recurring maintenance needs regardless of energy type. Without these regular maintenance outages, power plants cannot maintain operations and risk more costly unplanned service interruptions. This dynamic is particularly true for nuclear power generation, where baseload power demands are more acute than other energy sources. According to the 2020 Annual Energy Outlook published by the EIA, nuclear power represented 19% of U.S. electricity generation. Nuclear energy generates the highest capacity factor of all fuel sources. According to the EIA, U.S. nuclear power plants had a capacity factor of 98%. U.S. nuclear power plants also produced 55% of U.S. emission-free fuel in 2018.

Recurring maintenance of nuclear reactors represents an attractive long-term market opportunity given the seasonal predictability of outages and the expected longevity of nuclear power generation. Nuclear power plants typically run 24 hours a day, seven days a week over 12- to 24-month cycles with outages typically occurring during fall and spring. Since it is costly to take nuclear power plants offline, plant outages are planned, contracted, and announced far in advance. These outages involve the completion of numerous maintenance services while offline (including inspections, repairs, maintenance, equipment replacement, facility modification, new construction, and certifications). We estimate, based on our management's experience and discussions with customers, the total addressable market for our services (including outsourced maintenance and capital needs) to be over \$5 billion annually. We believe this spending will increase over time as the nuclear reactor fleet continues to age and as additional maintenance is required, offset somewhat by the absence of any anticipated new nuclear power plant construction. Additionally, given the stringent safety requirements for the nuclear power industry, specialized licenses and training are required for on-site workforces, representing a considerable barrier to entry for prospective market participants.

The Power Generation Industry Is Increasingly Requiring Larger Scale Environmental and Maintenance Service Providers

The mounting burden of environmental compliance, the consistent need to maintain aging facilities and the focus on continuous and safe plant operations have the power generation industry, particularly the coal-fired and nuclear energy producers, increasingly seeking to partner with larger scale, outsourced service providers that can provide a range of services on their behalf. To date, most prospective service providers either have narrow service offerings or a highly localized geographic focus (sometimes limited to a single plant). Few service providers can offer broad service capabilities with a track record of quality service, exceptional safety, exacting environmental standards, and a reliable labor force like Charah can.

According to the EIA, between 2010 and the first quarter of 2019, U.S. power companies announced the retirement of more than 546 coal-fired power plants, totaling approximately 102 gigawatts of generating capacity. There are plans to retire another 17 gigawatts of coal-fired capacity by 2025. After a coal-fired plant is retired, the site will go through a multi-year remediation and closure process. Remediation of CCRs is the main focus of coal plant decommissioning. Depending on the facility, CCRs are disposed of in on-site landfills or coal ash ponds, or they are beneficially reused in other products. We believe our broad set of service capabilities, our track record of quality service and safety, exacting environmental standards and our dependable and experienced labor force is a significant competitive advantage.

Our Strengths

We believe our company has become a leader in environmental and maintenance services to the power generation industry. Our strengths that support our leading position include:

Industry-Leading Quality, Safety, and Compliance

We believe we are a partner-of-choice for our customers due to our reputation as a leader in quality, safety, and compliance. Utilities and independent power producers are generally risk-averse and focus on environmental and safety considerations as crucial factors for awarding on-site service provider contracts. We believe our reputation for and dedication to quality, industry-leading safety record, and adherence to environmental compliance standards provide a distinct competitive advantage and

differentiate us from many of our competitors. Supported by our team of in-house compliance experts, we believe we have developed trusted relationships and credibility with regulatory agencies. We pride ourselves on being a reliable partner to our customers, consistently delivering high-quality, efficient, and on-time service.

These attributes are vital contributors to our leading market share positions. Our leading capabilities position us well for potential new business as customers recognize the value of engaging a proven service partner.

Broad Platform of Mission-Critical Environmental and Maintenance Services

Our broad platform of essential environmental and maintenance services has enabled us to become a leading service provider to our power generation customers. In our end markets, we are the only service provider offering a suite of CCR management and recycling, environmental remediation, and outage maintenance services. Compared to service providers with more limited scope, our platform allows our customers to gain efficiencies and to reduce the number of vendors on their sites by sourcing multiple required offerings from a single, trusted partner.

The national scale of our operational footprint is also a key differentiator, as many of our competitors are localized, focusing on a single geographic area (sometimes isolated to a single plant). We operate in 27 states across the country, resulting in an overall footprint and density in key markets that we believe is difficult to replicate. Our national reach enables us to pursue new business within our existing customer base successfully and to attract new customers while providing consistent quality, safety, and compliance standards.

Long-Term Partnerships with Leading Power Generators

Our customers are some of the largest power generation companies in the United States, including Dominion Energy, Inc., Duke Energy Corporation, Dynegy Inc., Exelon Corporation, PPL Corporation, and The Southern Company. Given the essential nature of our services, our on-site personnel become integrated into the daily procedures of each facility, seamlessly working with utility employees to provide uninterrupted continuous operations. Our co-location and integration into our customers' daily operations result in direct relationships with key decision-makers at every level of our customers' organizations. We believe this embedded partnership deepens customer connectivity and drives longer customer tenure. In some cases, these relationships have spanned over 20 years. As examples, LG&E and KU Energy LLC, which is currently owned by PPL Corporation, has been a customer for more than 20 years, and members of our management team have provided mission-critical services to Exelon Corporation for over 15 years. In the case of Exelon Corporation, these long-term relationships led to Exelon Corporation entrusting us with the outage maintenance needs across their nuclear fleet. We have also demonstrated the ability to grow our service offerings with a single customer. We first provided Duke Energy Corporation with byproduct sales in 2001 at two plants, and we now provide all of our coal-related services across nine of their plants. We believe these long-term relationships are critical for renewing existing contracts, winning incremental business from existing customers at new sites, and adding new customers. For example, over the last five years, we have achieved an approximately 90% fossil services renewal rate for eligible contracts.

Innovative Solutions to Our Customers' Environmental Challenges

Our customers regularly face complex, large-scale environmental challenges that require bespoke, technical solutions. We believe we have a proactive and differentiated approach to solving these challenges. Our internal technical and engineering experts have developed in-depth domain knowledge and capabilities in environmental remediation and beneficial use of coal ash as a result of our long-term and significant experience in the sector. We believe this credibility, combined with an entrepreneurial mindset, enables us to source market opportunities not readily available to our competitors.

As an example, we demonstrated this innovative approach for a major reclamation project at the Asheville Regional Airport in North Carolina. In the course of remediating an on-site ash pond at a nearby coal power plant, we had the vision to beneficially use that ash as structural fill underneath a newly constructed taxiway at the airport. Our engineers designed a state-of-the-art, highly engineered structural fill system to capture the ash in an environmentally sound way. Asheville Regional Airport saved approximately \$12 million by using coal ash instead of traditional materials, and approximately 4 million cubic yards of coal ash from an ash pond was beneficially used. We believe this innovative approach, coupled with new technologies and processes, generates additional value for our customers and stockholders.

Entrepreneurial Management Team Supported by Highly Skilled Labor Force

We are led by an experienced management team with an entrepreneurial mindset and keen focus on safety and customer service. Our senior executive team consists of industry veterans with deep industry experience, helping us provide high-quality operational execution and solidify long-term customer relationships. In addition to a commitment to developing internal talent, we have made key strategic external hires to deepen our expertise further. Our entrepreneurial mindset drives us to continually search for new ways to maximize relevance to customers and develop innovative solutions.

Our customers have unique certification and training requirements for the service providers they allow on-site. Our ability to hire, develop, and retain a highly-skilled labor force with specialized skills, training, and certifications is a critical differentiator

in the sector. We also have a dedicated team of in-house professionals that focus exclusively on training, certification, and mentorship. As part of our commitment to safety and compliance, each of our on-site employees must complete a unique, rigorous training program. We train our managers to lead from the frontline and to share, involve, and support their teams. Our ability to rapidly staff large-scale projects is also critical. For example, within our nuclear services offering, we have the proven ability to quickly ramp up to more than 4,000 employees to align with our customers' outage schedules and to service their planned maintenance needs. Collectively, our human capital management allows us to maintain and develop a labor force of highly qualified, well-trained personnel capable of handling our customers' needs.

Our Growth Strategy

Expand Market Share by Capitalizing on the Significant Environmental and Maintenance Needs of Power Generation Customers

We believe we have a substantial growth opportunity in the near term as U.S. coal-fired power generation facilities continue to remediate and close coal ash ponds and landfills. These projects are triggered as coal power plant operators preemptively manage environmental liabilities, comply with regulatory requirements (at the local, state, and federal level), and work to meet consumer standards for environmental sustainability. We believe there are \$75 billion in coal ash remediation opportunities in the U.S, driving a need for creative remediation solutions, including the beneficiation of ash. We estimate there are over 1,000 legacy ash ponds and landfills, substantially all of which remain to be remediated. We expect that customer spending for our core services, including ash pond and landfill remediation, will increase significantly over the next three to five years in response to these remediation requirements. We believe spending on coal ash management will increase as well due to our customers' increased focus on environmental stewardship. Additionally, we believe the market for mission-critical maintenance services in the nuclear power generation market is large and growing. We expect this market opportunity to grow over time as the nuclear reactor fleet continues to age and additional maintenance is required.

Continue to Grow On-Site Services Revenue by Expanding Environmental and Maintenance Offerings

We believe our broad platform of environmental and maintenance services is a competitive differentiator and, therefore, continuing to enhance the breadth of services offered to our existing customers is a key growth opportunity. We are a trusted partner and our team is embedded with the customer on-site to handle its most critical operational needs. As a result, we are well-positioned to identify relevant, attractive service offerings to add to our portfolio. We believe opportunities exist across our platform in waste byproduct management, recycling, environmental remediation, and maintenance services. We believe our customers will continue to find value in a full-service platform and source incremental services from us as an existing, on-site, trusted partner.

Leverage New and Existing Customer Relationships to Maximize Fleet-Wide Opportunities

The trend among our customers is to consolidate service providers. Given the breadth of our service offerings and our access to our customers' senior decision-makers, we believe we are well-positioned to deepen our relationship with current customers by providing our services to other coal-fired and nuclear power plants within their fleets. We see an opportunity to increase this percentage meaningfully. We will also seek to generate business with new utility customers, aiming ultimately to compete fleet-wide across their power plant footprints as well. We see similar opportunities in international geographies.

Invest in Innovative Technologies, Processes, and Solutions

We believe investments in new technology and processes present opportunities to provide higher-margin offerings while also improving the environment. The embedded nature of our operations gives us a superior understanding of unique customer problems allowing us to deploy innovative solutions. We believe there are opportunities for technological innovation in environmental compliance and stewardship. For example, our MP618TM technology provides an innovative new proprietary thermal process for fly ash beneficiation. This technology converts previously unusable coal ash into a consistent, high-quality fly ash that meets industry specifications, increasing the supply of marketable fly ash to concrete producers nationwide. We expect these innovative technologies will allow us to optimize our traditional fly ash sales and distribution, enter new markets for our products, and provide cleaner, environmentally friendly solutions to our customers. We intend to continue to invest in new technologies and other processes that expand our portfolio of solutions and further establish us as an innovator in our industry.

Our Services

We deliver services and solutions to the power generation industry through two business segments: Environmental Solutions and Maintenance and Technical Services.

Environmental Solutions

Our Environmental Solutions segment includes remediation and compliance services and byproduct sales. We are a trusted partner with our Environmental Solutions customers and are a leader in providing safe and quality environmental services to the

power generation industry. We have over 30 years of experience in constructing, operating, and managing structural fill projects for coal-fired utilities and assisting coal-fired utilities in beneficially using waste byproducts.

- *Remediation and Compliance Services.* Our remediation and compliance services offerings primarily include environmental management of landfills for coal-fired power generation facilities and of new and existing ash ponds (particularly remediation mandates). Our environmental management service offerings cover all aspects of new and existing active pond management including: clean closure, cap-in-place, and design and construction of new ponds. Additional service offerings include all aspects of the landfill development, construction, and management process. Our remediation and compliance services teams can also provide site evaluation and characterization; preliminary design and cost estimates with life-cycle analysis; hydrogeological assessments; groundwater and containment modeling; permit application and processing for expansions and greenfield sites; design engineering; construction of landfills and cap and cover systems; conversion of impoundments to landfill sites; quality assurance and quality control and documentation; engineered fills (off-site) and other related services.
- *Byproduct Sales.* Our byproduct sales offerings include the recycling of recurring and contracted volumes of coal-fired power generation waste byproducts, such as bottom ash, fly ash, and gypsum byproducts. These byproducts can be used for various industrial purposes, including in the production of concrete products as a replacement for Portland cement. Our dedicated waste byproduct sales and marketing team has a national presence and works with many of the nation's largest power generators to identify opportunities to improve each customer's long-term position in the market for sales of coal-fired waste byproducts while providing concrete producers with the consistent fly ash sourcing they need. With a variety of different coal sources being utilized across the power generation industry, we evaluate, process, and market the different bottom ash products to achieve the highest value for a given market area.

Maintenance and Technical Services

Our Maintenance and Technical Services segment includes fossil and nuclear services offerings. Maintenance and Technical Services segment offerings are most closely associated with the ongoing operations of power plants, whether in the form of daily environmental management or required maintenance services (typically during planned outages). Our on-site personnel become integrated into the daily procedures of each facility, seamlessly working with utility employees to provide uninterrupted operations. Because we are co-located and integrated into the daily operations at customer sites, our on-site presence results in direct relationships with key decision-makers at every level.

- *Fossil Services.* Our fossil services offerings focus on recurring and mission-critical management of coal ash and routine maintenance, outage services, and staffing solutions for coal-fired power generation facilities to fulfill the environmental service needs of our customers in handling their waste byproducts. Coal ash management is mission-critical to the daily operations of power plants as they generally only have on-site storage capacity for three to four days of CCR waste accumulation. These services include silo management, on-site ash transportation, landfill management, and capture and disposal of ash byproduct from coal power operations. These operations cover the management of a wide variety of combustion byproducts, including bottom ash, flue gas desulfurization gypsum disposal, Pozatec/fixated scrubber sludge disposal, and fluidized bed combustion fly ash disposal. We coordinate all aspects of the ash management operation, from processing and screening for sales to facilitating economical disposal.
- *Nuclear Services.* Our nuclear services operations, which we market under the Allied Power brand name, consist of a broad platform of mission-critical professional, technical, and craft services spanning the entire asset life cycle of a nuclear power generator. Our nuclear services offerings include routine maintenance, outage services, facility maintenance, and staffing solutions for nuclear power generation facilities. We are focused on expanding these offerings to include specialty welding, valve repairs, reactor and turbine support, and specialty engineering, among other services. Additionally, our staffing services and solutions include professional, technical, and craft staffing, managed and turnkey staffing solutions and staff recruitment and oversight services. A substantial portion of our nuclear services operations is driven by scheduled nuclear maintenance outages, which are typically planned for every 12 to 24 months.

Safety Record

Utilities and independent power producers are focused on environmental and safety considerations as crucial factors for awarding on-site service provider contracts. We believe our strong safety record provides a distinct competitive advantage. We believe we have developed trusted relationships and credibility with regulatory agencies and utilities over the past 30 years due to our long-standing safety record supported by an experienced team of in-house safety and regulatory compliance professionals.

Safety is integral to our culture and our results, and it is one of our core values. We believe we operate under the strictest safety standards, and we are committed to maintaining a safe working environment. Our dedicated in-house team of safety professionals develops and trains our employees and subcontractors to not only perform their jobs safely but also to proactively contribute to a safe workplace. This expert team includes highly trained professionals who are accredited Occupational Safety and Health Administration trainers, along with full-time transportation specialists in both over-the-road and rail operations.

We endorse and adhere to the U.S. Nuclear Regulatory Commission's Safety Culture Policy Statement, which consists of nine traits further defining a positive safety culture with respect to services we provide to nuclear utilities: (i) leadership safety values and actions; (ii) problem identification and resolution; (iii) personal accountability; (iv) work processes; (v) continuous learning; (vi) environment for raising concerns; (vii) effective safety communications; (viii) respectful work environment; and (ix) questioning attitude. Given the inherent stringent safety requirements surrounding the nuclear power industry, specialized licenses and training are required for all employees.

We recognize the unique safety issues related to working with our utility industry partners. Our Engineering, Environmental, and Quality Group has the expertise and experience to ensure our operations are compliant with local, state, and federal regulations and exceed customary safety standards in our industry.

Sales and Marketing

Our dedicated sales team has built successful and long-term relationships with the nation's largest power generators. We think we can leverage the deep connections and strong operational track record we have built to broaden our on-site presence and deepen client partnerships. We also seek to grow our business with new power generation customers, aiming ultimately to compete enterprise-wide across their power plant footprints. Through close connections with utility management and personal relationships developed on a daily basis by our network of embedded field team of regional managers and site managers, we believe we can understand our customers' needs and that we can respond to their project requirements and provide creative solutions quickly. Our team of professionals includes professional engineers, experienced site managers, and seasoned estimators who strive to be detailed, accurate, and upfront, enabling us to minimize contract modifications after the work begins. We employ what we refer to as a "zippered" organizational approach to customer service and marketing, leveraging relationships up and down the organization. By structuring our organization around our customers' needs through this unique network of regional field operations managers, we ensure that projects are completed on time and on budget. Additionally, we can quickly recognize opportunities to cross-sell and market our services.

Customers

We have developed our long-term, committed relationships to become a preferred provider to many of the largest power generation companies in the United States. In 2019, we performed work at more than 50 plants for more than 20 "blue-chip" utilities, including Ameren Corporation, Big Rivers Electric Corporation, Dominion Energy, Inc., Duke Energy Corporation, Dynegy Inc., Exelon Corporation, Hoosier Energy Rural Electric Cooperative, Inc., NRG Energy, Inc., PPL Corporation, and The Southern Company. The majority of our power generation clients have investment-grade credit ratings. For the years ended December 31, 2019 and 2018, Duke Energy Corporation and Exelon Corporation each accounted for more than 10% of our revenue. No other major customer accounted for more than 10% of our revenue during these periods. If one of these major customers decided to stop purchasing our services, revenue could decline and our operating results and financial condition could be adversely affected.

Award Status

We won approximately \$583 million in signed new awards in 2019 as compared to approximately \$106 million in 2018. Though the timing of future awards is difficult to determine, we believe we are well-positioned to capture a significant portion of a large and growing addressable market.

Joint Ventures and Contractual Arrangements

A portion of our coal ash sales is provided through the following two joint ventures:

Ash Venture Joint Venture

In December 2013, we formed Ash Venture LLC, a North Carolina limited liability company ("Ash Venture"), which provides ash management and marketing services to the utility industry. Ash Venture is a joint venture between Charah, LLC, a Kentucky limited liability company and our wholly-owned subsidiary ("Charah"), and Titan America, LLC, an unrelated third party. Charah owns 67% of Ash Venture and the third party owns 33%.

Equity Method Investment

In January 2016, we formed CV Ash a joint venture with VHSC Holdings, LLC, an unrelated third party, which markets and sells fly ash to the ready-mix concrete market. We account for the joint venture under the equity method. Charah and the third party each own 50% of the joint venture.

Competition

The power and environmental services industries are highly fragmented across regional competitors with a limited subset of competitors maintaining a national presence, few of which offer the same spectrum of services we provide through our Environmental Solutions and Maintenance and Technical Services segments. Our competitors consist of a combination of large environmental and waste management businesses, as well as hundreds of regional and local companies with limited service areas, typically servicing only one to three sites each. The highly fragmented and regional nature of our industry has produced a limited number of competitors with a national scope.

We are the only service provider offering a suite of CCR management and recycling, environmental remediation, and outage maintenance services. While some competitors are significantly engaged in one of the core areas in the power or environmental services value chain, many have limited or no engagement in the majority of our core areas.

Seasonality

Based on historical trends, we expect our operating results to vary seasonally due to demand within our industry as well as weather conditions. For additional information on the effects of seasonality on our operating results, see “Item 7. Management’s Discussion and Analysis of Financial Condition and Results of Operations—Key Factors Affecting Our Business and Financial Statements—Seasonality of Business.”

Risk Management and Insurance

The nature of our business exposes us to liabilities arising out of our operations, including possible damages to the environment. Such potential liabilities could involve, for example, claims for remediation costs, personal injury, property damage, and damage to the environment, including natural resources, claims of employees, customers, or third parties for personal injury or property damage occurring in the course of our operations, or claims alleging negligence or other wrongdoing in the planning or performance of work. We also could be subject to fines and civil and criminal penalties and other sanctions in connection with alleged violations of regulatory requirements that could be significant. We maintain general liability, contractor’s pollution liability policies (as well as additional pollution and remediation policies as needed), vehicle liability, employment practices liability, fiduciary liability, directors’ and officers’ liability, workers’ compensation, property, and employer’s liability coverages. We also maintain umbrella liability policies to provide excess coverage over the underlying limits contained in these primary policies.

Regulation

Our coal-based and nuclear-based power generation utility customers are subject to various federal, state, and local environmental laws and regulations. Our operations and services for these utility customers are subject to many of the same environmental laws and regulations that govern the host utility site. These environmental laws and regulations, among other things, impose limits on the discharge of pollutants into the air and water, and they establish requirements for the treatment, storage, and disposal of solid and hazardous materials, remediation of releases of hazardous substances, and reclamation of land. Compliance with applicable environmental laws and regulations adds to the cost of doing business. Moreover, to establish and operate power plants and collect, transport, and manage CCRs, our customers and we have obtained various federal, state, and local environmental permits. We must comply with these permits or processes and procedures approved by regulatory authorities. Any failure to comply with these laws or regulations, permits, or processes and procedures could result in the issuance of substantial fines and penalties or other sanctions and may cause us (or our customers) to incur environmental or reclamation liabilities or subject us (or our customers) to third-party claims.

We generally perform our Maintenance and Technical Services segment operations on-site at the host utility power plant. As such, the utility holds permits for our operational activities performed on-site. We secure any necessary permits at facilities that we own or lease.

Despite the safeguards we follow, our operations entail risks of regulatory noncompliance or releases of hazardous substances that could create an environmental liability.

Regulations Affecting Our Maintenance and Technical Services Segment

The fossil services offerings provided in our Maintenance and Technical Services segment are subject to environmental laws and regulations that have the potential to increase operating costs and to give rise to increased risk of regulatory noncompliance and environmental liabilities.

- *Resource Conservation and Recovery Act.* RCRA Subtitle C regulates handling, transporting, and disposing of hazardous waste. RCRA Subtitle D regulates non-hazardous wastes and delegates authority to states to develop solid waste programs. In 1991, the EPA issued final regulations under RCRA Subtitle D which set forth minimum federal performance and design criteria for municipal solid waste garbage landfills. In 2015, the EPA published regulations under RCRA Subtitle D for CCRs generated by the electric utility industry. Subtitle D municipal solid waste regulations are implemented by the states, although states can impose requirements that are more stringent than the Subtitle D standards. The CCR Rule regulates the disposal of CCRs under RCRA Subtitle D of the as non-hazardous wastes, as discussed below.
- *EPA CCRs Rule.* As a CCR, coal ash had previously mainly been exempted from regulation under the RCRA by the “Bevill amendment” and, therefore, was subject to state solid waste regulations. However, after a major spill at a Tennessee Valley Authority site in Tennessee in 2008, the EPA began a rulemaking process to regulate CCRs. That process ended with the publication in April 2015 of the CCR Rule to regulate the disposal of CCRs, including fly ash, bottom ash, and flue gas desulfurization products generated at coal-fired power plants. The CCR Rule, among other things, regulates CCRs as non-hazardous waste and imposes new standards for location, groundwater monitoring, and dam stability on surface impoundments and requires long-term monitoring of existing and new surface impoundments and landfill facilities. The CCR Rule also preserves an exemption for CCRs when used for beneficial purposes. In March 2018, the EPA issued proposed Phase-1 1-Part rules to reconsider certain sections of the CCR Rule. In July 2018, the EPA issued a final Phase-1 1-Part rule to modify the CCR Rule to establish the program to grant states authorization with approved CCR permit programs under the Water Infrastructure Improvements for the Nation Act (the “WIIN Act”). The Phase-1 1-Part rule also allows CCRs to be used during certain closure situations and addresses certain matters remanded to the EPA by the D.C. Circuit Court of Appeals in June 2016. The EPA intends to reconsider and propose additional regulations to address litigation decisions by courts related to CCRs.
- *WIIN Act.* In December 2016, Congress passed the WIIN Act, which, among other things, establishes state primacy for enforcement of the CCR Rule. The WIIN Act directed the EPA to provide guidance to states on issuing state regulations to manage the CCR program. The EPA published the Coal Combustion Residuals State Permit Program Guidance Document (Interim Final) in August 2017. States may now submit their regulatory programs for CCRs and receive EPA approval provided they are equivalent to or more stringent than federal guidelines. As noted above, the rule finalized by the EPA in July 2018 further implements the objectives of the WIIN Act by allowing states or the EPA to incorporate flexibilities into their coal ash permit programs.

The CCR Rule may require adjustments to our operations, and the complexity and cost of managing and disposing of CCRs could increase. We manage mine reclamation projects that may be subject to the CCR Rule. The CCR Rule establishes national minimum criteria for landfills and impoundments containing CCRs, and includes restrictions on their location, design, and operation, as well as groundwater monitoring, recordkeeping, reporting, and closure requirements. The rule also requires closure, shutdown, or retrofitting of certain non-complying units or impoundments. Citizens and states now have the right to bring lawsuits to enforce the new CCR Rule against owners and operators. Since the CCR Rule was finalized, citizens and environmental organizations have brought several suits against the utility owners and operators of CCR impoundments.

The CCR Rule affirms that beneficial uses of CCRs remain exempt from federal waste regulation under the RCRA’s “Bevill amendment.” Beneficial use is defined by the regulation as uses where CCRs provide a functional benefit, substitute for the use of a virgin material, meet the product specifications, follow established specifications for use, and are environmentally equivalent to the material that they substitute for or are below all thresholds for safety and environmental impact. In February 2014, the EPA released a report determining that the use of fly ash in concrete constitutes a beneficial use, and the CCR Rule notes explicitly that the incorporation of fly ash in concrete, as a replacement for Portland cement, is one of “the most widely recognized beneficial applications” of CCRs. The CCR Rule indicates that the use of CCRs in applications such as road base generally would qualify as beneficial use, so long as relevant regulations and guidelines are followed.

Both industry and environmental organizations have challenged the CCR Rule. The D.C. Circuit Court of Appeals has ruled on several cases involving CCRs. The D.C. Circuit Court remanded certain provisions of the CCR Rule back to the EPA to address through modification of the rules. The D.C. Circuit decision has indicated that CCR disposal or storage units that have only clay liners are not protective, and the EPA must now address the impacts to the CCR rules.

In September 2016, the U.S. Commission on Civil Rights (the “Civil Rights Commission”) issued a report which determined that CCR disposal facilities can negatively impact environmental justice communities. While the Civil Rights Commission cannot require changes to EPA regulations, environmental organizations may seek to use the Civil Rights Commission’s report to spur the EPA to make regulatory changes.

In July 2018, the EPA issued a final rule extending the deadline for closure of certain impoundments and adopting other substantive changes. In August 2018, the D.C. Circuit Court of Appeals vacated and remanded portions of the CCR Rule. In December 2019, the EPA addressed the deficiencies identified by the court and proposed amendments to change the closure deadline to August 31, 2020, but allow certain extensions. EPA has announced that it plans additional amendments to the CCR Rule.

Regulations Affecting the Coal Industry

The fossil services offerings of our Maintenance and Technical Services segment are dependent upon managing CCRs produced by our customers, typically coal-fired power plants. Coal-fired power plants and the coal industry are generally highly regulated under federal and state law. Regulation affecting this industry is ever-evolving, including the following:

- *Clean Air Act.* The federal Clean Air Act of 1970 and subsequent amendments, particularly the Clean Air Act Amendments of 1990 (as amended, the "CAA"), and corresponding state laws and EPA regulations (discussed below), regulate the emission of air pollutants such as SO_x, NO_x, particulate matter ("PM"), and ozone. The EPA finalized more stringent ambient air quality standards for fine PM in January 2013 and for ozone in October 2015, and issued final policy assessment for NO_x in April 2017 and draft policy assessment for SO_x in August 2017. The EPA concluded that the current primary NO_x standard is adequate, but has not taken additional steps concerning the SO_x standards. Utilities have been required to make changes, such as changing fuel sources, installing expensive pollution control equipment, and, in some cases, shutting down plants to meet EPA emissions limits.
- *National Ambient Air Quality Standards.* The CAA requires the EPA to set National Ambient Air Quality Standards ("NAAQS") for six pollutants considered harmful to public health and the environment ("criteria pollutants"). Areas that are not in compliance with these standards are considered "non-attainment areas." In recent years, the EPA has adopted more stringent NAAQS for these criteria pollutants that could directly or indirectly impact coal plants through the designation of new non-attainment areas. This could prompt local changes to permitting or emissions control requirements, as prescribed by federally mandated state implementation plans that require emission source identification and emission reduction plans. Final rules may require significant investment in emissions control technologies by our customers in the electric power generation industry and could affect the demand for coal. For example, in 2015, the EPA finalized the NAAQS for ozone pollution and reduced the limit to 70 parts per billion (ppb) from the previous 75 ppb standard. The final rule was challenged in the D.C. Circuit. On April 7, 2017, the EPA advised the D.C. Circuit that it intended to reconsider the final rule, and the Court subsequently stayed the litigation pending further action by the EPA. In August 2018, the EPA ultimately decided not to revisit the rule. As a result, the D.C. Circuit lifted its stay of the 2015 ozone NAAQS rule imposing the 70 ppb ambient air quality standard while the EPA reviews the standards under an expedited review process. On October 31, 2019, the EPA published a draft policy assessment recommending that the 70 ppb ozone NAAQS be retained. The policy assessment will be followed by a proposed rule finalizing the ozone NAAQS update by October 1, 2020.
- *Cross-State Air Pollution Rule.* In July 2011, the EPA adopted the Cross-State Air Pollution Rule (the "CSAPR"), a cap-and-trade type program requiring utilities to make substantial reductions in SO₂ and NO_x and emissions that contribute to ozone and in fine PM emissions in order to reduce interstate transport of such pollution. The CSAPR was challenged and vacated by the D.C. Circuit Court of Appeals in August 2012, but the U.S. Supreme Court reversed that decision in April 2014. The D.C. Circuit has since lifted its stay on the CSAPR and ruled in favor of the EPA on the remaining significant issues. In January 2016, the EPA filed a brief with the D.C. Circuit addressing the remaining legal challenges left undecided by the U.S. Supreme Court's 2014 decision. Conforming with a court-ordered schedule, the EPA implemented the first phase of the CSAPR in 2015 and 2016 and the second phase in 2017. In November 2014 and January 2015, the EPA issued notices of data availability outlining emission allowance allocations for existing generating units that began operating before and after 2010. In September 2016, the EPA finalized a rule updating the CSAPR to maintain 2008 ozone emission limitations in downwind states by addressing summer time (May-September) transport of ozone pollution (the "CSPAR Update"). The CSPAR Update, which commenced in May 2017, sets stricter NO_x ozone season emission budgets in 22 states and could affect up to 886 coal-fired facilities. These emission control requirements, for both NO_x and SO₂, can impact the quantity and quality of CCRs produced at a power plant, add to the costs of operating a power plant, and make coal a less attractive fuel alternative in the planning and building of utility power plants. On December 6, 2018, the EPA issued the CSAPR "Close-Out" Rule, a final determination that the CSAPR achieves concerning the 2008 ground-level ozone NAAQS in 20 states. Accordingly, those states will not be required to impose requirements for further reduction in transported ozone pollution. Also, the covered states do not need to submit state implementation plans that would establish additional requirements beyond the existing CSAPR Update. Several states and other entities challenged the CSPAR Close-Out Rule in the D.C. Circuit. In a September 13, 2019 ruling,

the D.C. Circuit remanded the CSAPR Update to the EPA, finding that rule is inconsistent with the CAA. In a subsequent October 1, 2019 ruling, the CSAPR Close-Out Rule was vacated.

- *Comprehensive Environmental Response, Compensation and Liability Act.* Certain environmental laws, including the Comprehensive Environmental Response, Compensation and Liability Act (the “CERCLA”) and similar state laws, impose strict, joint and several liability on responsible parties for investigation and remediation of regulated materials at contaminated sites, including our sites, customer sites, and sites to which we sent wastes, including CCRs. CCRs may contain materials such as metals that are regulated materials under these laws. Management of CCRs can give rise to liability under the CERCLA and similar laws.
- *Mercury and Air Toxics Standards for Power Plants.* In February 2012, under its Mercury and Air Toxics Standards for Power Plants rule, the EPA promulgated final limits on mercury and other toxic chemicals from new and modified power plants. In June 2015, the U.S. Supreme Court ordered the EPA to undertake cost-benefit analysis when promulgating mercury and air toxics standards. In April 2016, the EPA published a supplemental finding pursuant to the U.S. Supreme Court’s directive, which is currently being challenged in the D.C. Circuit. In April 2017, the D.C. Circuit granted the EPA’s motion to stay the litigation while the EPA reconsiders its finding that the rule is “appropriate and necessary” as required under the Clean Air Act. If upheld, requirements to control mercury emissions could result in the implementation of additional technologies at power plants that could negatively affect fly ash quality.
- *GHG Emissions.* Some states and regions have adopted legislation and regulatory programs to reduce GHG emissions, either directly or through mechanisms such as renewable portfolio standards for electric utilities. These programs require electric utilities to increase their use of renewable energy, such as solar and wind power. Federal GHG legislation appears unlikely in the near term. The EPA has initiated a review of rules finalized in August 2015 for GHG emissions from new and existing fossil fuel-fired electric power plants and for carbon emissions from existing sources in the power sector (the latter being known as the “Clean Power Plan”). The Clean Power Plan establishes state-specific, rate-based reduction goals for carbon emissions and calls on the power sector to reduce carbon emissions to 32% below 2005 levels by 2030. The EPA proposed rules titled the Affordable Clean Energy Rule (the “ACE Rule”) and sought comments on a framework to replace the Clean Power Plan. Under the ACE Rule, the EPA is proposing to allow efficiency improvements at existing coal plants and proposes to regulate emissions from new power plants at different levels and has taken an inside the fence approach to emissions limitations. If the proposed replacement ACE Rule is finalized by the EPA, various states’ utility companies may be encouraged to substitute electricity generation from low-emitting coal and natural gas plants and zero-emitting renewable sources for energy generated from higher-emitting coal plants. Such changes in the energy market could impact the quantity of CCRs produced by our suppliers, add to the cost of operating power plants, and make coal-fired power plants a less attractive option in the planning and commissioning of new energy generating facilities.
- *EPA Water Quality Regulations.* The EPA is addressing water quality impacts from coal-fired power plants and coal mining operations. To obtain a permit for certain coal mining activities, including the construction of coal refuse areas and slurry impoundments that may result in impacts to waters of the United States, an operator may need to obtain a permit for the discharge of fill material from the Army Corps of Engineers (“ACOE”) under Section 404, as well as a corresponding permit from the state regulatory authority under Section 401 of the CWA. All permits associated with the placement of dredge or fill material subject to minimum thresholds require appropriate mitigation. Permit holders must receive explicit authorization from the ACOE before proceeding with mining activities. In September 2015, the EPA finalized new effluent limitations (the “Clean Water Rule”) under the Clean Water Act for steam electric power generating facilities. The final rule requires operators of coal plants with a generating capacity over 50 megawatts to store fly ash and bottom ash in dry landfills, rather than containment ponds. Approximately 12% of coal plants will be affected, and some marginal operations may shut down rather than face the expense of complying with the Clean Water Rule. Multiple challenges to the Clean Water Rule were consolidated and are pending before the Court of Appeals for the Fifth Circuit. On February 28, 2017, President Trump issued an executive order prompting the EPA and ACOE to consider replacing the blocked Clean Water Rule. On December 11, 2018, the EPA and the ACOE proposed a new regulation to determine which waterbodies are subject to federal jurisdiction. A final rule repealing the 2015 definition of “Waters of the United States” (“WOTUS”) became effective on December 23, 2019. The repeal resets a consistent, nationwide regulatory standard to the previous pre-2015 regulations. A replacement rule that redefines WOTUS to comport with the text of the CWA is expected to be finalized in 2020. More stringent regulation of coal-fired power plants and coal mining operations could increase the cost for utilities and, thus, indirectly impact the availability and cost of fly ash for our CCR activities.

Increasingly strict requirements, such as those described above, generally will increase the cost of doing business and may make burning coal less attractive for utilities. Faced with the prospect of more stringent regulations, litigation by environmental groups, and the relatively low cost of natural gas, an increasing number of electric utilities are reducing their portfolio of coal-fired power plants. For example, in recent years, multiple companies have closed coal-fired power plant units or plants, or dropped plans to open new coal-fired plants, citing the cost of compliance with pending or new environmental regulations and the relatively low cost of natural gas. The potential negative impact on job prospects in the utility and mining industries has prompted considerable concern in Congress, leading to calls to restrict the EPA's regulatory authority and prompting the EPA to reconsider the same. The outcome of these developments cannot be predicted. If the rate of coal-fired power plant closures increases, our business, financial condition and results of operations may be adversely affected. Nevertheless, we believe that reliance on coal for a substantial amount of power generation in the United States is likely to continue for the foreseeable future.

Regulations Affecting the Nuclear Power Industry

Our nuclear power generation customers are subject to regulations from a number of entities, including the applicable U.S. regulatory bodies, such as the U.S. Nuclear Regulatory Commission, and non-U.S. regulatory bodies, such as the International Atomic Energy Agency (the "IAEA"). Regulations include, among other things: (i) systems for nuclear material safeguards implemented by the IAEA, (ii) global-scale agreements on nuclear safety, such as the Convention on Nuclear Safety and the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, and (iii) additional general regulations for nuclear facilities under the Atomic Energy Act and Nuclear Waste Policy Act, including strict licensing requirements, inspection procedures, and regulations governing the maintenance, shutdown, and dismantling of nuclear facilities and the management and disposal of radioactive wastes. In addition, the Price-Anderson Act (the "PAA") regulates, among other things, radioactive materials and the nuclear energy industry, including liability and compensation in the event of nuclear-related incidents. The PAA provides certain protections and indemnification to nuclear energy plant operators, which also apply to us as part of our services to the U.S. nuclear energy industry.

Motor Carrier Operations

Through the services we provide, we operate as a motor carrier and, therefore, are subject to regulation by the U.S. Department of Transportation (the "DOT") and various state agencies. These regulatory authorities exercise broad powers governing activities, such as the authorization to engage in motor carrier operations; regulatory safety; hazardous materials labeling, placarding, and marking; financial reporting; and certain mergers, consolidations, and acquisitions. There are additional regulations specifically relating to the trucking industry, including testing and specification of equipment and product handling requirements. The trucking industry is subject to possible regulatory and legislative changes that may affect the economics of the industry by requiring changes in operating practices or by changing the demand for common or contract carrier services or the cost of providing truckload services. Some of these possible changes include increasingly stringent environmental regulations, changes in the hours of service regulations which govern the amount of time a driver may drive in any specific period, and requiring onboard black box recorder devices or limits on vehicle weight and size.

Interstate motor carrier operations are subject to safety requirements prescribed by the DOT. Intrastate motor carrier operations are subject to safety requirements that often mirror federal regulations. Such matters as weight and dimension of equipment are also subject to federal and state regulations. DOT regulations also mandate drug testing of drivers. From time to time, various legislative proposals are introduced, including proposals to increase federal, state, or local taxes, including taxes on motor fuels, which may increase our costs or adversely impact the recruitment of drivers. We cannot predict whether, or in what form, any increase in such taxes applicable to us will be enacted.

Employees

As of December 31, 2019, we had approximately 1,461 employees. Approximately 443 of our employees were covered by collective bargaining agreements, 91% of whom are employed in the nuclear services operations of our Maintenance and Technical Services segment. We believe we have good relations with our employees.

Exchange Act Reports

We make available free of charge through our website, www.charah.com, our Annual Report on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K, proxy statement and all amendments to these reports. These reports are available on the investor relations portion of our website, ir.charah.com as soon as reasonably practicable after such materials are electronically filed with, or furnished to, the Securities and Exchange Commission (the "SEC"). We use the investor relations portion of our website to distribute company information, including as a means of disclosing material, non-public information and for complying with our disclosure obligations under Regulation FD. We routinely post and make accessible financial and other information regarding the Company on the investor relations portion of our website. Accordingly, investors should monitor the investor relations portion of our website, in addition to following our press releases, SEC filings, public conference calls and webcasts. The information provided on our website is not part of this Annual Report and is not incorporated herein by reference.

The SEC also maintains a website, www.sec.gov, which contains reports, proxy and information statements, and other information regarding issuers that file electronically with the SEC.

Item 1A. Risk Factors

Risks Related to Our Business

A decline in the production of CCRs by our coal-fired utility industry customers due to environmental regulations or otherwise could negatively impact our profitability and hinder our growth.

Many of our services are dependent upon the production of CCRs by our coal-fired utility industry customers. The coal-fired utility industry is facing several new and pending initiatives by regulatory authorities seeking to address air and water pollution, GHG emissions, and management and disposal of CCRs. In recent years, federal and state environmental regulations have imposed more stringent requirements regarding the emission of air pollutants and other toxic chemicals, reduction of GHG emissions, and water quality impacts from coal operations. Adoption of more stringent regulations governing coal combustion, water discharges, or air emissions may decrease the amount of CCRs produced by our customers and, as a result, the demand for our services. Faced with the prospect of more stringent regulations, litigation by environmental groups, and the relatively low cost of natural gas, an increasing number of electric utilities are reducing their portfolio of coal-fired power plants. This reduction could increase if the ACE Rule, which could cause states to substitute electricity generation from higher-emitting coal plants to low-emitting coal and natural gas plants and zero-emitting renewable sources, is finalized by the EPA. See “Item 1. Business—Regulation.”

Increasingly strict requirements generally will increase the cost of doing business and may make burning coal less attractive for utilities. In recent years, multiple companies have announced plans to close coal-fired power plant units or plants, or dropped plans to open new plants, citing the cost of compliance with pending or new environmental regulations and the relatively low cost of natural gas. A reduction in the use of coal as fuel would cause a decline in the production and availability of CCRs, which would adversely affect our fossil services and byproduct sales offerings and result in reduced revenue. The outcome of these developments cannot be predicted but could have a material adverse effect on our business, results of operation, financial condition, and cash flows.

Our business, financial condition and results of operations depend on the award of new contracts and the timing of the performance of these contracts.

We derive our revenue from the performance of customer contracts which itself is dependent on new contract awards. Reductions in the number and amounts of new awards, delays in the timing of the awards, or potential cancellations of such awards as a result of economic conditions, material and equipment pricing, and availability or other factors could adversely impact our business, financial condition and results of operations. It is particularly difficult to predict whether or when we will be awarded large-scale projects as these contracts frequently involve a lengthy and complex bidding and selection process that is affected by market conditions as well as regulatory requirements. We have experienced difficulty in the timely award of new projects and may again in the future. Because we generate our revenue from such projects, our results of operations and cash flows can fluctuate significantly from quarter to quarter depending on the timing of our contract awards and the commencement and progress of work under awarded contracts. In addition, many of these contracts are subject to financing contingencies. As a result, we are subject to the risk that the customer will not be able to secure the necessary financing for a project to proceed. If we are unable to secure the awards of new contracts, our business, financial condition and results of operations will be adversely affected.

We may lose existing contracts through competitive bidding or early termination.

Many of our contracts are for a specified term and are or will be subject to competitive rebidding after the term for such contract expires. Although we intend to bid to extend expiring contracts, we may not always be successful. In addition, some or all of our customers may terminate their contracts with us prior to their scheduled expiration dates. If we are not able to replace lost revenue resulting from unsuccessful competitive bidding, early termination, or the renegotiation of existing contracts with other revenue within a reasonable period of time, our business, financial condition and results of operations could be adversely affected.

We could be precluded from entering into or maintaining permits or certain contracts if we are unable to obtain sufficient third-party financial assurance or adequate insurance coverage.

Our operations in our Environmental Solutions and Maintenance and Technical Services segments sometimes require us to obtain performance or surety bonds, letters of credit, or other means of financial assurance to secure our contractual performance. We currently obtain performance and surety bonds from multiple financial institutions; however, if we are unable to obtain financial assurance in the future in sufficient amounts from appropriately rated sureties or on acceptable terms, we could be precluded from entering into certain additional contracts or from obtaining or retaining landfill management or other contracts or operating permits. Any future difficulty in obtaining insurance could also impair our ability to secure future contracts conditioned upon having adequate insurance coverage.

Unsatisfactory service and safety performance may negatively affect our customer relationships and, to the extent we fail to retain existing customers or attract new customers, adversely impact our revenue.

Our ability to retain existing customers and attract new business is dependent on many factors, including our ability to demonstrate that we can reliably and safely operate our business in a manner that is consistent with our customers' standards of service as well as applicable laws, rules, and permits, which are subject to change. Existing and potential customers consider the safety and service record of their third-party service providers to be of high importance in their decision to engage such providers. The power generation industry generally emphasizes safety and service over cost due to economic and reputational risk associated with operations at their facilities.

It is possible that we will experience multiple or particularly severe accidents in the future, causing our safety record to deteriorate. This may be more likely as we continue to grow, if we experience high employee turnover or a labor shortage or hire inexperienced personnel to support our staffing needs. If one or more accidents were to occur while we are providing services to our customers, or if we were unable to maintain the level of safety and service our customers require, the affected customer may seek to terminate or cancel our services and may be less likely to use our services in the future, which could adversely affect our business, financial condition and results of operations. Furthermore, our ability to attract new customers may be impaired if they view our safety or service record as unacceptable.

A substantial portion of our Maintenance and Technical Services segment consists of services to nuclear power plants. To the extent there is a decrease in the number of these plants, due to reduced investment, increased regulation, or otherwise, demand for our nuclear services offerings could decrease.

U.S. nuclear capacity and electricity generation are expected to decline due to continuing low natural gas prices and the rapid expansion of low-cost renewable energy and other new technologies in the United States, displacing more traditional sources of power, including nuclear power. Public support for nuclear power has also softened because of concerns about safety and environmental issues and new construction costs.

There are very few new nuclear plants and reactors under construction in the United States, and several nuclear reactors are undergoing decommissioning. In addition, changes in local, state and federal government subsidies and increased regulation could negatively impact the nuclear power industry. For instance, the U.S. Nuclear Regulatory Commission has broad authority under federal law to impose safety-related and other licensing requirements for the operation of nuclear generation facilities. Events at nuclear facilities or other events impacting the industry generally could lead to additional requirements and regulations on all nuclear generation facilities and could negatively impact the new construction of or continued generation from nuclear power facilities. A lower number of nuclear power facilities in operation and a corresponding decrease in related maintenance and construction budgets would have a material adverse effect on our business, financial condition, results of operation and cash flows.

The limitation or modification of the PAA indemnification authority and similar federal programs for nuclear and other potentially hazardous activities could adversely affect our business.

The PAA provides indemnification to the nuclear industry against liability arising from nuclear incidents at non-military facilities in the United States while still ensuring compensation for the general public. The Energy Policy Act of 2005 extended the period of coverage to include all nuclear power reactors issued construction permits through December 31, 2025. Because we provide services to the nuclear energy industry in the ongoing maintenance and modification of its nuclear energy plants, we are entitled to the indemnification protections under the PAA. Although the PAA's indemnification provisions are broad, it does not apply to all liabilities that we might incur while performing services as a contractor.

If the contractor protection currently provided by the PAA is significantly modified, is not reapproved, does not receive an appropriation or does not extend to all of our services, our business, financial condition and results of operations could be adversely affected by either our clients' refusal to retain us for potentially covered services or our inability to obtain commercially adequate insurance and indemnification, or we may be subject to potentially material liabilities in connection with the performance of our services.

Loss of a large customer may adversely affect our revenue and operating results.

For fiscal 2019 and 2018, each of Duke Energy Corporation and Exelon Corporation accounted for greater than 10% of our revenue. We will likely continue to derive a significant portion of our revenue from a relatively small number of customers in the future. If a major customer fails to pay us promptly or at all, our revenue would be negatively impacted and our operating results, financial condition and cash flows could be materially adversely affected. Additionally, if we were to lose any material customer, such loss would have a material adverse effect on our business and results of operations.

We and our customers operate in industries subject to significant environmental regulation, and compliance with changes in, or liabilities under, such regulations could add significantly to the costs of conducting business.

Our operations and the operations of our customers are subject to federal, state, and local environmental laws and regulations that, among other matters, impose limitations on the discharge of pollutants into the air and water and establish standards for the treatment, storage, and disposal of solid, hazardous, and radioactive waste materials, the remediation of releases of hazardous substances, and the reclamation of land. We and our customers have obtained various federal, state, and local environmental permits to conduct our operations and we must comply with these permits and processes and procedures that have been approved by regulatory authorities. Any failure to comply with these environmental requirements could give rise to sanctions, including, but not limited to: i) the cessation of all or part of our operations, ii) substantial fines and penalties, iii) environmental or reclamation liabilities, which liabilities may be strict and joint and several and iv) damages, including natural resource damages in connection with our sites, customer sites, or sites to which we sent wastes, including CCRs, and third-party claims. Moreover, changes in environmental laws and regulations occur frequently, and any changes that result in more stringent or costly environmental requirements could require our customers or us to make significant expenditures to attain and maintain compliance. New regulations, any failure to comply with existing regulations, or environmental liabilities arising thereunder could have a material adverse effect on our business, results of operation, financial condition, and cash flows.

Success by environmental groups in convincing the EPA to restrict beneficial uses of CCRs, or to regulate CCRs as hazardous waste, may have an adverse effect on our business.

In April 2015, the EPA published the CCR Rule to regulate the disposal of CCRs, including fly ash and bottom ash generated at coal-fired power plants, as non-hazardous waste under Subtitle D of the RCRA and to distinguish beneficial use of CCRs from disposal, which became effective in October 2015. The CCR Rule establishes national minimum criteria for CCR landfills and impoundments consisting of location restrictions, design and operating criteria, groundwater monitoring and corrective action, closure requirements, post-closure care, recordkeeping and reporting and other requirements, and requires closure of facilities unable to comply with these criteria within five to seven years. The CCR Rule has increased the complexity and cost of managing and disposing of CCRs and the remediation of existing ash ponds and landfills. In addition, Congress passed the WIIN Act in December 2016, which, among other things, authorizes state permit programs to manage CCRs in lieu of the CCR Rule. The WIIN Act also gives the EPA the authority to regulate coal ash in states that choose not to implement state permitting programs and in states whose permitting programs are determined to be inadequate by the EPA. In July 2018, the EPA issued a final rule that would take further steps under the WIIN Act by granting states with approved CCR permit programs (or the EPA where it is the permitting authority) the ability to set certain alternative performance standards. The rule would also allow CCRs to be used during certain closure situations and address certain matters remanded to the EPA by the D.C. Circuit Court of Appeals in June 2016, including clarifying corrective action triggers and requirements, adding boron to the list of constituents triggering corrective action, determining the proper height of woody and grassy vegetation for slope protection, and modifying alternative closure procedures. In August 2018, the D.C. Circuit Court of Appeals vacated and remanded portions of the CCR Rule. In December 2019, the EPA addressed the deficiencies identified by the court and proposed amendments to change the closure deadline to August 31, 2020, but to allow certain extensions. The EPA has announced that it is planning additional amendments to the rule.

Some environmental groups continue to urge the EPA to restrict certain beneficial uses of CCRs, such as in concrete, road base, and soil stabilization, alleging contaminants may leach into the environment. The CCR Rule created a definition of “beneficial use” that includes uses in concrete and road base. Still changes in the definition could reduce the demand for fly ash and other CCRs which would have an adverse effect on our revenue. Moreover, if the EPA were to regulate CCRs as hazardous waste, we, together with CCR generators, could be subject to environmental cleanup, personal injury, and other possible claims and liabilities, which could result in significant additional costs. Any such changes in or new regulations or indemnity obligations could have a material adverse effect on our business, results of operation, financial condition, and cash flows.

We may be adversely affected by uncertainty in the global financial markets and the deterioration of the financial condition of our customers. If any of our customers suffer financial difficulties affecting their credit risk, our operating results could be negatively impacted.

Our future results of operations may be impacted by the uncertainty caused by an economic downturn, natural disaster, pandemic, volatility or deterioration in the capital markets or credit markets, inflation, deflation, or other adverse economic conditions that may negatively affect us or parties with whom we do business, resulting in a reduction in our customers’ spending and their nonpayment or inability to perform obligations owed to us, such as the failure of customers to honor their commitments. Additionally, downturns in U.S. construction could lower the demand for our byproduct sales offerings. Furthermore, uncertainty caused by the impact of the outbreak of the novel coronavirus (“COVID-19”) has led to increased volatility in the markets in which we operate. The continuation of the COVID-19 pandemic or the occurrence of any of the foregoing events could lead to decreased revenue and limit our ability to execute on our business plan, which could adversely affect our business, financial condition and results of operations.

We also provide service to power generators. To the extent these entities suffer significant financial difficulties, they could be unable to pay amounts owed to us or to renew contracts with us on attractive terms. The inability of our customers, particularly larger customers, to pay us promptly or to pay increased rates could negatively affect our business, financial condition and results of operations. In addition, in the course of our business, we hold accounts receivable from our customers. In the event of the financial distress or bankruptcy of a customer, we could lose all or a portion of such outstanding accounts receivable associated with that customer. Further, if a customer was to enter into bankruptcy, it could also result in the cancellation of all or a portion of our service contracts with such customer at significant expense or loss of expected revenue to us.

Work stoppages, union negotiations, health crisis and other labor problems could adversely affect us.

A lengthy strike or other work stoppages at any of the facilities where we provide nuclear services could have a material adverse effect on us. From time to time, we are subject to unfair labor practice charges, complaints, and other legal administrative and arbitration proceedings initiated against us by unions, the National Labor Relations Board, or our employees, which could negatively impact our business and results of operations. Furthermore, additional groups of our employees may seek union representation in the future. Negotiating collective bargaining agreements could divert management attention, which could also adversely affect operating results. If we are unable to negotiate acceptable collective bargaining agreements with our unionized employees, we may be subject to labor disruptions, such as union-initiated work stoppages, including strikes. Pandemics including the recent outbreak of the COVID-19 or other crises could adversely impact our labor workforce for our Environmental Solutions and Maintenance and Technical Services operations. Labor is one of our highest costs and depending on the type and duration of any labor disruptions, our operating expenses could increase significantly, which could adversely affect our business, financial condition, results of operations and cash flows.

Increases in labor costs or our ability to find, employ and deploy technically skilled labor could impact our financial results.

Our continued success will depend on our ability to attract and retain qualified personnel. Additionally, we hire a significant percentage of our nuclear services employees on a short-term basis as a result of the seasonal (typically every 12 to 24 months) outage maintenance services we provide. We compete with other businesses in our markets for qualified employees. From time to time, the labor supply is tight in some of our markets. A shortage of qualified employees would require us to enhance our wage and benefits packages to compete more effectively for employees, to hire more expensive temporary employees or to contract for services with more expensive third-party vendors. Labor is one of our highest costs and relatively small increases in labor costs per employee could materially affect our cost structure. Our operating margins could suffer if we fail to attract and retain qualified employees, control our labor costs, or recover any increased labor costs through increased prices we charge for our services or otherwise offset such increases with cost savings in other areas.

Further, beginning in the first quarter of 2020, the spread of COVID-19 caused significant disruptions to worldwide business and market activity. In reaction, many businesses have instituted social distancing policies, including the closure of offices and worksites and deferring planned business activity. Because of the embedded presence of our on-site workforce, if COVID-19 or a similar outbreak of infectious disease were to prevent our workers from being deployed to the applicable work site, it may disrupt our service offerings, interrupt performance on our contracts with clients and negatively impact our business, financial condition and results of operations. COVID-19 or a similar outbreak of infectious disease may also lead to further tightening of the labor supply and lead to enhanced wage and benefit packages, as discussed above

Dependence on third-party subcontractors and equipment manufacturers could adversely affect our profits.

We rely on third-party subcontractors and equipment manufacturers to complete many of our projects. To the extent that we cannot engage subcontractors or acquire equipment or materials, or if the amount we are required to pay for these goods or services exceeds the amount we have estimated in bidding for fixed-price contracts, we could experience losses in the performance of these contracts. In addition, if a subcontractor or a manufacturer is unable to deliver its services, equipment or materials according to the negotiated terms for any reason including, but not limited to, the deterioration of its financial condition, we may be required to purchase the services, equipment or materials from another source at a higher price. This may reduce the expected profit or result in a loss on a project negatively impacting our business, financial condition and results of operations.

Our employees perform services that involve certain risks, including risks of accident, and a failure to maintain a safe work site could result in significant losses.

Safety is a primary focus of our business and is critical to our reputation. Our services can place our employees and others in challenging environments near large equipment, dangerous processes and highly toxic or caustic materials. Operations in our Environmental Solutions and Maintenance and Technical Services segments involve risks, such as truck accidents, equipment defects, malfunctions, and failures, and natural disasters, which could potentially result in releases of CCR materials, injury or death of employees and others, or a need to shut down or reduce operation of our customers' facilities while remedial actions are undertaken. We are responsible for safety on the sites where we work and these risks expose us to potential liability for pollution

and other environmental damages, personal injury, loss of life, business interruption, and property damage or destruction. Unsafe work conditions also have the potential of increasing employee turnover, increasing costs, and raising our operating costs. If we fail to implement appropriate safety procedures and/or if our procedures fail, our employees or others may suffer injuries.

Although we maintain functional groups whose primary purpose is to implement effective health, safety, and environmental procedures throughout our company, the failure to comply with such procedures, client contracts, or applicable regulations could subject us to losses and liability and the potential loss of customers. If we were to incur substantial liabilities in excess of any applicable insurance, our business, results of operations, and financial condition could be adversely affected.

Our financial results may fluctuate from quarter to quarter due to seasonal weather patterns and other factors which may make it difficult to predict our future performance.

Consumption of energy is seasonal and any variation from normal weather patterns, including due to unseasonably cooler or warmer weather, can have a significant impact on energy demand. Our financial results may fluctuate seasonally as a result of the seasonal outage maintenance services we provide as part of our nuclear services offerings, along with a number of other factors, many of which are outside of our control. Additionally, adverse weather conditions, such as hurricanes, tropical storms, and severe cold weather, may interrupt or curtail our operations or our customers' operations, and result in a loss of revenue and damage to our equipment and facilities, which may or may not be insured.

Our other service offerings are also subject to quarterly fluctuations from time to time. For these reasons, comparing our financial results on a period-to-period basis may not be meaningful, and our past results should not be relied on as an indication of our future performance. Our future quarterly and annual expenses as a percentage of our revenue may be significantly different from those we have recorded in the past or which we expect for the future. Our financial results in some quarters may fall below expectations. Changes in cost estimates relating to our services, which under percentage-of-completion accounting principles could lead to significant fluctuations in revenue or to changes in the timing of our recognition of revenue from such services, could cause our stock price to fall.

We operate in a highly competitive industry and may not be able to compete effectively with larger and better-capitalized companies.

While no specific company provides the range of services that we offer, the industries in which we operate are highly competitive and require substantial labor and capital resources. Some of the markets in which we compete or plan to compete are served by one or more large, national companies, as well as by regional and local companies of varying sizes and resources, some of which may have accumulated a substantial reputation in their markets. Some of our competitors may also be better capitalized than we are, have greater name recognition than we do, or be able to provide or be willing to bid their services at a lower price than we may be willing to offer. Our inability to compete effectively could hinder our growth or adversely impact our business, financial condition and results of operations.

We rely on technology in our business, and any technology disruption or delay in implementing new technology could adversely affect our business, financial condition, results of operation and cash flows.

We invest in new technology and processes to provide higher-margin offerings for our customers while limiting and managing our environmental risk. We also depend on digital technologies to process and record financial and operating data and we rely on sophisticated information technology systems and infrastructure to support our business, including process control technology. The failure of our technology initiatives and systems to perform as we anticipate or a delay in implementing new technology could adversely affect our business, financial condition, results of operations and cash flows. For example, within our byproduct sales offerings, which is part of our Environmental Solutions segment, the roll-out of our technology initiatives, including our MP618™ thermal beneficiation technology and our grinding technology, has been slower than previously anticipated, resulting in lower than expected contribution to operating results.

Additionally, if competitors implement new technologies before we do, allowing such competitors to provide lower-priced or enhanced services of superior quality compared to those we provide, this could have an adverse effect on our financial condition, results of operations and cash flows.

If we are unable to protect the confidentiality of our trade secrets fully, or if competitors are able to replicate our technology or services, we may suffer a loss in our competitive advantage or market share.

Though we do not have patents or patent applications relating to many of our key processes and technology, if we are not able to maintain the confidentiality of our trade secrets, or if our competitors replicate our technology or services, our competitive advantage would be diminished. Further, our competitors may develop or employ comparable technologies or processes.

In addition, third parties from time to time may initiate litigation against us by asserting that the conduct of our business infringes, misappropriates, or otherwise violates intellectual property rights. If we are sued for infringement and lose, we could

be required to pay substantial damages and/or be enjoined from using or selling the infringing products or technology. Any legal proceeding concerning intellectual property could be protracted and costly regardless of the merits of any claim, is inherently unpredictable, and could have a material adverse effect on our financial condition, irrespective of its outcome.

Additionally, we currently license certain third-party intellectual property in connection with our business, and the loss of any such license could adversely impact our financial condition and results of operations.

We may be unable to make attractive acquisitions or to integrate acquired businesses successfully, and any inability to do so may disrupt our business and hinder our ability to grow.

We may from time to time consider opportunities to acquire or make investments in other businesses and lines of business that could enhance our technical capabilities, complement our current services, or expand the breadth of our markets. The success of any completed acquisition will depend on our ability to integrate the acquired business into our existing operations effectively. The process of integrating acquired businesses may involve unforeseen difficulties or liabilities and may require a disproportionate amount of our managerial and financial resources. In addition, possible future acquisitions may be larger and for purchase prices significantly higher than those paid for earlier acquisitions. No assurance can be given that we will be able to identify suitable acquisition opportunities, negotiate acceptable terms, obtain financing for acquisitions on acceptable terms, or successfully acquire identified targets. Our failure to achieve consolidation savings, to integrate the acquired businesses and assets into our existing operations successfully, or to minimize any unforeseen operational difficulties or liabilities could have a material adverse effect on our business, financial condition and results of operations.

We are vulnerable to significant fluctuations in our liquidity or capital requirements that may vary substantially over time.

Our operations could require us to utilize large sums of working capital, sometimes on short notice and sometimes without assurance of recovery of the expenditures. Environmental liabilities could result in significant cash outflows, including those arising from various customer contracts and acquisition agreements, that require us to indemnify for certain environmental liabilities, litigation risks, unexpected costs or losses resulting from acquisitions, contract initiation or completion delays, political conditions, client payment problems and professional liability claims.

Restrictive covenants in our debt agreements may restrict our ability to pursue our business strategies. If we fail to comply with the restrictions and covenants in our debt agreements, there could be an event of default under the terms of such agreements, which could result in an acceleration of the amounts owed under such agreements.

Our debt agreements limit our ability to, among other things:

- incur indebtedness or contingent obligations;
- pay dividends or make distributions to our stockholders;
- repurchase or redeem our capital stock or subordinated indebtedness;
- make investments;
- create liens;
- enter into sale/leaseback transactions;
- incur restrictions on the ability of our subsidiaries to pay dividends or to make payments to us;
- enter into transactions with our stockholders and affiliates;
- sell and pledge assets; and
- acquire the assets of, or merge or consolidate with, other companies or transfer all or substantially all of our assets.

These covenants may also impair our ability to engage in favorable business activities, acquire other businesses or lines of business and finance future operations or capital needs in furtherance of our business strategies. Moreover, the form or level of our indebtedness may prevent us from raising additional capital on attractive terms or obtaining additional financing if needed. A breach of any of these covenants would result in a default under the applicable agreement after any applicable grace periods. A default could result in acceleration of the indebtedness owed under such agreement which would have a material adverse effect on our business, financial condition and results of operations. If an acceleration occurs, it would likely accelerate all of our indebtedness under all of the instruments that govern our outstanding indebtedness through cross-default provisions and we would likely be unable to make all of the required payments to refinance such indebtedness. Even if new financing were available at that time, it might not be on terms that are acceptable to us.

Our borrowing levels and debt service obligations could adversely affect our financial condition and impair our ability to fulfill our obligations under our Revolving Loan, Term Loan and Delayed Draw Term Loan (each, as hereinafter defined).

At December 31, 2019, we had total outstanding indebtedness of approximately \$204.6 million, \$152.2 million of which relates to our Term Loan and Delayed Draw Term Loan. At December 31, 2019, we had outstanding borrowings of \$19.0 million and letters of credit issued for our account of \$12.0 million under our Revolving Loan. We dedicate a portion of our cash flow to debt service. If we do not ultimately have sufficient earnings to service our debt, we would need to refinance all or part of our existing debt, sell assets, borrow more money or issue securities, which we may not be able to do on commercially reasonable terms or at all.

The terms of our Term Loan and Revolving Loan include customary events of default and require us to maintain certain financial ratios and restrict our ability to incur additional indebtedness. A breach of our Term Loan and Revolving Loan, including any inability to comply with the required financial ratios, could result in a default. In the event of any default, the lenders thereunder would be entitled to accelerate the repayment of amounts outstanding, plus accrued and unpaid interest. Moreover, these lenders would have the option to terminate any obligation to make further extensions of credit under our Revolving Loan. In the event of a default under our Term Loan and Revolving Loan, the lenders thereunder could also proceed to foreclose against the assets securing such obligations. In the event of a foreclosure on all or substantially all of our assets, we may not be able to continue to operate as a going concern. Outstanding letters of credit issued under our revolving credit facility would need to be replaced with other forms of collateral. Cross defaults may also occur on other agreements including surety and lease agreements.

Our indebtedness could have significant consequences, including the following:

- requiring us to dedicate a substantial portion of our cash flows from operations to the repayment of debt, which reduces the cash available for other business purposes;
- limiting our ability to obtain additional financing and creating additional liens on our assets;
- limiting our flexibility in planning for, and reacting to, changes in our business;
- placing us at a competitive disadvantage if we are more leveraged than our competitors;
- limiting our ability to deduct our interest expense;
- making us more vulnerable to adverse economic and industry conditions; and
- restricting us from making additional investments or acquisitions by limiting our aggregate debt obligations.

To the extent that we incur new debt in addition to our current debt levels, the leverage risks described above would increase.

The London Interbank Offered Rate ("LIBOR") calculation method may change and LIBOR is expected to be phased out after 2021.

On July 27, 2017, the U.K. Financial Conduct Authority (the "FCA") announced that after 2021, it would no longer require banks to submit rates for the calculation of LIBOR. In the meantime, actions by the FCA, other regulators, or law enforcement agencies may result in changes to the method by which LIBOR is calculated. Certain of the instruments governing our indebtedness calculate interest with reference to LIBOR. The discontinuation, reform or replacement of LIBOR or any other benchmark rates may have an unpredictable impact on contractual mechanics in the credit markets or disrupt the broader financial markets. Uncertainty as to the nature of such potential discontinuation, reform or replacement may negatively impact the cost of our variable rate debt.

These reforms may also result in new methods of calculating LIBOR to be established, or alternative reference rates to be established. For example, in the U.S., a group convened by the Federal Reserve Board and the Federal Reserve Bank of New York, called the Alternative Reference Rate Committee ("ARRC") and composed of a diverse set of private sector entities, has identified the Secured Overnight Financing Rate (or "SOFR") as its preferred alternative rate for the U.S. LIBOR. The Federal Reserve Bank of New York has begun publishing SOFR daily, and central banks in several other jurisdictions have also announced plans for alternative reference rates for other currencies. The potential consequences of these changes cannot be fully predicted and could have an adverse impact on the market value for LIBOR-linked debt agreements held by us and could adversely affect our financial condition and results of operations. Changes in market interest rates may influence our financing costs and could reduce our earnings and cash flows.

We are subject to cyber security risks and interruptions or failures in our information technology systems. A cyber incident could occur and result in information theft, data corruption, operational disruption, and/or financial loss.

We depend on digital technologies to process and record financial and operating data and we rely on sophisticated information technology systems and infrastructure to support our business, including process control technology. At the same time, cyber incidents, including deliberate attacks, have increased. The U.S. government has issued public warnings that indicate that energy assets might be specific targets of cyber-security threats. Our technologies, systems, and networks and those of our vendors, suppliers, and other business partners may become the target of cyber attacks or information security breaches that could result in the unauthorized release, gathering, monitoring, misuse, loss, or destruction of proprietary and other information, or other disruption of business operations. In addition, certain cyber incidents, such as surveillance, may remain undetected for an extended period. Despite our considerable expenditures and efforts to secure our systems, our systems for protecting against cyber security risks may not be sufficient. As the sophistication of cyber incidents continues to evolve, we will likely be required to expend additional resources to continue to modify or enhance our protective measures or to investigate and remediate any vulnerability to cyber incidents. Additionally, any of these systems may be susceptible to outages due to fire, floods, power loss, telecommunications failures, usage errors by employees, computer viruses, cyber attacks, or other security breaches or similar events. The failure of any of our information technology systems may cause disruptions in our operations, which could adversely affect our revenue and profitability.

We may, in the normal course of business, be subject to judicial, administrative, or other third-party proceedings that could materially and adversely affect our reputation, business, financial condition, results of operations, and liquidity.

We have in the past been, and may in the future be, named as a defendant in lawsuits, claims, and other legal proceedings during the ordinary course of our business. In the future, individuals, citizens groups, trade associations, community groups, or environmental activists may bring actions against us in connection with our operations that could interrupt or limit the scope of our business. Many of these proceedings could raise difficult and complicated factual and legal issues and are subject to uncertainties and complexities. These proceedings may seek, among other things, compensation for alleged personal injury, workers' compensation, employment discrimination, breach of contract, property damage, punitive damages, civil penalties, or other losses, consequential damages, or injunctive or declaratory relief. In addition, pursuant to our service agreements, we generally indemnify our customers for claims related to our conduct and the services we provide thereunder.

With respect to all such proceedings, we have and will when warranted in the future, accrue expenses in accordance with accounting principles generally accepted in the United States ("GAAP"). If such actions or indemnities are ultimately resolved unfavorably at amounts exceeding our accrued expenses, or at material amounts, the outcome could materially and adversely affect our reputation, business, financial condition, and results of operations. In addition, payments of significant amounts, even if reserved, could adversely affect our liquidity position.

We recognize revenue from construction contracts using the cost-to-cost input method; therefore, variations of actual results from our assumptions may reduce our profitability.

We recognize revenue from construction contracts using the cost-to-cost input method permitted under GAAP, under which we measure the percentage of revenue to be recognized in a given period by the percentage of costs incurred to date on the contract to the total estimated costs for the contract. The cost-to-cost input method therefore, relies on estimates of total expected contract costs. Contract revenue and total cost estimates are reviewed and revised on an ongoing basis as the work progresses. Adjustments arising from changes in the estimates of contracts revenue or costs are reflected in the fiscal period in which such estimates are revised. Estimates are based on management's reasonable assumptions, judgment and experience, but are subject to the risks inherent in estimates, including unanticipated delays or technical complications. Variances in actual results from related estimates on a large project, or on several smaller projects, could be material to our results of operations. The full amount of an estimated loss on a contract is recognized in the period such a loss is identified. Such adjustments and accrued losses could result in reduced profitability, which could negatively impact our financial condition and results of operations.

Our balance sheet includes a significant amount of goodwill and intangible assets. A decline in the estimated fair value of a business unit or intangible asset could result in an asset impairment charge, which would be recorded as a noncash expense in our consolidated statement of operations.

Goodwill, tradenames, customer relationships and other identifiable intangible assets must be tested for impairment at least annually. The fair value of the goodwill assigned to a business unit could decline if projected revenue or cash flows were to be lower in the future due to the timing of new awards or other causes. If the carrying value of intangible assets or of goodwill were to exceed its fair value, the asset would be written down to its fair value, with the impairment loss recognized as a noncash charge in the consolidated statement of operations.

As of December 31, 2019, we had approximately \$74.2 million of goodwill and \$92.5 million of tradenames, customer relationships and other identifiable intangibles on our balance sheet, which together represent 47% of our total assets. No impairment

was identified in 2019. Changes in the future outlook of a business unit could result in an impairment loss, which could have a material adverse effect on our results of operations and financial condition.

Risks Related to Our Common Stock

The market price of our stock may be influenced by many factors, some of which are beyond our control.

These factors include the various risks described in this section as well as the following:

- the failure of securities analysts to continue to cover our common stock or changes in financial estimates or recommendations by analysts;
- announcements by us or our competitors of significant contracts, acquisitions, or capital commitments;
- changes in market valuation or earnings of our competitors;
- variations in quarterly operating results;
- internal control failures;
- changes in management;
- availability of capital;
- general economic conditions;
- terrorist acts;
- natural disasters and pandemics
- legislation;
- future sales of our common stock; and
- investor perception of us and the power generation industry.

Additional factors that do not specifically relate to our company or the electric utility industry may also materially reduce the market price of our common stock, regardless of our operating performance.

The concentration of our capital stock will limit other stockholders' ability to influence corporate matters.

Bernhard Capital Partners Management, LP and its affiliates ("BCP") own approximately 52% of the total voting power of our outstanding shares of common stock and all of the outstanding Series A Preferred Stock ("Preferred Stock"), which is convertible at BCP's option at any time following the three-month anniversary of the issuance date into shares of common stock. As a result, BCP has the ability to exert substantial influence or actual control over our management and affairs and over most matters requiring action by our stockholders. The interests of BCP may not coincide with the interests of the other holders of our common stock. This concentration of ownership also may have the effect of delaying or preventing a change in control otherwise favored by our other stockholders, which could depress the market price of our common stock.

BCP and its respective affiliates are not limited in their ability to compete with us, and the corporate opportunity provisions in our amended and restated certificate of incorporation could enable BCP to benefit from corporate opportunities that might otherwise be available to us.

Our governing documents provide that BCP and its respective affiliates (including portfolio investments of BCP and its affiliates) are not restricted from owning assets or engaging in businesses that compete directly or indirectly with us. In particular, subject to the limitations of applicable law, our amended and restated certificate of incorporation, among other things:

- permits BCP and its respective affiliates to conduct business that competes with us and to make investments in any kind of property in which we may make investments; and
- provides that if BCP or its respective affiliates, or any employee, partner, member, manager, officer or director of BCP or its respective affiliates who is also one of our directors or officers, becomes aware of a potential business opportunity, transaction, or other matter, they will have no duty to communicate or offer that opportunity to us.

BCP or its respective affiliates may become aware, from time to time, of certain business opportunities (such as acquisition opportunities) and may direct such opportunities to other businesses in which they have invested, in which case we may not become aware of or otherwise have the ability to pursue such opportunity. Furthermore, such businesses may choose to compete with us for these opportunities, possibly causing these opportunities to not be available to us or causing them to be more expensive for us to pursue. In addition, BCP and its respective affiliates may dispose of properties or other assets in the future, without any obligation

to offer us the opportunity to purchase any of those assets. As a result, our business or prospects may be negatively affected if attractive business opportunities are procured by such parties for their own benefit rather than for ours.

We have engaged in transactions with our affiliates and it is likely that we will do so in the future. The terms of such transactions and the resolution of any conflicts that may arise may not always be in our or our stockholders' best interests.

We have engaged in transactions with affiliated companies in the past and it is likely that we will do so in the future. The terms of such transactions and the resolution of any conflicts that may arise may not always be as favorable as may be obtained with a third party.

Our amended and restated certificate of incorporation and amended and restated bylaws, as well as Delaware law, contain provisions that could discourage acquisition bids or merger proposals, which may adversely affect the market price of our common stock.

Our amended and restated certificate of incorporation authorizes our board of directors to issue preferred stock without stockholder approval. If our board of directors elects to issue preferred stock, it could be more difficult for a third party to acquire us. In addition, some provisions of our amended and restated certificate of incorporation and amended and restated bylaws could make it more difficult for a third party to acquire control of us, even if the change of control would be beneficial to our stockholders, including:

- after BCP and its affiliates no longer collectively hold more than 35% of the voting power of our common stock, providing that all vacancies, including newly created directorships, may, except as otherwise required by law or, if applicable, the rights of holders of a series of preferred stock, only be filled by the affirmative vote of a majority of directors then in office, even if less than a quorum (prior to such time, vacancies may also be filled by stockholders holding a majority of the outstanding shares entitled to vote);
- after BCP and its affiliates no longer collectively hold more than 35% of the voting power of our common stock, permitting any action by stockholders to be taken only at an annual meeting or special meeting rather than by a written consent of the stockholders, subject to the rights of any series of preferred stock concerning such rights;
- after BCP and its affiliates no longer collectively hold more than 35% of the voting power of our common stock, permitting our amended and restated certificate of incorporation and amended and restated bylaws to be amended by the affirmative vote of the holders of at least two-thirds of our then outstanding shares of stock entitled to vote thereon;
- after BCP and its affiliates no longer collectively hold more than 35% of the voting power of our common stock, permitting special meetings of our stockholders to be called only by our board of directors pursuant to a resolution adopted by the affirmative vote of a majority of the total number of authorized directors whether or not there exist any vacancies in previously authorized directorships (prior to such time, a special meeting may also be called at the request of stockholders holding a majority of the outstanding shares entitled to vote);
- after BCP and its affiliates no longer collectively hold more than 35% of the voting power of our common stock, requiring the affirmative vote of the holders of at least 75% in voting power of all then outstanding common stock entitled to vote generally in the election of directors, voting together as a single class, to remove any or all of the directors from office at any time, and directors will be removable only for "cause";
- dividing our board of directors into three classes of directors, with each class serving staggered three-year terms;
- prohibiting cumulative voting in the election of directors;
- establishing advance notice provisions for stockholder proposals and nominations for elections to the board of directors to be acted upon at meetings of stockholders; and
- providing that the board of directors is expressly authorized to adopt, or to alter or repeal our amended and restated bylaws.

Our amended and restated certificate of incorporation designates the Court of Chancery of the State of Delaware as the sole and exclusive forum for certain types of actions and proceedings that may be initiated by our stockholders, which could limit our stockholders' ability to obtain a favorable judicial forum for disputes with us or our directors, officers, employees, or agents.

Our amended and restated certificate of incorporation provides that, unless we consent in writing to the selection of an alternative forum, the Court of Chancery of the State of Delaware will, to the fullest extent permitted by applicable law, be the sole and exclusive forum for (i) any derivative action or proceeding brought on our behalf, (ii) any action asserting a claim of

breach of a fiduciary duty owed by any of our directors, officers, employees, agents, or stockholders to us or our stockholders, (iii) any action asserting a claim against us or any director, officer, employee, or agent of ours arising pursuant to any provision of the Delaware General Corporation Law (the “DGCL”), our amended and restated certificate of incorporation or our amended and restated bylaws, or (iv) any action asserting a claim that is governed by the internal affairs doctrine. Any person or entity purchasing or otherwise acquiring any interest in shares of our capital stock will be deemed to have notice of, and consented to, the provisions of our amended and restated certificate of incorporation described in the preceding sentence. This choice of forum provision may limit a stockholder’s ability to bring a claim in a judicial forum that it finds favorable for disputes with us or our directors, officers, employees, or agents, which may discourage such lawsuits against us and such persons. Alternatively, if a court were to find these provisions of our amended and restated certificate of incorporation inapplicable to, or unenforceable in respect of, one or more of the specified types of actions or proceedings, we may incur additional costs associated with resolving such matters in other jurisdictions, which could adversely affect our business, financial condition, or results of operations.

We do not intend to pay cash dividends on shares of our common stock, and our debt agreements place certain restrictions on our ability to do so. Consequently, your only opportunity to achieve a return on your investment is if the price of our common stock appreciates.

We do not plan to declare cash dividends on shares of our common stock in the foreseeable future. Additionally, our debt agreements place certain restrictions on our ability to pay cash dividends. Consequently, your only opportunity to achieve a return on your investment in us will be if you sell your common stock at a price higher than you paid for it. There is no guarantee that the price of our common stock that will prevail in the market will ever exceed the price that you paid for it.

Shares eligible for future sale may cause the market price of our common stock to drop significantly, even if our business is doing well.

The market price of our common stock could decline as a result of sales of a large number of shares of our common stock in the market or the perception that these sales could occur. These sales, or the possibility that these sales may occur, also might make it more difficult for us to sell equity securities in the future at a time and at a price that we deem appropriate.

On March 16, 2020, we issued \$26.0 million in Preferred Stock to BCP, the terms of which could adversely affect the voting power or value of our common stock.

We currently have 26,000 shares of Preferred Stock outstanding, which is convertible at BCP's option at any time following the three-month anniversary of the issuance date into shares of common stock with an initial conversion price of \$2.77 per share. Dividends will be payable quarterly basis at a rate of 13% per annum, provided that we pay dividends in-kind through the issuance of additional shares to BCP. Our Preferred Stock gives BCP a superior right to our assets upon liquidation as compared to our common stock and could adversely impact the voting power or value of our common stock. For example, our preferred stock provides BCP the right to nominate one member of the Company's board of directors and the right to veto specified transactions. Similarly, the repurchase or redemption rights or liquidation preferences assigned to BCP could affect the residual value of the common stock.

Taking advantage of the reduced disclosure requirements applicable to “emerging growth companies” may make our common stock less attractive to investors.

We qualify as an “emerging growth company” as defined in the Jumpstart Our Business Startups Act (the “JOBS Act”). An emerging growth company may take advantage of certain reduced reporting and other requirements that are otherwise applicable generally to public companies. Under these reduced disclosure requirements, emerging growth companies are not required to, among other things, comply with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act of 2002, provide certain disclosures regarding executive compensation, hold stockholder advisory votes on executive compensation, or obtain stockholder approval of any golden parachute payments not previously approved. In addition, emerging growth companies have extended phase-in periods for the adoption of new or revised financial accounting standards.

We intend to take advantage of all of the reduced reporting requirements and exemptions, including the extended phase-in periods for the adoption of new or revised financial accounting standards under Section 107 of the JOBS Act, until we are no longer an emerging growth company. Under the JOBS Act, emerging growth companies can delay adopting new or revised accounting standards until such time as those standards apply to private companies. If we were to subsequently elect instead to comply with these public company effective dates, such election would be irrevocable pursuant to Section 107 of the JOBS Act.

Our election to use the longer phase-in periods permitted by this election may make it difficult to compare our financial statements to those of non-emerging growth companies and other emerging growth companies that have opted out of the extended phase-in periods under Section 107 of the JOBS Act and who will comply with new or revised financial accounting standards. We cannot predict if investors will find our common stock less attractive because we will rely on these exemptions. If some investors find our common stock less attractive as a result, there may be a less active trading market for our common stock and our common stock price may be more volatile.

If securities or industry analysts do not publish research or reports about our business, if they adversely change their recommendations regarding our common stock, or if our operating results do not meet their expectations, our stock price could decline.

The trading market for our common stock is influenced by the research and reports that industry or securities analysts publish about us or our business. If one or more of these analysts cease coverage of our company or fail to publish reports on us regularly, we could lose visibility in the financial markets, which in turn could cause our stock price or trading volume to decline. Moreover, if one or more of the analysts who cover our company adversely changes his or her recommendation with respect to our common stock or if our operating results do not meet their expectations, our stock price could decline.

Item 1B. Unresolved Staff Comments

None.

Item 2. Properties

While many of our employees are embedded directly at our customers' power generation facilities, we lease our corporate headquarters in Louisville, Kentucky and own and lease other facilities throughout the United States where we conduct business. Our facilities are utilized for operations in both of our reportable segments and include offices, equipment yards, mines, storage, and manufacturing facilities. As of December 31, 2019, we owned two of our facilities and leased the remainder. We believe that our existing facilities are sufficient for our current needs.

Item 3. Legal Proceedings

We are party to a lawsuit filed against North Carolina by an environmental advocacy group alleging that the issuance by the state of certain permits associated with our Brickhaven clay mine reclamation site exceeded the state's power. Although the state's authority to issue the bulk of the permits (i.e., the allowance to reclaim the original site with coal ash) was upheld, the portion of the permits that allows us to "cut and prepare" an additional portion of the site was held by the North Carolina Superior Court to exceed the relevant agency's statutory authority. The North Carolina Superior Court's decision was reversed and remanded back to the North Carolina Office of Administrative Hearing ("NCOAH") due to the North Carolina Superior Court's having used an improper standard of review. While the NCOAH upheld the state's authority to issue the bulk of the permits, it too held that a portion of the permits that allowed us to "cut and prepare" an additional portion of the site was in excess of the relevant agency's authority. We have filed a petition for judicial review with the North Carolina Superior Court. All customer related work at the Brickhaven site has been completed.

Allied and its affiliate, Allied Power Resources, LLC, have been named in a collective action lawsuit filed in the U.S. District Court for the Northern District of Illinois, alleging violations of the Fair Labor Standards Act, and which includes related class claims alleging violations of the Illinois Minimum Wage Law and the Pennsylvania Minimum Wage Act for failure to pay overtime. This case is one of a series filed against companies in the oil, gas and energy industries in Illinois and Texas. The parties mediated this case in November 2018 and reached a settlement, which received conditional approval from the court. The parties are working on implementing the settlement terms and the plaintiffs in the case will submit a motion for final approval in June 2020 prior to the court's scheduled hearing.

In addition to the above matters, we are from time to time party to various lawsuits, claims and other legal proceedings that arise in the ordinary course of our business. With respect to all such lawsuits, claims and proceedings, we record reserves when it is probable a liability has been incurred and the amount of loss can be reasonably estimated. Although it is difficult to predict the outcome of these lawsuits, claims and proceedings, we do not believe that the ultimate disposition of any of these matters, individually or in the aggregate, would have a material adverse effect on our results of operations, financial position or cash flows. We maintain liability insurance for certain risks that is subject to certain self-insurance limits.

Item 4. Mine Safety Disclosures

Not applicable.

Information About Our Executive Officers

The following information is provided with respect to each of the executive officers of the Company as of March 27, 2020.

<u>Name</u>	<u>Age</u>	<u>Positions with Charah Solutions</u>
Scott A. Sewell	40	President, Chief Executive Officer and Director
Roger D. Shannon	55	Chief Financial Officer and Treasurer
Dorsey “Ron” McCall	72	Senior Vice President and Director

Scott A. Sewell—President, Chief Executive Officer and Director. Mr. Sewell has served as President and Chief Executive Officer of Charah Solutions and a member of our board of directors since January 2019. Before that, Mr. Sewell held several other leadership positions with Charah Solutions, including Chief Operating Officer from 2013 to January 2019, Senior Vice President of Operations from 2012 to 2013, Vice President of Operations from 2010 to 2012, and Operations Manager from 2008 to 2010. Before joining Charah Solutions, he worked for Bechtel Corporation from 2002 to 2007. He is a Six Sigma Yellow Belt and holds professional affiliations as a member of the Project Management Institute, the Association of Equipment Management Professionals and the International Erosion Control Association. Mr. Sewell holds a bachelor’s degree in international business from the College of Charleston in South Carolina.

Roger D. Shannon—Chief Financial Officer and Treasurer. Mr. Shannon has served as Chief Financial Officer and Treasurer of Charah Solutions since June 2019. Mr. Shannon previously served in various roles including CFO, Senior Vice President of Finance, Treasurer and Head of Corporate Development at ADTRAN, a publicly-traded provider of next-generation networking solutions. Mr. Shannon also served as CFO and Treasurer for Steel Technologies, plus a variety of senior finance roles at the Brown-Forman Corporation, British American Tobacco, and accounting positions at Vulcan Materials Company, Lexmark International and KPMG. Roger is a CPA and CFA and has a bachelor’s of science degree in accounting from Auburn University, and an MBA from the University of Georgia.

Dorsey “Ron” McCall—Senior Vice President and Director. Mr. McCall has served as Senior Vice President of Charah Solutions since 2018 and as Chief Executive Officer of Allied Power Management, LLC, a subsidiary of Charah Solutions, since he joined the Company in June 2017. Mr. McCall has also served as a member of our board of directors since January 2018. From January 2016 to June 2017, Mr. McCall worked as an independent consultant. Before that, Mr. McCall served as President of the Plant Services Division at Chicago Bridge & Iron Company N.V. (formerly The Shaw Group Inc.), a large engineering, procurement, and construction company acquired by McDermott International, Inc. in February 2018, from 2002 to January 2016 and Senior Vice President of Turner Industries’ Western Division for nearly 25 years. Mr. McCall has extensive knowledge in all aspects of project management, including nuclear outages, refinery turnarounds, and major construction and maintenance projects, both domestic and international. Mr. McCall received his bachelor’s degree in education from McNeese State University.

PART II

Item 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities

The shares of our common stock trade on the New York Stock Exchange under the symbol "CHRA."

As of March 11, 2020, there were 1,180 stockholders of record of our common stock. We have not paid dividends on our common stock to date and do not intend to pay dividends in the foreseeable future. Our debt agreements place certain restrictions on our ability to pay cash dividends. We intend to retain earnings to finance the development and expansion of our business. Payment of common stock dividends in the future will depend upon our debt covenants, our ability to generate earnings, our need for capital, our investment opportunities and our overall financial condition, among other things.

Item 6. Selected Financial Data

The table below shows selected historical consolidated and combined financial information for the periods and as of the dates indicated. On January 13, 2017, Charah Management LLC, a Delaware limited liability company ("Charah Management"), completed a transaction with BCP, a previously unrelated third party, pursuant to which BCP acquired a 76% equity position of Charah Management. Our historical financial and operating information as of and for the periods after January 13, 2017 may not be comparable to the historical financial and operating information as of and for the periods ended on or before January 12, 2017. The successor columns below represent the consolidated financial information of Charah Solutions for the year ended December 31, 2019, the consolidated and combined financial information for the year ended December 31, 2018 and the combined financial information of Charah and Allied Power Management, LLC, a Delaware limited liability company ("Allied"), for the period from January 13, 2017 through December 31, 2017, as reflected in our audited financial statements included elsewhere herein. The predecessor columns below represent the financial information of Charah Solutions for the period from January 1, 2017 through January 12, 2017 as reflected in our audited financial statements included elsewhere herein and for the year ended December 31, 2016 as reflected in our audited financial statements not included elsewhere herein. This selected financial data should be read in conjunction with "Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations" and the consolidated and combined financial statements and the related notes included elsewhere herein.

	Successor			Predecessor	
	Year Ended December 31, 2019	Year Ended December 31, 2018	Period from January 13, 2017 through December 31, 2017	Period from January 1, 2017 through January 12, 2017	Year Ended December 31, 2016
	(in thousands, except per share data)				
Statement of Operations:					
Revenue:					
Environmental Solutions	\$ 180,396	\$ 343,105	\$ 232,581	\$ 7,451	\$ 218,051
Maintenance and Technical Services	374,472	397,357	188,658	1,679	47,017
Total revenue	554,868	740,462	421,239	9,130	265,068
Cost of sales	514,492	642,734	338,908	7,301	203,228
Gross profit:					
Environmental Solutions	11,486	69,464	64,433	1,412	51,282
Maintenance and Technical Services	28,890	28,264	17,898	417	10,558
Total gross profit	40,376	97,728	82,331	1,829	61,840
General and administrative expenses	60,870	76,752	48,495	3,170	35,170
Operating (loss) income	(20,494)	20,976	33,836	(1,341)	26,670
Interest expense, net	(16,835)	(32,226)	(14,146)	(4,181)	(6,244)
Income from equity method investment	2,295	2,407	816	48	2,703
(Loss) income before income taxes	(35,034)	(8,843)	20,506	(5,474)	23,129
Income tax expense (benefit)	4,190	(2,427)	—	—	—
Net (loss) income	(39,224)	(6,416)	20,506	(5,474)	23,129
Less income attributable to non-controlling interest ⁽¹⁾	2,834	2,486	2,190	54	2,198
Net (loss) income attributable to Charah Solutions, Inc.	<u>\$ (42,058)</u>	<u>\$ (8,902)</u>	<u>\$ 18,316</u>	<u>\$ (5,528)</u>	<u>\$ 20,931</u>
Basic (loss) earnings per share	\$ (1.43)	\$ (0.33)	\$ 0.77	N/A	N/A
Diluted (loss) earnings per share	\$ (1.43)	\$ (0.33)	\$ 0.75	N/A	N/A
Pro forma net (loss) income information (unaudited):					
Net (loss) income attributable to Charah Solutions, Inc. before provision for income taxes	\$ (37,868)	\$ (11,329)	\$ 18,316	\$ (5,528)	\$ 20,931
Pro forma provision for income taxes	4,190	(2,214)	6,960	(2,101)	7,954
Pro forma net (loss) income attributable to Charah Solutions, Inc.	<u>\$ (42,058)</u>	<u>\$ (9,115)</u>	<u>\$ 11,356</u>	<u>\$ (3,427)</u>	<u>\$ 12,977</u>
Statements of Cash Flows Data:					
Cash flows provided by (used in) operating activities	\$ 68,653	\$ (13,633)	\$ 57,792	\$ (4,418)	\$ 8,351
Cash flows used in investing activities	(15,759)	(40,368)	(10,628)	—	(15,885)
Cash flows (used in) provided by financing activities	(53,666)	28,637	(19,304)	4,463	7,298
Other Financial Data:					
Adjusted EBITDA ⁽²⁾	18,140	\$ 98,772	\$ 76,430	\$ (422)	\$ 58,965
Adjusted EBITDA margin ⁽²⁾	3.3%	13.3%	18.1%	(4.6) %	22.7 %
Balance Sheet Data (as of the end of the periods indicated):					
Total assets	\$ 355,756	\$ 458,901	\$ 377,651		
Long-term debt	169,698	230,821	227,698		
Total liabilities	302,483	365,511	329,332		
Total equity	53,273	93,390	48,319		

- (1) Relates to one of our joint ventures.
- (2) Adjusted EBITDA and Adjusted EBITDA margin are non-GAAP financial measures. For a definition of Adjusted EBITDA and Adjusted EBITDA margin, as well as a reconciliation to our most directly comparable financial measures calculated and presented in accordance with GAAP, please read “—Non-GAAP Financial Measures.”

Item 7. Management’s Discussion and Analysis of Financial Condition and Results of Operations

The following discussion and analysis should be read in conjunction with the historical financial statements and the related notes included in Part II Item 8. Financial Statements and Supplementary Data. The following Management Discussion and Analysis of Financial Condition and Results of Operations included in this report provides an analysis of our financial condition and results of operations and reasons for material changes therein for the year ended December 31, 2019 as compared to the year ended December 31, 2018 (“2018”). Discussion regarding our financial condition and results of operation for 2018 as compared to the year ended December 31, 2017 is included in Part II, Item 7 Management’s Discussion and Analysis of Financial Condition and Results of Operations of our Annual Report on Form 10-K for 2018 filed with the SEC on March 27, 2019. This discussion contains “forward-looking statements” reflecting our current expectations, estimates, and assumptions concerning events and financial trends that may affect our future operating results or financial position. Actual results and the timing of events may differ materially from those contained in these forward-looking statements due to a number of factors. Factors that could cause or contribute to such differences include, but are not limited to, capital expenditures, economic and competitive conditions, regulatory changes, and other uncertainties, as well as those factors discussed below and elsewhere herein. Please read Cautionary Note Regarding Forward-Looking Statements. Also, please read the risk factors and other cautionary statements described under “Item 1A. Risk Factors” included elsewhere herein. We assume no obligation to update any of these forward-looking statements.

Charah Solutions, Inc.

Charah Solutions, Inc. (together with its subsidiaries, “Charah Solutions,” the “Company,” “we,” “us” or “our”) was formed as a Delaware corporation in January 2018 in anticipation of the IPO to be a holding company for Charah Management and Allied Power Holdings. We did not conduct any material business operations before the transactions described below under “—Initial Public Offering” other than certain activities related to the initial public offering (the “IPO”), which was completed on June 18, 2018. In connection with the closing of the IPO and pursuant to the terms and conditions of the master reorganization agreement dated June 13, 2018, Charah Management LLC, a Delaware limited liability company (“Charah Management”), and Allied Power Holdings, LLC, a Delaware limited liability company (“Allied Power Holdings”), became our wholly owned subsidiaries.

Through our ownership of Charah Management and Allied Power Holdings, we own the outstanding equity interests in Charah, LLC, a Delaware limited liability company (“Charah”) and Allied Power Management, LLC, a Delaware limited liability company (“Allied”), the subsidiaries through which we operate our businesses.

Overview

The historical financial data presented herein as of December 31, 2019 and for periods after the June 18, 2018 corporate reorganization is that of Charah Solutions, Inc. and its subsidiaries on a consolidated basis including Charah and Allied, and on a combined basis for periods prior to the June 18, 2018 corporate reorganization. Allied was formed in May 2017 and did not commence operations until July 2017.

We are a leading provider of mission-critical environmental and maintenance services to the power generation industry. We offer a suite of coal ash management and recycling, environmental remediation, and utility plant outage-related maintenance services. We also design and implement solutions for complex environmental projects (such as coal ash pond closures) and facilitate coal ash recycling through byproduct sales and other beneficial use services. We believe we are a partner-of-choice for the power generation industry due to our quality, safety, domain experience, and compliance record, all of which are key criteria for our customers. In 2019, we performed work at more than 50 coal-fired and nuclear power generation sites nationwide.

We are an environmental remediation and maintenance company and we conduct our operations through two segments: Environmental Solutions and Maintenance and Technical Services.

Environmental Solutions. Our Environmental Solutions segment includes remediation and compliance services, as well as byproduct sales. Remediation and compliance services are associated with our customers’ need for multi-year environmental improvement and sustainability initiatives, whether driven by regulatory requirements, by power generation customers initiatives, by our proactive engagement or by consumer expectations and standards. Byproduct sales support both our power generation customers’ desire to recycle their recurring and legacy volumes of coal combustion residuals (“CCRs”) commonly known as coal ash and our ultimate end customers’ need for high-quality, cost-effective raw material substitutes.

Maintenance and Technical Services. Our Maintenance and Technical Services segment includes fossil services and, from and after May 2017 when Allied was created, nuclear services. Fossil services are the recurring and mission-critical management of coal ash and the routine maintenance, outage services and staffing solutions for coal-fired power generation facilities. Nuclear services, which we market under the Allied Power brand name, include routine maintenance, outage services, facility maintenance, and staffing solutions for nuclear power generation facilities. The Maintenance and Technical Services segment offerings are most closely associated with the ongoing operations of power plants, whether in the form of daily environmental management or required maintenance services (typically during planned outages).

Initial Public Offering

On June 18, 2018, we completed the IPO of 7,352,941 shares of the Company's common stock, par value \$0.01 per share. The net proceeds of the IPO to us prior to offering expenses were approximately \$59.2 million. We used a portion of the IPO proceeds to pay off approximately \$40.0 million of the borrowings outstanding under the Term Loan, and any remaining net proceeds were used to pay offering expenses or for general corporate purposes.

How We Evaluate Our Operations

We use a variety of financial and operational metrics to assess the performance of our operations, including:

- Revenue;
- Gross Profit;
- Operating Income;
- Adjusted EBITDA; and
- Adjusted EBITDA Margin.

Revenue

We analyze our revenue by comparing actual revenue to our internal projections for a given period and to prior periods to assess our performance. We believe that revenue is a meaningful indicator of the demand and pricing for our services.

Gross Profit

We analyze our gross profit, which we define as revenue less cost of sales, to measure our financial performance. We believe gross profit is a meaningful metric because it provides insight on financial performance of our revenue streams without consideration of Company overhead. When analyzing gross profit, we compare actual gross profit to our internal projections for a given period and to prior periods to assess our performance.

Operating Income

We analyze our operating income, which we define as revenue less cost of sales and general and administrative expenses, to measure our financial performance. We believe operating income is a meaningful metric because it provides insight on profitability and operating performance based on the cost basis of our assets. We also compare operating income to our internal projections for a given period and to prior periods.

Adjusted EBITDA and Adjusted EBITDA Margin

We view Adjusted EBITDA and Adjusted EBITDA Margin, which are non-GAAP financial measures, as an important indicator of performance because they allow for an effective evaluation of our operating performance when compared to our peers, without regard to our financing methods or capital structure.

We define Adjusted EBITDA as net (loss) income before interest expense, income taxes, depreciation and amortization, equity-based compensation, non-recurring legal costs and expenses and start-up costs, the Brickhaven contract deemed termination revenue reversal and transaction-related expenses and other items. Adjusted EBITDA margin represents the ratio of Adjusted EBITDA to total revenue. See “—Non-GAAP Financial Measures” below for more information and a reconciliation of Adjusted EBITDA to net (loss) income, the most directly comparable financial measure calculated and presented in accordance with GAAP.

Key Factors Affecting Our Business and Financial Statements

Ability to Capture New Contracts and Opportunities

Our ability to grow revenue and earnings is dependent on maintaining and increasing our market share, renewing existing contracts, and obtaining additional contracts from proactive bidding on contracts with new and existing customers. We proactively

work with existing customers ahead of contract end dates to attempt to secure contract renewals. We also leverage the embedded long-term nature of our customer relationships to obtain insight into and to capture new business opportunities across our platform.

Seasonality of Business

Based on historical trends, we expect our operating results to vary seasonally. Nuclear power generators perform turnaround and outages in the off-peak months when demand is lower and generation capacity is less constrained. As a result, our nuclear services offerings may have higher revenue volume in the spring and fall months. Variations in normal weather patterns can also cause changes in the consumption of energy, which may influence the demand and timing of associated services for our fossil services offerings. Inclement weather can impact construction-related activities associated with pond and landfill remediation, which affects the timing of revenue generation for our remediation and compliance services. Our byproduct sales are also impacted during winter months when the utilization of cement and cement products is generally lower.

Project-Based Nature of Environmental Remediation Mandates

We believe there is a significant pipeline of coal ash ponds and landfills that will require remediation and/or closure in the future. Due to their scale and complexity, these environmental remediation projects are typically completed over longer periods. As a result, our revenue from these projects can fluctuate over time. Some of our revenue from projects is recognized over time using the cost-to-cost input method of accounting for GAAP purposes, based primarily on contract costs incurred to date compared to total estimated contract costs. This method is the most accurate measure of our contract performance because it depicts the company's performance in transferring control of goods or services promised to customers according to a reasonable measure of progress toward complete satisfaction of the performance obligation. The timing of revenue recorded for financial reporting purposes may differ from actual billings to customers, sometimes resulting in costs and billing in excess of actual revenue. Because of the risks in estimating gross profit margins for long-term jobs, actual results may differ from these estimates.

Byproduct Recycling Market Dynamics

There is a growing demand for recycled coal ash across a variety of applications driven by market forces and governmental regulations creating the need to dispose of coal ash in an environmentally sensitive manner. Pricing of byproduct sales is driven by supply and demand market dynamics as well as the chemical and physical properties of the ash. As demand increases for the end-products that use CCRs' (i.e., concrete for construction and infrastructure projects), the demand for recycled coal ash also typically rises. These fluctuations affect the relative demand for our byproduct sales. In recessionary periods, construction and infrastructure spending and the corresponding need for concrete may decline. However, this unfavorable effect may be partially offset by an increase in the demand for recycled coal ash during recessionary periods given that coal ash is more cost-effective than other alternatives.

Power Generation Industry Spend on Environmental Liability Management and Regulatory Requirements

The power generation industry has increased annual spending on environmental liability management. We believe this is the result of not only regulatory requirements and consumer pressure, but also the industry's increasing focus on environmental stewardship. Continued increases in spending on environmental liability management by our customers should result in increased demand for services across our platform.

Cost Management and Capital Investment Efficiency

Our main operating costs consist of labor, material and equipment costs and equipment maintenance. We maintain a focus on cost management and efficiency, including monitoring labor costs, both in terms of wage rates and headcount, along with other costs such as materials and equipment. We believe we maintain a disciplined approach to capital expenditure decisions, which are typically associated with specific contract requirements. Furthermore, we strive to extend the useful life of our equipment through the application of a well-planned routine maintenance program.

How We Generate Revenue

The Environmental Solutions segment generates revenue through our remediation and compliance services, as well as our byproduct sales. Our remediation and compliance services primarily consist of designing, constructing, managing, remediating and closing ash ponds and landfills on customer-owned sites. Our byproduct sales offerings include the recycling of recurring and contracted volumes of coal-fired power generation waste byproducts, such as bottom ash, fly ash and gypsum byproduct, each of which can be used for various industrial purposes. More than 90% of our services work is structured as time and materials, cost reimbursable or unit price contracts, which significantly reduces the risk of loss on contracts and provides gross margin visibility. Revenue from management contracts is recognized when the ash is hauled to the landfill or the management services are provided. Revenue from the sale of ash is recognized when it is delivered to the customer. Revenue from construction contracts is recognized using the cost-to-cost input method.

The Maintenance and Technical Services segment generates revenue through our fossil services and nuclear services offerings. Maintenance and Technical Services segment offerings are most closely associated with the ongoing operations of power plants, whether in the form of daily environmental management or required maintenance services (typically during planned outages). Our fossil services offerings focus on recurring and mission-critical management of coal ash and routine maintenance, outage services and staffing solutions for coal-fired power generation facilities to fulfill the environmental service need of our customers in handling their waste byproducts. Over the last five years, our renewal rate for fossil services contracts has been approximately 90%. Our nuclear services operations, which we market under the Allied Power brand name, consist of a broad platform of mission-critical professional, technical and craft services spanning the entire asset life cycle of a nuclear power generator. The services are performed on the customer's site and the contract terms typically range from three to five years. Revenue is billed and paid during the periods of time work is being executed. This combination of the maintenance and environmental-related services deepens customer connectivity and drives long-term relationships which we believe are critical for renewing existing contracts, winning incremental business from existing customers at new sites and adding new customers.

Factors Impacting the Comparability of Results of Operations

Public Company Costs

We have incurred, and expect to continue to incur, incremental recurring and certain non-recurring costs related to our transition to a publicly-traded and taxable corporation, including the costs of the IPO and the costs associated with the initial implementation and testing of our Sarbanes-Oxley Section 404 internal controls. We also have incurred, and expect to incur, additional significant and recurring expenses as a publicly-traded company, including costs associated with the employment of additional personnel, compliance under the Exchange Act, annual and quarterly reports to security holders, registrar and transfer agent fees, national stock exchange fees, audit fees, incremental director and officer liability insurance costs, and director and officer compensation

Income Taxes

Charah Solutions is a "C" corporation under the Internal Revenue Code of 1986, as amended, and, as a result, is subject to U.S. federal, state and local income taxes. In connection with the IPO, Charah and Allied, which previously were flow-through entities for income tax purposes and were indirect subsidiaries of two partnerships, Charah Management and Allied Power Holdings, respectively, became indirect subsidiaries of Charah Solutions. Prior to the contribution, Charah and Allied passed through their taxable income to the owners of the partnerships for U.S. federal and other state and local income tax purposes and, thus, were not subject to U.S. federal income taxes or other state or local income taxes, except for franchise tax at the state level (at less than 1% of modified pre-tax earnings). Accordingly, the financial data attributable to Charah and Allied prior to the contribution on June 18, 2018 contains no provision for U.S. federal income taxes or income taxes in any state or locality other than franchise taxes.

Year Ended December 31, 2019 Compared to Year Ended December 31, 2018

The table below sets forth our selected operating data for the years ended December 31, 2019 and 2018.

Successor	Year Ended December 31,		Change	
	2019	2018	\$	%
	(in thousands)			
Revenue:				
Environmental Solutions	\$ 180,396	\$ 343,105	\$ (162,709)	(47.4)%
Maintenance and Technical Services	374,472	397,357	(22,885)	(5.8)%
Total revenue	554,868	740,462	(185,594)	(25.1)%
Cost of sales	514,492	642,734	(128,242)	(20.0)%
Gross profit:				
Environmental Solutions	11,486	69,464	(57,978)	(83.5)%
Maintenance and Technical Services	28,890	28,264	626	2.2 %
Total gross profit	40,376	97,728	(57,352)	(58.7)%
General and administrative expenses	60,870	76,752	(15,882)	(20.7)%
Operating (loss) income	(20,494)	20,976	(41,470)	(197.7)%
Interest expense, net	(16,835)	(32,226)	15,391	(47.8)%
Income from equity method investment	2,295	2,407	(112)	(4.7)%
Loss before taxes	(35,034)	(8,843)	(26,191)	296.2 %
Income tax expense (benefit)	4,190	(2,427)	6,617	(272.6)%
Net loss	(39,224)	(6,416)	(32,808)	511.3 %
Less income attributable to non-controlling interest	2,834	2,486	348	14.0 %
Net loss attributable to Charah Solutions, Inc.	<u>\$ (42,058)</u>	<u>\$ (8,902)</u>	<u>\$ (33,156)</u>	<u>372.5 %</u>

Overview of Financial Results

Delays in new work awards resulting from increased project scope and complexity, the \$10.0 million revenue reversal associated with the Brickhaven contract payment (as discussed below) and unanticipated cost increases at three remediation sites led to our disappointing financial performance for the year ended December 31, 2019. As a result of long sales cycles, driven by the increase in the size, scope and complexity of remediation and compliance projects that we are bidding on, the volume of new awards in 2018 was not sufficient to offset the impact of projects completed during 2018 and 2019. The volume of new awards in 2019 on a project revenue basis, increased over those awarded in 2018. Due to project timing, however, the significant majority of revenue contributions from these new awards will be recognized in 2020 and beyond. As remediation and compliance projects have gotten larger and more complex, utility customers are seeking regulatory clarity as well as cost recovery through rate relief. Though this delay adversely impacted our 2019 results, we expect demand for our remediation and compliance services to grow as more than 1,000 ash ponds and landfills still require EPA-mandated closure or remediation.

On May 29, 2019, the ash remediation contract for our Brickhaven location was deemed terminated, consistent with our previously communicated expectations. Per the terms of the Brickhaven contract, the customer was obligated to pay us for the recovery of project development costs, expected site closure costs, and post-maintenance costs upon deemed termination. After negotiations with the customer, the amount of the recovered costs was \$80 million and the payment of these costs was received during the year ended December 31, 2019.

We continue to believe our market opportunities remain strong and are growing as we have won approximately \$583 million in new awards during the year ended December 31, 2019 as compared to \$106 million in 2018. While the projects were awarded later than anticipated, as previously disclosed, our success rate in winning awards for the year ended December 31, 2019 on a project revenue basis was ahead of the year ended December 31, 2018. Compared to last year, projects awarded in 2018 were considerably smaller in size on the basis of revenue, which negatively impacted our financial results in 2019. We believe we are well-positioned to capture a significant portion of a large and growing addressable market, although the timing of future awards is difficult to determine. Furthermore, we believe recent regulatory developments in Illinois, Indiana, Kentucky, Missouri, North Carolina, Oklahoma, South Carolina and Virginia will have a positive impact on our business operations as states are becoming more prescriptive in their requirements to remediate ash ponds. Finally, customer interest in our MP618™ thermal beneficiation technology continues to be strong, and contracts with utility customers are currently under discussion.

Our primary sources of liquidity and capital resources are cash flows generated by operating activities and borrowings under the Credit Facility (as defined below). In part due to longer sales cycles, driven by the increase in the size, scope and complexity of remediation and compliance projects that we are bidding on, we experienced unexpected contract initiation delays and project completion delays, particularly in 2019, which have adversely affected our revenue and overall liquidity. Our lengthy and complex projects require us to expend large sums of working capital, and delays in payment receipts, project commencement or project completion can adversely affect our financial position and the cash flows that normally would fund our expenditures.

See “—Liquidity and Capital Resources—Our Debt Agreements—Existing Credit Facility” below for more information about the Credit Facility and the amendments thereto.

Revenue. Revenue decreased \$185.6 million, or 25.1%, for the year ended December 31, 2019, to \$554.9 million as compared to \$740.5 million for the year ended December 31, 2018, driven primarily by a decrease in revenue in the Environmental Solutions segment. The change in revenue by segment was as follows:

Environmental Solutions Revenue. Environmental Solutions segment revenue decreased \$162.7 million, or 47.4%, for the year ended December 31, 2019, to \$180.4 million as compared to \$343.1 million for the year ended December 31, 2018. The decrease in revenue was primarily attributable to remediation and compliance project completions including the completion of the Brickhaven project resulting from the deemed termination, the \$10.0 million revenue reversal associated with the Brickhaven contract payment, and a decrease in the value of projects won in 2018, partially offset by an overall net increase in revenue from our byproduct sales.

Maintenance and Technical Services Revenue. Maintenance and Technical Services segment revenue decreased \$22.9 million, or 5.8%, for the year ended December 31, 2019, to \$374.5 million as compared to \$397.4 million for the year ended December 31, 2018. The decrease in revenue was primarily attributable to the reduced scope of nuclear outages services and fewer outages in the year ended December 31, 2019, partially offset by an overall net increase in revenue from our fossil services offerings.

Gross Profit. Gross profit decreased \$57.4 million, or 58.7%, for the year ended December 31, 2019 to \$40.4 million as compared to \$97.7 million for the year ended December 31, 2018, driven primarily by a decrease in revenue. As a percentage of revenue, gross profit was 7.3% and 13.2% for the year ended December 31, 2019 and 2018, respectively. The change in gross profit by segment was as follows:

Environmental Solutions Gross Profit. Gross profit for our Environmental Solutions segment decreased \$58.0 million, or 83.5%, for the year ended December 31, 2019, to \$11.5 million as compared to \$69.5 million for the year ended December 31, 2018. The decrease in gross profit was primarily driven by remediation and compliance project completions, the \$10.0 million revenue reversal associated with the deemed termination of the Brickhaven contract, adverse weather-related impacts and site-specific issues at three remediation sites which resulted in higher than expected costs.

Maintenance and Technical Services Gross Profit. Gross profit for our Maintenance and Technical Services segment increased \$0.6 million, or 2.2%, for the year ended December 31, 2019, to \$28.9 million as compared to \$28.3 million for the year ended December 31, 2018. The increase in gross profit overall was primarily attributable to a net increase in gross profit from our fossil services offerings.

General and Administrative Expenses. General and administrative expenses decreased \$15.9 million, or 20.7%, for the year ended December 31, 2019, to \$60.9 million as compared to \$76.8 million for the year ended December 31, 2018. The decrease was primarily attributable to a reduction in non-recurring legal costs and expenses, including \$20.0 million in reserves incurred in the year ended December 31, 2018, related to legal proceedings during that period, non-recurring start-up costs and equity-based compensation, partially offset by increased expenses due to the acquisition of SCB Materials International, Inc. and affiliated entities (“SCB”) in March 2018, increased transaction-related expenses during the year ended December 31, 2019 associated with an amendment to the Credit Facility and a decrease in amortization expense during the year ended December 31, 2019 related to our purchase option liability.

Interest Expense, Net. Interest expense, net decreased \$15.4 million, or 47.8%, for the year ended December 31, 2019, to \$16.8 million as compared to \$32.2 million for the year ended December 31, 2018. The decrease was primarily attributable to a favorable comparison as \$12.5 million of costs were incurred in conjunction with the refinancing of our debt during the year ended December 31, 2018, consisting of a \$10.4 million non-cash write-off of debt issuance costs and a \$2.1 million prepayment penalty, and a reduction in the debt balances using cash received from the Brickhaven deemed termination payment received during the year ended December 31, 2019. These decreases were partially offset by an increase in the mark-to-market expense associated with the change in the fair value of our interest rate swap.

Income from Equity Method Investment. Income from equity method investment decreased \$0.1 million, or 4.7%, for the year ended December 31, 2019, to \$2.3 million as compared to \$2.4 million for the year ended December 31, 2018. The slight decrease period-over-period was primarily attributable to a reduction in ash volumes generated by the utility and available for sale by us.

Income tax expense (benefit) Income tax expense increased by \$6.6 million for the year ended December 31, 2019, to income tax expense of \$4.2 million as compared to an income tax benefit of \$2.4 million during the year ended December 31, 2018. Based on the available evidence as of December 31, 2019, we were not able to conclude it was more likely than not certain deferred tax assets will be realized. Therefore, a valuation allowance of \$12.9 million was recorded against our deferred tax assets. The valuation allowance was partially offset by an income tax benefit associated with the increase in our loss before taxes.

Net Loss. Net loss increased \$32.8 million for the year ended December 31, 2019, to a loss of \$39.2 million as compared to \$6.4 million for the year ended December 31, 2018. The increase was primarily attributable to lower gross profit resulting from lower revenue, and an increase in income tax expense, partially offset by the decrease in general and administrative expenses and interest expense, net as discussed above.

Consolidated Balance Sheet

The following table is a summary of our overall financial position:

	As of December 31,		Change
	2019	2018	\$
	(in thousands)		
Total assets	\$ 355,756	\$ 458,901	\$ (103,145)
Total liabilities	302,483	365,511	(63,028)
Total stockholders' equity	53,273	93,390	(40,117)

Assets

Total assets decreased \$103.1 million driven primarily by a decrease in contract assets from the \$80.0 million Brickhaven deemed termination payment received during 2019, a \$11.0 million decrease in inventory from improved inventory management, a \$8.4 million decrease in intangible assets, net due to amortization, and a \$3.6 million decrease in property and equipment, net as depreciation expense and disposal of assets exceeded new additions.

Liabilities

Total liabilities decreased \$63.0 million driven by a \$49.5 million net decrease in notes payable and amounts owed under the Revolving Loan (as defined below) as proceeds from the Brickhaven deemed termination payment were used to pay down our debt balances, a \$10.9 million decrease in our asset retirement obligation associated with our maintenance and monitoring requirement payments and a \$2.9 million decrease in our purchase option liability from amortization.

Stockholders' Equity

Total stockholders' equity decreased \$40.1 million driven primarily by the \$39.2 million net loss, a \$0.4 million decrease as a result of the adoption of Accounting Standards Codification ("ASC") 606, *Revenue from Contracts with Customers*, a decrease of \$2.9 million related to distributions to our non-controlling interest, partially offset by an increase of \$2.5 million in share-based compensation.

Liquidity and Capital Resources

Our primary sources of liquidity and capital resources are cash flows generated by operating activities and borrowings under the Credit Facility. In part due to longer sales cycles, driven by the increase in the size, scope and complexity of remediation and compliance projects that we are bidding on, we have experienced unexpected contract initiation delays and project completion delays which have adversely affected our revenue and overall liquidity. Our lengthy and complex projects require us to expend large sums of working capital, and delays in payment receipts, project commencement or project completion can adversely affect our financial position and the cash flows that normally would fund our expenditures.

As of December 31, 2019, we had total liquidity of approximately \$28.9 million, comprised of \$4.9 million of cash on hand, \$19.0 million availability under the Revolving Loan and \$5.0 million of delayed draw availability under the Term Loan.

Cash Flows

Year Ended December 31, 2019 Compared to Year Ended December 31, 2018

Successor	Year Ended December 31,		Change
	2019	2018	\$
	(in thousands)		
Cash flows provided by (used in) operating activities	\$ 68,653	\$ (13,633)	\$ 82,286
Cash flows used in investing activities	(15,759)	(40,368)	\$ 24,609
Cash flows (used in) provided by financing activities	(53,666)	28,637	\$ (82,303)

Operating Activities

Net cash provided by (used in) operating activities increased \$82.3 million for the year ended December 31, 2019, to \$68.7 million of net cash provided by operating activities as compared to \$13.6 million of net cash used in operating activities for the year ended December 31, 2018. The change in cash flows provided by (used in) operating activities was primarily attributable to the \$80.0 million Brickhaven deemed termination payment received during the year ended December 31, 2019, a decrease of \$10.8 million in cash paid for interest due to the debt refinancing during the year ended December 31, 2018, a decrease in cash paid for income taxes during the year ended December 31, 2019 of \$5 million and improvements in working capital items from the year-over-year change in inventory of \$16.8 million. These decreases were partially offset by an increase in net loss of \$33.2 million.

Investing Activities

Net cash used in investing activities decreased \$24.6 million for the year ended December 31, 2019, to \$15.8 million as compared to \$40.4 million for the year ended December 31, 2018. The change in cash flows used in investing activities was primarily attributable to \$20.0 million used for business acquisitions during the year ended December 31, 2018, net of cash received, and a decrease in capital expenditures, net of proceeds, of \$4.6 million.

Financing Activities

Net cash (used in) provided by financing activities increased \$82.3 million for the year ended December 31, 2019, to \$54 million of net cash used in financing activities as compared to \$28.6 million of net cash provided by financing activities for the year ended December 31, 2018. The change in cash flows (used in) provided by financing activities was primarily attributable to the \$59.2 million in proceeds received during the year ended December 31, 2018 from the issuance of common stock resulting from our IPO. In addition, there was a net increase of \$30.5 million in debt related payments during the year ended December 31, 2019. These decreases were partially offset by a \$7.5 million reduction in debt and IPO related costs as \$1.4 million was paid during the year ended December 31, 2019 as compared to \$8.9 million paid during the year ended December 31, 2018.

Working Capital

Our working capital, which we define as total current assets less total current liabilities, totaled a working capital deficit of \$16.1 million and working capital of \$74.1 million as of December 31, 2019 and 2018, respectively. This decrease in net working capital for the year ended December 31, 2019 was primarily due to decreases in contract assets from the Brickhaven deemed termination, decreases in inventory resulting from the timing of activities between periods and improved inventory management and increases in notes payable, current maturities, related to the Third Amendment (as discussed below).

Our Debt Agreements

Former Credit Agreement

On October 25, 2017, we entered into a credit agreement (the “2017 Credit Agreement”) by and among us, the lenders party thereto from time to time and Regions Bank, as administrative agent. The 2017 Credit Agreement provided for a revolving credit facility (the “2017 Credit Facility”) with a principal amount of up to \$45.0 million. The 2017 Credit Facility permitted extensions of credit up to the lesser of \$45.0 million and a borrowing base that was calculated by us based upon a percentage of the value of our eligible accounts receivable and eligible inventory and approved by the administrative agent.

The interest rates per annum applicable to the loans under the 2017 Credit Facility were based on a fluctuating rate of interest measured by reference to, at our election, either (i) an adjusted London Inter-bank Offered Rate (“LIBOR”) plus a 2.00% borrowing margin or (ii) an alternative base rate plus a 1.00% borrowing margin. Customary fees were payable in respect of the 2017 Credit Facility and included (a) commitment fees in an amount equal to 0.50% of the daily unused portions of the 2017 Credit Facility and (b) a 2.00% fee on outstanding letters of credit. The 2017 Credit Facility contained various representations and warranties and restrictive covenants. If excess availability under the 2017 Credit Facility fell below the greater of 15% of the loan cap amount or \$6.75 million, we were required to comply with a minimum fixed charge coverage ratio of 1.0 to 1.0. The 2017 Credit Facility did not otherwise contain financial maintenance covenants.

The 2017 Credit Facility had a scheduled maturity date of October 25, 2022; however, all amounts outstanding were repaid in September 2018 as a result of the refinancing discussed below.

Former CS Term Loan

On October 25, 2017, we entered into a credit agreement by and among us, the lenders party thereto from time to time and Credit Suisse AG, Cayman Islands Branch, as administrative agent, providing for a term loan (the “2017 CS Term Loan”) with an initial commitment of \$250.0 million. The 2017 CS Term Loan provided that we had the right at any time to request incremental term loans up to the greater of (i) the excess, if any, of \$25.0 million over the aggregate amount of all incremental 2017 Credit Facility commitments and incremental 2017 CS Term Loan commitments previously utilized and (ii) such other

amount so long as such amount at such time could be incurred without causing the pro forma consolidated secured leverage ratio (as defined in the credit agreement governing the 2017 CS Term Loan) to exceed 3.25 to 1.00.

The interest rates per annum applicable to the loans under the 2017 CS Term Loan were based on a fluctuating rate of interest measured by reference to, at our election, either (i) LIBOR plus a 6.25% borrowing margin or (ii) an alternative base rate plus a 5.25% borrowing margin. The 2017 CS Term Loan contained various customary representations and warranties and restrictive covenants. In addition, we were required to comply with a maximum senior secured net leverage ratio of 5.00 to 1.00 beginning March 31, 2018, decreasing to 4.50 to 1.00 as of March 31, 2019, and further decreasing to 4.00 to 1.00 as of March 31, 2020 and thereafter. The principal amount of the 2017 CS Term Loan amortized at a rate of 7.5% per annum with all remaining outstanding amounts under the 2017 CS Term Loan due on the 2017 CS Term Loan maturity date. We received net proceeds from the IPO of \$59.2 million prior to deducting offering expenses. We used these net proceeds to pay offering expenses and to pay off \$40.0 million of the borrowings outstanding under the 2017 CS Term Loan, which would otherwise have been required in June 2020.

The 2017 CS Term Loan had a scheduled maturity date of October 25, 2024; however, all amounts outstanding were repaid in September 2018 as a result of the refinancing discussed below.

Existing Credit Facility

On September 21, 2018, we entered into a credit agreement (the “Credit Facility”) by and among us, the lenders party thereto from time to time, and Bank of America, N.A., as administrative agent (the “Administrative Agent”). The Credit Facility includes:

- A revolving loan not to exceed \$50.0 million (the “Revolving Loan”);
- A term loan of \$205.0 million (the “Closing Date Term Loan”); and
- A commitment to loan up to a further \$25.0 million, which expires in March 2020 (the “Delayed Draw Commitment” and the term loans funded under such Delayed Draw Commitment, the “Delayed Draw Term Loan,” together with the Closing Date Term Loan, the “Term Loan”).

After the Third Amendment all amounts associated with the Revolving Loan and the Term Loan under the Credit Facility will mature in July 2022, as discussed more fully below. The interest rates per annum applicable to the loans under the Credit Facility are based on a fluctuating rate of interest measured by reference to, at our election, either (i) the Eurodollar rate, currently LIBOR, or (ii) an alternative base rate. Various margins are added to the interest rate based upon our consolidated net leverage ratio (as defined in the Credit Facility). Customary fees are payable in respect of the Credit Facility and include (i) commitment fees for the unused portions of the Credit Facility and (ii) fees on outstanding letters of credit. Amounts borrowed under the Credit Facility are secured by substantially all of the assets of the Company.

The Credit Facility contains various customary representations and warranties, and restrictive covenants that, among other things and subject to specified exceptions, restrict the ability of us and our restricted subsidiaries to grant liens, incur indebtedness (including guarantees), make investments, engage in mergers and acquisitions, make dispositions of assets, make restricted payments or change the nature of our or our subsidiaries' business. The Credit Facility contains financial covenants related to the consolidated net leverage ratio and the fixed charge coverage ratio (as defined in the Credit Facility), which have been modified as described below.

The Credit Facility also contains certain affirmative covenants, including reporting requirements, such as the delivery of financial statements, certificates and notices of certain events, maintaining insurance and providing additional guarantees and collateral in certain circumstances.

The Credit Facility includes customary events of default, including non-payment of principal, interest or fees as they come due, violation of covenants, inaccuracy of representations or warranties, cross-default to certain other material indebtedness, bankruptcy and insolvency events, invalidity or impairment of guarantees or security interests, material judgments and change of control.

The Revolving Loan provides a principal amount of up to \$50.0 million, reduced by outstanding letters of credit. As of December 31, 2019, \$19.0 million was outstanding on the Revolving Loan and \$12.0 million in letters of credit were outstanding.

But for Amendment No. 2 to Credit Agreement and Waiver (the “Second Amendment”), as of June 30, 2019, we would not have been in compliance with the requirement to maintain a consolidated net leverage ratio of 3.75 to 1.00 under the Credit Facility. On August 13, 2019, we entered into the Second Amendment, pursuant to which, among other things, the required lenders agreed to waive such non-compliance.

In addition, pursuant to the terms of the Second Amendment, the Credit Facility was amended to revise the required financial covenant ratios, which have been modified as described below. As consideration for these accommodations, we agreed that amounts borrowed pursuant to the Delayed Draw Commitment would not exceed \$15.0 million at any one time outstanding

(without reducing the overall Delayed Draw Commitment amount). Further, the margin of interest charged on all outstanding loans was increased to 4.00% for loans based on LIBOR and 3.00% for loans based on the alternative base rate. The Second Amendment revised the amount of (i) the commitment fees to 0.35% at all times for the unused portions of the Credit Facility and (ii) fees on outstanding letters of credit to 3.35% at all times. The Second Amendment also added a requirement to make two additional scheduled prepayments of outstanding loans under the Credit Facility, including a payment of \$50.0 million on or before September 13, 2019 and an additional payment of \$40.0 million on or before March 31, 2020. The \$50.0 million payment was made before September 13, 2019, using proceeds of the Brickhaven deemed termination payment.

The Second Amendment also included revisions to the restrictive covenants, including removing certain exceptions to the restrictions on our ability to make acquisitions, to make investments and to make dividends or other distributions. After giving effect to the Second Amendment, we will not be permitted to make any distributions or dividends to our stockholders without the consent of the required lenders.

After the end of our fiscal year, ended December 31, 2019, in March 2020, the Company entered into Amendment No. 3 to Credit Agreement (the "Third Amendment").

Pursuant to the terms of the Third Amendment, the Credit Facility was amended to waive the mandatory \$40.0 million prepayment due on or before March 31, 2020, and to revise the required financial covenant ratios such that, after giving effect to the Third Amendment, we are not required to comply with any financial covenants through December 30, 2020. After December 30, 2020, we will be required to comply with a maximum consolidated net leverage ratio of 6.50 to 1.00 from December 31, 2020 through June 29, 2021, decreasing to 6.00 to 1.00 from June 30, 2021 through December 30, 2021, and to 3.50 to 1.00 as of December 31, 2021 and thereafter. After giving effect to the Third Amendment, we will also be required to comply with a minimum fixed charge coverage ratio of 1.00 to 1.00 as of December 31, 2020, increasing to 1.20 to 1.00 as of March 31, 2021 and thereafter. In the event that we are unable to comply in the future with such financial covenants upon delivery of our financial statements pursuant to the terms of the Credit Facility, an Event of Default (as defined in the Credit Facility) will have occurred and the Administrative Agent can then, following a specified cure period, declare the unpaid principal amount of all outstanding loans, all interest accrued and unpaid thereon, and all other amounts payable to be immediately due and payable by the Company.

The Third Amendment increased the maximum amount available to be borrowed pursuant to the Delayed Draw Commitment from \$15.0 million to \$25.0 million, subject to certain quarterly amortization payments. The Third Amendment also included revisions to the restrictive covenants, including increasing the amount of indebtedness that the Company may incur in respect of certain capitalized leases from \$50.0 million to \$75.0 million.

Under the Third Amendment, the Company has agreed to make monthly amortization payments in respect of term loans beginning in April 2020, and to move the maturity date for all loans under the Credit Agreement to July 31, 2022 (the "Maturity Date"). In addition, if at any time after August 13, 2019, the outstanding principal amount of the Delayed Draw Term Loans exceeds \$10.0 million, we will incur additional interest at a rate equal to 10.0% per annum on all daily average amounts exceeding \$10.0 million payable at March 31, 2020 and the Maturity Date. Further, the Third Amendment requires mandatory prepayments of revolving loans with any cash held by the Company in excess of \$10.0 million, which excludes the amount of proceeds received in respect of the Preferred Stock Offering (as defined below) to the extent such funds are used for liquidity and general corporate purposes. The Company has also agreed to an increase of four percent (4%) to the interest rate applicable to the Closing Date Term Loan that will be compounded monthly and paid in kind by adding such portion to the outstanding principal amount.

As a condition to entering into the Second Amendment, we are required to pay the Administrative Agent an amendment fee (the "Second Amendment Fee") in an amount equal to 1.50% of the total credit exposure under the Credit Agreement, immediately prior to the effectiveness of the Second Amendment. Of the Second Amendment Fee, 0.50% was due and paid on October 15, 2019, and 1.00% of such Second Amendment Fee will become due and payable on August 16, 2020 if the facility has not been terminated on or prior to August 15, 2020. We are also required to pay the Administrative Agent an amendment fee associated with the Third Amendment (the "Third Amendment Fee") in an amount equal to 0.20% of the total credit exposure under the Credit Agreement, immediately prior to the effectiveness of the Third Amendment, with such Third Amendment Fee being due and payable on June 30, 2020. Finally, we will also pay an additional fee with respect to the Third Amendment in the amount of \$2.0 million with such fee being due and payable on the Maturity Date; provided that if the facility is terminated by December 31, 2020, 50% of this fee shall be waived.

As a condition to the Third Amendment, the Company entered into an agreement with an investment fund affiliated with Bernhard Capital Partners Management, LP ("BCP" or the "Holder") to sell 26,000 shares of Series A Preferred Stock, par value \$0.01 (the "Preferred Stock") for approximately \$25.2 million in a private placement (the "Preferred Stock Offering"). The Preferred Stock will have an initial liquidation preference of \$1,000 per share and will pay a dividend at the rate of 10% per annum in cash, or 13% if the Company elects to pay dividends in kind by adding such amount to the liquidation preference. The Company's intention is to pay dividends in kind for the foreseeable future. Proceeds from the Preferred Stock Offering will be used for liquidity and general corporate purposes.

Following the three-month anniversary of the date of issuance, the Preferred Stock may be converted at the option of the holders into shares of the Company's common stock at a conversion price of \$2.77 per share (the "Conversion Price"), which represents a 30% premium to the 20-day volume-weighted average price ended March 4, 2020. Following the third anniversary of the date of issuance, the Company may, subject to certain requirements, give notice to the holders of the Preferred Stock of the Company's intent to mandatorily convert the Preferred Stock, and the holders of the Preferred Stock will have the option to either agree to such conversion or force the Company to redeem the Preferred Stock for cash. Following the seven-year anniversary of the date of issuance, the holders shall have the right, subject to applicable law, to require the Company at any time to redeem the Preferred Stock, in whole or in part, from any source of funds legally available for such purpose.

In connection with certain change of control transactions, the holders of the Preferred Stock will be entitled to cause the Company to repurchase the Preferred Stock for cash in an amount equal to the greater of (i) the liquidation preference plus accrued and unpaid dividends (plus, a make-whole premium equal to the net present value of dividend payments through the third anniversary of the issue date, for any transaction occurring prior to such date, subject to certain limitations) and (ii) the amount each holder would be entitled to receive if the Preferred Stock were converted prior to such transaction. The Company will have the right to redeem the Preferred Stock starting on the third anniversary of the issue date at the greater of (i) the closing sale price multiplied by the number of shares of common stock issuable upon conversion and (ii) certain premiums to the liquidation preference that will decrease each year following the third anniversary of the issuance date.

From April 5, 2020, until conversion, the holders of the Preferred Stock will vote together with Company's common stock on an as-converted basis and will also have rights to vote on certain matters impacting the Preferred Stock. After April 5, 2020, the holders of the Preferred Stock will have the right to either elect one member to the Company's board of directors or appoint one non-voting board observer.

Equipment Financing Facilities

We have entered into various equipment financing arrangements to finance the acquisition of certain equipment (the "Equipment Financing Facilities"). As of December 31, 2019, we had \$36.3 million of equipment notes outstanding. Each of the Equipment Financing Facilities include non-financial covenants, and, as of December 31, 2019, we were in compliance with all such covenants.

Contractual and Commercial Commitments

The following table summarizes our contractual obligations and commercial commitments as of December 31, 2019 and reflects the waiver of the mandatory \$40.0 million prepayment due on or before March 31, 2020 and the new payment terms noted in the Third Amendment:

	Total	2020	2021	2022	2023	2024	Thereafter
	(in thousands)						
Term Loan	\$ 152,187	\$ 18,647	\$ 15,448	\$ 118,092	\$ —	\$ —	\$ —
Revolving Loan	19,000	—	—	19,000	—	—	—
Equipment Financing Facilities	36,319	15,720	6,108	6,424	5,217	2,472	378
Commercial insurance financing agreement	506	506	—	—	—	—	—
Interest on Outstanding Loans	22,253	9,480	8,066	4,313	301	89	4
Operating Lease Obligations ⁽¹⁾	21,008	7,396	4,734	3,965	3,426	1,389	98
Credit Facility Amendment fees ⁽²⁾	1,439	439	—	1,000	—	—	—
Minimum Royalty and purchase obligations	54,634	9,948	11,721	11,821	11,196	9,218	730
Total ⁽³⁾	<u>\$ 307,346</u>	<u>\$ 62,136</u>	<u>\$ 46,077</u>	<u>\$ 164,615</u>	<u>\$ 20,140</u>	<u>\$ 13,168</u>	<u>\$ 1,210</u>

(1) We lease equipment and office facilities under non-cancellable operating leases.

(2) Represents minimum fees required that are not contingent upon potential changes to the Maturity Date.

(3) Contingent payments for acquisitions and the asset retirement obligation are not included in the table above because the timing of such payments is uncertain. There are no uncertain tax positions.

Non-GAAP Financial Measures

Adjusted EBITDA

Adjusted EBITDA and Adjusted EBITDA margin are not financial measures determined in accordance with GAAP.

We define Adjusted EBITDA as net (loss) income before interest expense, income taxes, depreciation and amortization, equity-based compensation, non-recurring legal costs and expenses and start-up costs, the Brickhaven contract deemed termination

revenue reversal, and transaction-related expenses and other items. Adjusted EBITDA margin represents the ratio of Adjusted EBITDA to total revenue.

We believe Adjusted EBITDA and Adjusted EBITDA margin are useful performance measures because they allow for an effective evaluation of our operating performance when compared to our peers, without regard to our financing methods or capital structure. We exclude the items listed above from net (loss) income in arriving at Adjusted EBITDA because these amounts are either non-recurring or can vary substantially within our industry depending upon accounting methods and book values of assets, capital structures and the method by which the assets were acquired. Adjusted EBITDA should not be considered as an alternative to, or more meaningful than, net (loss) income determined in accordance with GAAP. Certain items excluded from Adjusted EBITDA are significant components in understanding and assessing a company's financial performance, such as a company's cost of capital and tax structure, as well as the historic costs of depreciable assets, none of which are reflected in Adjusted EBITDA. Our presentation of Adjusted EBITDA should not be construed as an indication that our results will be unaffected by the items excluded from Adjusted EBITDA. Our computations of Adjusted EBITDA may not be identical to other similarly titled measures of other companies. We use Adjusted EBITDA margin to measure the success of our business in managing our cost base and improving profitability. The following table presents a reconciliation of Adjusted EBITDA to net (loss) income, our most directly comparable financial measure calculated and presented in accordance with GAAP, along with our Adjusted EBITDA margin.

The successor columns below represent the consolidated financial information of Charah Solutions for the years ended December 31, 2019 and 2018 and the combined financial information of Charah and Allied for the period from January 13, 2017 through December 31, 2017, and the predecessor column below represents the financial information of Charah for the period from January 1, 2017, through January 12, 2017, each as reflected in our audited financial statements included elsewhere herein.

	Successor			Predecessor
	Year Ended December 31, 2019	Year Ended December 31, 2018	Period from January 13, 2017 through December 31, 2017	Period from January 1, 2017 through January 12, 2017
	(in thousands)			
Net (loss) income attributable to Charah Solutions, Inc.	\$ (42,058)	\$ (8,902)	\$ 18,316	\$ (5,528)
Interest expense, net	16,835	32,226	14,146	4,181
Income tax expense (benefit)	4,190	(2,427)	—	—
Depreciation and amortization	23,437	42,308	25,719	763
Elimination of certain non-recurring legal costs and expenses ⁽¹⁾	(2,231)	25,428	8,650	—
Elimination of certain non-recurring start-up costs ⁽²⁾	—	1,480	6,167	—
Equity-based compensation	2,513	4,127	2,429	—
Brickhaven contract deemed termination revenue reversal	10,000	—	—	—
Transaction related expenses and other items ⁽³⁾	5,454	4,532	1,003	162
Adjusted EBITDA	<u>\$ 18,140</u>	<u>\$ 98,772</u>	<u>\$ 76,430</u>	<u>\$ (422)</u>
Adjusted EBITDA margin ⁽⁴⁾	<u>3.3%</u>	<u>13.3%</u>	<u>18.1%</u>	<u>(4.6)%</u>

- (1) Represents non-recurring legal costs and expenses, which amounts are not representative of those that we historically incur in the ordinary course of our business. Negative amounts represent insurance recoveries related to these matters.
- (2) Represents non-recurring start-up costs associated with the start-up of Allied and our nuclear services offerings, including the setup of financial operations systems and modules, pre-contract expenses to obtain initial contracts, and the hiring of operational staff. Because these costs are associated with the initial setup of the Allied business to initiate the operations involved in our nuclear services offerings, these costs are non-recurring in the normal course of our business.
- (3) Represents SCB transaction expenses, executive severance costs, IPO-related costs, expenses associated with the Amendment to the Credit Facility and other miscellaneous items.
- (4) Adjusted EBITDA margin is a non-GAAP financial measure that represents the ratio of Adjusted EBITDA to total revenue. We use Adjusted EBITDA margin to measure the success of our businesses in managing our cost base and improving profitability.

Critical Accounting Policies and Estimates

Our financial statements are prepared in accordance with GAAP. In connection with preparing our financial statements, we are required to make assumptions and estimates about future events, and apply judgments that affect the reported amounts of assets, liabilities, revenue, expense, and the related disclosures. We base our assumptions, estimates, and judgments on historical experience, current trends and other factors that management believes to be relevant at the time we prepare our consolidated and combined financial statements. On a regular basis, management reviews the accounting policies, assumptions, estimates, and judgments to ensure that our consolidated combined financial statements are presented fairly and in accordance with GAAP. However, because future events and their effects cannot be determined with certainty, actual results could differ materially from our assumptions and estimates.

Our significant accounting policies are described in Note 2 to our consolidated and combined financial statements included herein. Our critical accounting policies are described below to provide a better understanding of our estimates and assumptions about future events that affect the amounts reported in the consolidated and combined financial statements and accompanying notes. Significant accounting estimates are important to the representation of our financial position and results of operations and involve our most difficult, subjective or complex judgments. We base our estimates on historical experience and on various other assumptions we believe to be reasonable according to the current facts and circumstances through the date of the issuance of our financial statements.

Revenue

We adopted Accounting Standards Codification Topic 606: *Revenue from Contracts with Customers* ("ASC 606") on January 1, 2019. Accordingly, we revised our accounting policy on revenue recognition from the policy provided in the notes to our consolidated and combined financial statements included in our Annual Report on Form 10-K for the year ended December 31, 2018. Our revised accounting policy on revenue recognition is provided in Note 2 to our consolidated and combined financial statements for the year ended December 31, 2019 contained herein.

To determine revenue recognition for contracts, we evaluate whether two or more contracts should be combined and accounted for as one single contract and whether the combined or single contract should be accounted for as more than one performance obligation. This evaluation requires significant judgment and the decision to combine a group of contracts or separate a combined or single contract into multiple performance obligations could change the amount of revenue and profit recorded in a given period. Contracts are considered to have a single performance obligation if the promise to transfer the individual goods or services is not separately identifiable from other promises in the contracts primarily because we provide a service that involves multiple inter-related and integrated tasks to achieve the completion of a specific, single project. For contracts with multiple performance obligations, we allocate the transaction price to each performance obligation using our best estimate of the stand-alone selling price of each distinct good or service in the contract.

For sales and service contracts where we have the right to consideration from the customer in an amount that corresponds directly with the value received by the customer based on our performance to date, revenue is recognized at a point in time when services are performed and contractually billable. Certain service contracts contain provisions dictating fluctuating rates per unit for the certain services in which the rates are not directly related to changes in the Company's effort to perform under the contract. We recognize revenue based on the stand-alone selling price per unit for such contracts, calculated as the average rate per unit over the term of those contractual rates. This creates a contract asset or liability for the difference between the revenue recognized and the amount billed to the customer.

Under the typical payment terms of our services contracts, amounts are billed as work progresses in accordance with agreed-upon contractual terms, at periodic intervals (e.g., weekly, biweekly or monthly).

We recognize revenue over time, as performance obligations are satisfied, for substantially all of our construction contracts due to the continuous transfer of control to the customer. For most of our construction contracts, the customer contracts with us to provide a service that involves multiple inter-related and integrated tasks to achieve the completion of a specific, single project and are therefore accounted for as a single performance obligation. We recognize revenue using the cost-to-cost input method, based primarily on contract costs incurred to date compared to total estimated contract costs. This method is the most accurate measure of our contract performance because it depicts the company's performance in transferring control of goods or services promised to customers according to a reasonable measure of progress toward complete satisfaction of the performance obligation.

Contract costs include all direct material, labor and subcontractor costs and indirect costs related to contract performance. For costs incurred that do not relate directly to transferring a service to the customer, they are excluded from the input method used to recognize revenue. Project mobilization costs are generally charged to the project as incurred when they are an integrated part of the performance obligation being transferred to the client. Pre-contract costs are expensed as incurred unless they are expected to be recovered from the client.

It is common for our contracts to contain contract provisions that give rise to variable consideration such as unpriced change orders or volume discounts that may either increase or decrease the transaction price. We estimate the amount of variable consideration at the expected value or most likely amount, depending on which is determined to be more predictive of the amount to which the Company will be entitled. Variable consideration is included in the transaction price when it is probable that a significant reversal of cumulative revenue recognized will not occur or when the uncertainty associated with the variable consideration is resolved. Our estimates of variable consideration and determination of whether to include such amounts in the transaction price are based largely on our assessment of legal enforceability, anticipated performance, industry business practices, and any other information (historical, current or forecasted) that is reasonably available to us. Variable consideration associated with unapproved change orders is included in the transaction price only to the extent of costs incurred.

We provide limited warranties to customers for work performed under our contracts. Such warranties are not sold separately, provide assurance that the services comply with the agreed-upon specifications and legal requirements and do not provide customers with a service in addition to assurance of compliance with agreed-upon specifications. Accordingly, these types of warranties are not considered to be separate performance obligations. Historically, warranty claims have not resulted in material costs incurred by the Company.

Due to the nature of the work required to be performed on many of our performance obligations, the estimation of total revenue and cost at completion is complex, subject to many variables and requires significant judgment. As a significant change in one or more of these estimates could affect the profitability of our contracts, we routinely review and update our contract-related estimates through a disciplined project review process in which management reviews the progress and execution of our performance obligations and the estimated costs at completion. As part of this process, management reviews information including, but not limited to, outstanding contract matters, progress towards completion, program schedule and the associated changes in estimates of revenue and costs. Management must make assumptions and estimates regarding the availability and productivity of labor, the complexity of the work to be performed, the availability and cost of materials, the performance of subcontractors, and the availability and timing of funding from the customer, along with other risks inherent in performing services under all contracts where we recognize revenue over-time using the cost-to-cost method.

We recognize changes in contract estimates on a cumulative catch-up basis in the period in which the changes are identified. Such changes in contract estimates can result in the recognition of revenue in a current period for performance obligations which were satisfied or partially satisfied in prior periods. Changes in contract estimates may also result in the reversal of previously recognized revenue if the current estimate differs from the previous estimate. If at any time the estimate of contract profitability indicates an anticipated loss on the contract, we recognize the total loss in the period it is identified.

Contracts are often modified to account for changes in contract specifications and requirements. Most of our contract modifications are for goods or services that are not distinct from existing contracts due to the significant integration provided in the context of the contract and are accounted for as if they were part of the original contract. The effect of a contract modification on the transaction price and our measure of progress for the performance obligation to which it relates, is recognized as an adjustment to revenue (either as an increase in or a reduction of revenue) on a cumulative catch-up basis. We account for contract modifications when the modification results in the promise to deliver additional goods or services that are distinct and the increase in the price of the contract is for the same amount as the stand-alone selling price of the additional goods or services included in the modification.

We evaluate our contracts whether we are acting as the principal or as the agent when providing services, which we consider in determining if revenue should be reported on a gross or net basis. We determine the Company to be a principal if we control the specified service before that service is transferred to a customer.

Billing practices are governed by the contract terms of each project based upon costs incurred, the achievement of milestones or predetermined schedules. Billings do not necessarily correlate with revenue recognized over time using the cost-to-cost input method. Contract assets include unbilled amounts typically resulting from revenue under long-term contracts when the revenue recognized exceeds the amount billed to the customer. Contract liabilities consist of advance payments and billings in excess of revenue recognized as well as deferred revenue.

Contract assets also include retainage, which represents amounts withheld by our clients from billings pursuant to provisions in the contracts and may not be paid to us until the completion of specific tasks or the completion of the project and, in some instances, for even longer periods.

Our contract assets and liabilities are reported in a gross position on a contract-by-contract basis at the end of each reporting period. We include in current assets and liabilities contract assets and liabilities, which may extend beyond one year.

Goodwill

Goodwill represents the cost of an acquisition purchase price over the fair value of acquired net assets, and such amounts are reported separately as goodwill on our consolidated and combined balance sheets. Our total goodwill resulted from the

application of “push-down” accounting associated with BCP’s January 2017 acquisition of a controlling equity position in Charah Management and the acquisition of certain assets and liabilities of SCB.

Goodwill is not amortized, but instead is tested for impairment at least annually, as of October 1st of each year, or more often if events or circumstances indicate that goodwill might be impaired. Goodwill is tested at the reporting unit level. We may elect to perform a qualitative assessment for our reporting units to determine whether it is more likely than not that the fair value of the reporting unit is greater than its carrying value. If a qualitative assessment is not performed, or if as a result of a qualitative assessment it is not more likely than not that the fair value of a reporting unit exceeds its carrying value, then the reporting unit’s fair value is compared to its carrying value. Fair value is typically estimated using an income approach based on discounted cash flows. However, when appropriate, we may also use a market approach. The income approach is based on the long-term projected future cash flows of the reporting units. We discount the estimated cash flows to present value using a weighted average cost of capital that considers factors such as market assumptions, the timing of the cash flows, and the risks inherent in those cash flows. We believe that this approach is appropriate because it provides a fair value estimate based upon the reporting units’ expected long-term performance considering the economic and market conditions that generally affect our business. The market approach estimates fair value by measuring the aggregate market value of publicly traded companies with similar characteristics to our business as a multiple of their reported earnings. We then apply that multiple to the reporting units’ earnings to estimate their fair values. We believe that this approach may also be appropriate in certain circumstances because it provides a fair value estimate using valuation inputs from entities with operations and economic characteristics comparable to our reporting units. Fair value is computed using several factors, including projected future operating results, economic projections, anticipated future cash flows, comparable marketplace data, and the cost of capital. There are inherent uncertainties related to these factors and to our judgment in applying them in our analysis. However, we believe our methodology for estimating the fair value of our reporting units is reasonable. If the carrying value of a reporting unit exceeds its fair value, goodwill is written down to its implied fair value.

The Company performed quantitative assessments of its Environmental Solutions and Maintenance and Technical Services reporting units as of October 1, 2019. The Environmental Solutions and Maintenance and Technical Services reporting units’ fair values, as calculated, were approximately 6.8% and 143.3%, respectively, greater than their book values as of October 1, 2019.

The valuation used to test goodwill for impairment is dependent upon a number of significant estimates and assumptions, including macroeconomic conditions, growth rates, competitive activities, cost containment, margin expansion and the Company’s business plans. We believe these estimates and assumptions are reasonable. However, future changes in the judgments, assumptions and estimates that are used in our impairment testing for goodwill, including discount and tax rates or future cash flow projections, could result in significantly different estimates of the fair values. As a result of these factors and the related cushion as of the date of the previous annual impairment test, goodwill for the Environmental Solutions reporting unit is more susceptible to impairment risk.

The most significant assumptions utilized in the determination of the estimated fair value of the Environmental Solutions reporting unit are the net sales and earnings growth rates (including residual growth rates) and the discount rate. The residual growth rate represents the rate at which the reporting unit is expected to grow beyond the shorter-term business planning period. The residual growth rate utilized in our fair value estimate is consistent with the reporting unit operating plans and approximates expected long-term category market growth rates and inflation. The discount rate, which is consistent with a weighted average cost of capital that is likely to be expected by a market participant, is based upon industry required rates of return, including consideration of both debt and equity components of the capital structure. Our discount rate may be impacted by adverse changes in the macroeconomic environment, volatility in the equity and debt markets or other factors.

While management can and has implemented strategies to address these events, changes in operating plans or adverse changes in the future could reduce the underlying cash flows used to estimate fair values and could result in a decline in fair value that would trigger future impairment charges of the reporting unit’s goodwill balance. The table below provides a sensitivity analysis for the Environmental Solutions reporting unit, utilizing reasonably possible changes in the assumptions for the shorter-term revenue and residual growth rates and the discount rate, to demonstrate the potential impacts to the estimated fair values. The table below provides, in isolation, the estimated fair value impacts related to (i) a 50-basis point increase to the discount rate assumption and (ii) a 50-basis point decrease to our shorter-term revenue and residual growth rates assumptions, both of which would result in impairment charges.

	Approximate Percent Decrease in Estimated Fair Value	
	+50 bps Discount Rate	-50 bps Growth Rate
Environmental Solutions reporting unit	7.1%	7.3%

Deferred Taxes, Valuation Allowance

As discussed in Note 18 to our consolidated and combined financial statements, deferred tax assets and liabilities are recognized for the expected future tax consequences of events that have been recognized in our consolidated and combined financial statements or tax returns. We record a valuation allowance to reduce certain deferred tax assets to amounts that are more-likely-than-not to be realized. We evaluate the realizability of our deferred tax assets by assessing the valuation allowance and by adjusting the amount of such allowance, if necessary. The factors used to assess the likelihood of realization include our forecast of future taxable income exclusive of reversing temporary differences and carryforwards, future reversals of existing taxable temporary differences and available tax planning strategies that could be implemented to realize the net deferred tax assets.

Based on the available evidence as of December 31, 2019, we were not able to conclude it is more likely than not certain deferred tax assets will be realized. Therefore, a valuation allowance of \$12.9 million was recorded against our deferred tax assets. We will continue to evaluate the need for a valuation allowance on our deferred tax assets in future periods.

Recent Accounting Pronouncements

Please see Note 2, “Summary of Significant Accounting Policies—Recently Adopted Accounting Pronouncements” and “Summary of Significant Accounting Policies—Recently Issued Accounting Pronouncements” to our historical consolidated and combined financial statements as of and for the years ended December 31, 2019 and 2018, included elsewhere herein, for a discussion of recent accounting pronouncements.

Under the JOBS Act, we meet the definition of an “emerging growth company,” which allows us to have an extended transition period for complying with new or revised accounting standards pursuant to Section 107(b) of the JOBS Act. We intend to take advantage of all of the reduced reporting requirements and exemptions, including the longer phase-in periods for the adoption of new or revised financial accounting standards under Section 107(b) of the JOBS Act until we are no longer an emerging growth company.

Item 7A. Quantitative and Qualitative Disclosure About Market Risks

Market risk is the risk of loss arising from adverse changes in market rates and prices. Currently, our market risks relate to potential changes in the fair value of our long-term debt due to fluctuations in applicable market interest rates. Going forward our market risk exposure generally will be limited to those risks that arise in the normal course of business, as we do not engage in speculative, non-operating transactions, nor do we utilize financial instruments or derivative instruments for trading purposes.

Interest Rate Risk

As of December 31, 2019, we had \$152.2 million of debt outstanding under the Term Loan and \$19.0 million of outstanding borrowings under the Revolving Loan, with an interest rate of 5.8%. A 1.0% increase or decrease in the interest rate would increase or decrease interest expense by approximately \$1.7 million per year assuming a consistent debt balance. We currently have an interest rate cap in place with respect to outstanding indebtedness under our Term Loan that provides a ceiling on three-month LIBOR at 2.5% for a notional amount of \$150.0 million. A fair value liability of \$1.1 million was recorded with respect to our interest rate cap in the consolidated balance sheet within other liabilities as of December 31, 2019 and a fair value asset of \$0.9 million was recorded in the consolidated balance sheet within other assets as of December 31, 2018.

Credit Risk

While we are exposed to credit risk in the event of non-performance by counterparties, the majority of our customers are investment-grade companies and we do not anticipate non-performance. We mitigate the associated credit risk by performing credit evaluations and monitoring the payment patterns of our customers.

Off-Balance Sheet Arrangements

We currently have no material off-balance sheet arrangements except for operating leases as referenced in “Item 7. Management’s Discussion and Analysis of Financial Condition and Results of Operations—Liquidity and Capital Resources.”

Item 8. Financial Statements and Supplementary Data

Our consolidated and combined financial statements and the related notes begin on page F-1 herein.

Item 9. Changes in and Disagreements With Accountants on Accounting and Financial Disclosure

None.

Item 9A. Controls and Procedures

Evaluation of Disclosure Controls and Procedures

Our management, with the participation of our principal executive officer and principal financial officer, has evaluated the effectiveness of our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act as of the end of the period covered by this Annual Report. Based on such evaluation, our principal executive officer and principal financial officer have concluded that as of such date, our disclosure controls and procedures were effective.

Management's Annual Report on Internal Control Over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) of the Exchange Act). The Company's internal control over financial reporting is a process designed under the supervision of its Chief Executive Officer (Principal Executive Officer) and Chief Financial Officer and Treasurer (Principal Financial Officer) and effected by the Company's Board of Directors, management and other personnel, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of its financial statements for external reporting purposes in accordance with GAAP.

The Company's internal control over financial reporting includes policies and procedures that pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect transactions and dispositions of the Company's assets; provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with GAAP, and that receipts and expenditures of the Company are being made only in accordance with authorizations of management and the directors; and provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of the Company's assets that could have a material effect on its financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. In addition, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Management conducted an evaluation of the effectiveness of the Company's internal control over financial reporting as of December 31, 2019 based on the framework established in *Internal Control - Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission. Based on this assessment, management concluded that the Company's internal control over financial reporting as of December 31, 2019 was effective.

This annual report does not include an attestation report of the Company's registered public accounting firm due to an exemption for emerging growth companies under the JOBS Act.

Changes in Internal Control Over Financial Reporting

There were no changes in our internal control over financial reporting identified in connection with the evaluation required by Rules 13a-15(d) and 15d-15(e) of the Exchange Act that occurred during the quarter ended December 31, 2019 that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

Item 9B. Other Information

None.

PART III

Item 10. Directors, Executive Officers and Corporate Governance

Charah Solutions will file with the SEC a definitive proxy statement for its 2020 Annual Meeting of Stockholders (the “Proxy Statement”) no later than 120 days after the close of its fiscal year ended December 31, 2019. The information required by this item with respect to our executive officers appears in Part I of this Annual Report under the heading “Information About Our Executive Officers.” The other information required by this item is furnished by incorporation by reference to the information under the headings “Election of Directors,” “Corporate Governance,” and “Section 16(a) Beneficial Ownership Reporting Compliance” in the Proxy Statement.

We have adopted a Financial Code of Ethics (the “Code of Ethics”), which is intended to qualify as a “code of ethics” within the meaning of Item 406 of Regulation S-K of the Exchange Act. The Code of Ethics applies to our principal executive officer, principal financial officer, principal accounting officer or controller, and persons performing similar functions. The Code of Ethics is available on our website at www.charah.com.

We will disclose information pertaining to any amendment to, or waiver from, the provisions of the Code of Ethics that apply to our principal executive officer, principal financial officer, principal accounting officer or controller, or persons performing similar functions and that relate to any element of the Code of Ethics enumerated in the SEC rules and regulations by posting this information on our website, www.charah.com. The information contained on our website or available by hyperlink from our website is not a part of this Annual Report and is not incorporated into this Annual Report or any other documents we file with, or furnish to, the SEC.

Item 11. Executive Compensation

The information required by this item is furnished by incorporation by reference to the information under the headings “Director Compensation,” “Executive Compensation,” “Compensation Committee Interlocks and Insider Participation,” and “Compensation Committee Report” in the Proxy Statement.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters

The information required by this item is furnished by incorporation by reference to the information under the headings “Security Ownership of Certain Beneficial Owners and Management” and “Equity Compensation Plan Information” in the Proxy Statement.

Item 13. Certain Relationships and Related Transactions, and Director Independence

The information required by this item is furnished by incorporation by reference to the information under the headings “Corporate Governance—Director Independence,” “Corporate Governance—Policy for Review of Related Party Transactions,” and “Corporate Governance—Related Party Transactions” in the Proxy Statement.

Item 14. Principal Accountant Fees and Services

The information required by this item is furnished by incorporation by reference to the information under the heading “Ratification of the Appointment of Independent Registered Public Accounting Firm” in the Proxy Statement.

PART IV

Item 15. Exhibits and Financial Statement Schedules

1. Financial Statements

Description	Page Number
Report of Independent Registered Public Accounting Firm	F-1
Consolidated Balance Sheets as of December 31, 2019 and December 31, 2018	F-2
Consolidated & Combined Statements of Operations for the year ended December 31, 2019, the year ended December 31, 2018, the period from January 13, 2017 through December 31, 2017, and the period from January 1, 2017 through January 12, 2017	F-3
Consolidated & Combined Statements of Stockholders' and Members' Equity for the year ended December 31, 2019, the year ended December 31, 2018, the period from January 13, 2017 through December 31, 2017, and the period from January 1, 2017 through January 12, 2017	F-4
Consolidated & Combined Statements of Cash Flows for the year ended December 31, 2019, the year ended December 31, 2018, the period from January 13, 2017 through December 31, 2017, and the period from January 1, 2017 through January 12, 2017	F-6
Notes to Consolidated & Combined Financial Statements	F-8

2. Financial Statement Schedules

Schedule II—Schedule of Valuation and Qualifying Accounts	F-41
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3. Listing of Exhibits

INDEX TO EXHIBITS

Exhibit Number	Description
2.1††	Master Reorganization Agreement, dated June 13, 2018, by and among Charah Solutions, Inc. and the other parties named therein (incorporated by reference to Exhibit 2.1 to the Current Report on Form 8-K filed on June 19, 2018 (File No. 001-38523)).
3.1	Amended and Restated Certificate of Incorporation of Charah Solutions, Inc. (incorporated by reference to Exhibit 3.1 to the Current Report on Form 8-K filed June 22, 2018 (File No. 001-38523)).
3.2	Amended and Restated Bylaws of Charah Solutions, Inc. (incorporated by reference to Exhibit 3.2 to the Current Report on Form 8-K filed June 22, 2018 (File No. 001-38523)).
4.1*	Description of Common Stock of Charah Solutions, Inc
4.2	Registration Rights Agreement (incorporated by reference to Exhibit 4.1 to the Current Report on Form 8-K filed June 22, 2018 (File No. 001-38523)).
4.3	Amendment No.1 to Registration Rights Agreement (incorporated by reference to Exhibit 4.1 to the Current Report on Form 8-K file March 16, 2020 (File No. 001-38523))
4.4	Stockholders' Agreement (incorporated by reference to Exhibit 4.2 to the Current Report on Form 8-K filed June 22, 2018 (File No. 001-38523)).
10.1	Credit Agreement, dated as of September 21, 2018, by and among Charah Solutions, Inc., certain of the Charah Solutions, Inc.'s subsidiaries, as guarantors, Bank of America, N.A., as administrative agent, swingline lender and letter of credit issuer, and the other lenders party thereto (incorporated by reference to Exhibit 10.1 to the Current Report on Form 8-K filed September 25, 2018 (File No. 001-38523)).
10.2	Amendment No. 1 to Credit Agreement, dated as of March 5, 2019, by and among Charah Solutions, Inc., certain subsidiaries of Charah Solutions, Inc., as guarantors, Bank of America, N.A., as administrative agent, swingline lender and letter of credit issuer, and the other lenders party thereto (incorporated by reference to Exhibit 10.1 to the Quarterly Report on Form 10-Q for the quarter ended March 31, 2019 (File No. 001-38523)).

Exhibit Number	Description
10.3	Amendment No. 2 to Credit Agreement and Waiver, by and among Charah Solutions, Inc., Bank of America, N.A., as administrative agent, the lenders party thereto and certain subsidiary guarantors named therein, dated August 13, 2019 (incorporated by reference to Exhibit 10.1 to the Current Report on Form 8-K filed August 14, 2019 (File No. 001-38523)).
10.4	Amendment No. 3 to Credit Agreement, by and among Charah Solutions, Inc., Bank of America, N.A., as administrative agent, the lenders party thereto and certain subsidiary guarantors named therein, dated March 5, 2020 (incorporated by reference to Exhibit 10.2 to the Current Report on Form 8-K filed March 6, 2020 (File No. 001-38523)).
10.5	Series A Preferred Stock Purchase Agreement between Charah Solutions, Inc. and Charah Preferred Stock Aggregator, LP, as purchaser, dated March 5, 2020 (incorporated by reference to Exhibit 10.1 to the Current Report on Form 8-K filed March 6, 2020 (File No. 001-38523)).
10.6	Information Rights Agreement, dated October 9, 2018, by and between Charah Solutions, Inc. and Bernhard Capital Partners Management, LP (incorporated by reference to Exhibit 10.1 to the Current Report on Form 8-K filed October 10, 2018 (File No. 001-38523)).
10.7	Mutual Release Agreement, effective as of December 13, 2018, by and between Charah Solutions, Inc. and Bernhard Capital Partners Management, LP (incorporated by reference to Exhibit 10.1 to the Current Report on Form 8-K filed December 18, 2018 (File No. 001-38523)).
10.8†	Charah Solutions, Inc. 2018 Omnibus Incentive Plan (incorporated by reference to Exhibit 4.4 to the Registration Statement on Form S-8 filed June 19, 2018 (File No. 333-225717)).
10.9†	Form of Restricted Stock Agreement under the Charah Solutions, Inc. 2018 Omnibus Incentive Plan (Time Based) (incorporated by reference to Exhibit 4.5 to the Registration Statement on Form S-8 filed June 19, 2018 (File No. 333-225717)).
10.10†	Form of Restricted Stock Agreement under the Charah Solutions, Inc. 2018 Omnibus Incentive Plan (Time and Performance Based) (incorporated by reference to Exhibit 4.6 to the Registration Statement on Form S-8 filed June 19, 2018 (File No. 333-225717)).
10.11†	Form of Restricted Stock Unit Agreement under the Charah Solutions, Inc. 2018 Omnibus Plan (incorporated by reference to Exhibit 10.12 to the Annual Report on Form 10-K for the year ended December 31, 2018 (File No. 001-38523)).
10.12†	Form of Performance Share Unit Grant Notice (Form for grantee with employment agreement) (incorporated by reference to Exhibit 10.1 to the Quarterly Report on Form 10-Q for the quarter ended June 30, 2019 (File No. 001-38523)).
10.13†	Form of Performance Share Unit Grant Notice (Form for grantee without employment agreement) (incorporated by reference to Exhibit 10.2 to the Quarterly Report on Form 10-Q for the quarter ended June 30, 2019 (File No. 001-38523)).
10.14†	Form of Restricted Stock Unit Grant Notice (Form for grantee with employment agreement) (incorporated by reference to Exhibit 10.3 to the Quarterly Report on Form 10-Q for the quarter ended June 30, 2019 (File No. 001-38523)).
10.15†	Form of Restricted Stock Unit Grant Notice (Form for grantee without employment agreement) (incorporated by reference to Exhibit 10.4 to the Quarterly Report on Form 10-Q for the quarter ended June 30, 2019 (File No. 001-38523)).
10.16†	Letter Agreement between Charah Solutions, Inc. and Scott Sewell, dated January 23, 2019 (incorporated by reference to Exhibit 10.1 to the Current Report on Form 8-K filed January 24, 2019 (File No. 001-38523)).
10.17†	Amended and Restated Employment Agreement between Charah, LLC, Charah Solutions, Inc. and Scott A. Sewell, dated June 10, 2019 (incorporated by reference to Exhibit 10.2 to the Current Report on Form 8-K, filed June 14, 2019 (File No. 001-38523)).
10.18†	Employment Agreement with Charles E. Price, dated December 23, 2016 (incorporated by reference to Exhibit 10.8 to the Registration Statement on Form S-1 filed May 18, 2018 (File No. 333-225051)).
10.19†	Amendment to Employment Agreement with Charles E. Price, dated May 11, 2017 (incorporated by reference to Exhibit 10.15 to the Annual Report on Form 10-K for the year ended December 31, 2018 (File No. 001-38523)).
10.20†	Second Amendment to Employment Agreement with Charles E. Price, dated June 1, 2018 (incorporated by reference to Exhibit 10.11 to the Registration Statement on Form S-1/A filed June 4, 2018 (File No. 333-225051)).
10.21†	Employment Agreement with Bruce Kramer, dated January 13, 2017 (incorporated by reference to Exhibit 10.9 to the Registration Statement on Form S-1 filed May 18, 2018 (File No. 333-225051)).

Exhibit Number	Description
10.22†	First Amendment to Employment Agreement with Bruce Kramer, dated June 1, 2018 (incorporated by reference to Exhibit 10.12 to the Registration Statement on Form S-1/A filed June 4, 2018 (File No. 333-225051)).
10.23†	Amended and Restated Employment Agreement with Dorsey “Ron” McCall, dated July 12, 2017 (incorporated by reference to Exhibit 10.10 to the Registration Statement on Form S-1 filed May 18, 2018 (File No. 333-225051)).
10.24†	First Amendment to Employment Agreement with Dorsey "Ron" McCall, dated June 5, 2018 (incorporated by reference to Exhibit 10.1 to the Current Report on Form 8-K filed June 19, 2018 (File No. 001-38523)).
10.25†	Employment Agreement between Charah, LLC, Charah Solutions, Inc. and Roger D. Shannon, dated June 17, 2019 (incorporated by reference to Exhibit 10.1 to the Current Report on Form 8-K, filed June 14, 2019 (File No. 001-38523)).
10.26†	Form of Indemnification Agreement (incorporated by reference to Exhibit 10.2 to the Registration Statement on Form S-1 filed May 18, 2018 (File No. 333-225051)).
10.27	Confidential Settlement Agreement and Release, dated August 30, 2019, by and between Duke Energy Business Services LLC, as agent for and on behalf of Duke Energy Carolinas, LLC and Duke Energy Progress, LLC, and Charah, LLC (incorporated by reference to the Company’s Current Report on Form 8-K filed on August 30, 2019 (File No. 001-38523)).
21.1*	List of Subsidiaries of Charah Solutions, Inc.
23.1*	Consent of Deloitte & Touche LLP, Independent Registered Public Accounting Firm.
31.1*	Certification of Principal Executive Officer pursuant to Rule 13a-14(a)/15d-14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
31.2*	Certification of Principal Financial Officer pursuant to Rule 13a-14(a)/15d-14(a) as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
32.1**	Certification of Principal Executive Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
32.2**	Certification of Principal Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
101.CAL*	XBRL Taxonomy Extension Calculation Linkbase Document.
101.DEF*	XBRL Taxonomy Extension Definition Linkbase Document.
101.INS*	XBRL Instance Document.
101.LAB*	XBRL Taxonomy Extension Labels Linkbase Document.
101.PRE*	XBRL Taxonomy Extension Presentation Linkbase Document.
101.SCH*	XBRL Taxonomy Extension Schema Document
*	Filed herewith.
**	Furnished herewith.
†	Indicates a management contract or compensatory plan or arrangement.
††	Schedules and similar attachments have been omitted pursuant to Item 601(b)(2) of Regulation S-K. The registrant will furnish a supplemental copy of any omitted schedule or similar attachment to the SEC upon request.

Item 16. Form 10-K Summary

None.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

CHARAH SOLUTIONS, INC.

March 27, 2020

By: /s/ Scott A. Sewell
Name: Scott A. Sewell
Title: President, Chief Executive Officer and Director
(Principal Executive Officer)

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints Scott A. Sewell, Roger D. Shannon and Steven A. Brehm, or any of them, his or her attorney-in-fact, with full power of substitution and resubstitution for such person in any and all capacities, to sign any amendments to this report and to file the same, with exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, hereby ratifying and confirming all that either of said attorney-in-fact, or substitute or substitutes, may do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant and in the capacities and on the date indicated:

Signature

Title

/s/ Scott A. Sewell
Scott A. Sewell

President, Chief Executive Officer and Director
(Principal Executive Officer)

/s/ Roger D. Shannon
Roger D. Shannon

Chief Financial Officer and Treasurer
(Principal Financial Officer and
Principal Accounting Officer)

/s/ Jack A. Blossman, Jr.
Jack A. Blossman, Jr.

Director

/s/ Mignon L. Clyburn
Mignon L. Clyburn

Director

/s/ Brian K. Ferraioli
Brian K. Ferraioli

Director

Signature

Title

/s/ Robert C. Flexon

Director

Robert C. Flexon

/s/ Dorsey “Ron” McCall

Director

Dorsey “Ron” McCall

/s/ Mark Spender

Director

Mark Spender

/s/ Stephen R. Tritch

Director

Stephen R. Tritch

March 27, 2020

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors and Stockholders of
Charah Solutions, Inc.

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Charah Solutions, Inc. and subsidiaries (the “Company”) as of December 31, 2019 (Successor) and 2018 (Successor), the related consolidated and combined statements of operations, stockholders’ and members’ equity, and cash flows for the years ended December 31, 2019 (Successor) and 2018 (Successor), the period January 13, 2017 through December 31, 2017 (Successor), and the period January 1, 2017 through January 12, 2017 (Predecessor), and the related notes and the schedule listed in the Index at Item 15 (collectively referred to as the “financial statements”). In our opinion, the financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2019 (Successor) and 2018 (Successor), and the results of its operations and its cash flows for the years ended December 31, 2019 (Successor) and 2018 (Successor), the period January 13, 2017 through December 31, 2017 (Successor), and the period January 1, 2017 through January 12, 2017 (Predecessor), in conformity with accounting principles generally accepted in the United States of America.

Change in Accounting Principle

As discussed in Note 2 to the financial statements, in 2019 the Company has changed its method of accounting for revenue due to the adoption of Accounting Standard Codification 606, *Revenue from Contracts with Customers*.

Basis for Opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. As part of our audits, we are required to obtain an understanding of internal control over financial reporting but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control over financial reporting. Accordingly, we express no such opinion.

Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/ Deloitte & Touche LLP

Louisville, Kentucky
March 27, 2020

We have served as the Company's auditor since 2017.

CHARAH SOLUTIONS, INC.

Consolidated Balance Sheets
(amounts in thousands except par value amounts)

	Successor	
	December 31, 2019	December 31, 2018
Assets		
Current assets:		
Cash	\$ 4,913	\$ 6,900
Restricted cash	1,215	—
Trade accounts receivable, net	50,570	60,742
Receivable from affiliates	390	894
Contract assets	20,641	86,710
Inventory	14,792	25,797
Income tax receivable	1,374	—
Prepaid expenses and other current assets	4,615	5,133
Total current assets	98,510	186,176
Property and equipment, net	85,294	88,941
Goodwill	74,213	74,213
Intangible assets, net	92,473	100,873
Deferred tax asset	—	2,747
Equity method investments	5,078	5,060
Other assets	188	891
Total assets	\$ 355,756	\$ 458,901
Liabilities and stockholders' equity		
Current liabilities:		
Accounts payable	\$ 25,510	\$ 24,821
Contract liabilities	582	1,352
Notes payable, current maturities	34,873	23,268
Asset retirement obligation	9,944	14,704
Purchase option liability	7,110	10,017
Accrued liabilities	35,490	37,953
Other liabilities	1,116	—
Total current liabilities	114,625	112,115
Deferred tax liabilities	1,492	—
Contingent payments for acquisitions	11,481	11,214
Asset retirement obligation	5,187	11,361
Line of credit	19,000	19,799
Notes payable, less current maturities	150,698	211,022
Total liabilities	302,483	365,511
Commitments and contingencies (see Note 14)		
Stockholders' equity		
Retained (losses) earnings	(33,002)	9,414
Common Stock — \$0.01 par value; 200,000 shares authorized, 29,624 and 29,083 shares issued and outstanding as of December 31, 2019 and 2018, respectively	296	291
Additional paid-in capital	85,187	82,880
Total stockholders' equity	52,481	92,585
Non-controlling interest	792	805
Total equity	53,273	93,390
Total liabilities and equity	\$ 355,756	\$ 458,901

See notes to consolidated & combined financial statements.

CHARAH SOLUTIONS, INC.

Consolidated & Combined Statements of Operations (dollars in thousands except per share data)

	Successor			Predecessor
	Year Ended December 31, 2019	Year Ended December 31, 2018	Period from January 13, 2017 through December 31, 2017	Period from January 1, 2017 through January 12, 2017
Revenue	\$ 554,868	\$ 740,462	\$ 421,239	\$ 9,130
Cost of sales	514,492	642,734	338,908	7,301
Gross profit	40,376	97,728	82,331	1,829
General and administrative expenses	60,870	76,752	48,495	3,170
Operating (loss) income	(20,494)	20,976	33,836	(1,341)
Interest expense, net	(16,835)	(32,226)	(14,146)	(4,181)
Income from equity method investment	2,295	2,407	816	48
(Loss) income before income taxes	(35,034)	(8,843)	20,506	(5,474)
Income tax expense (benefit)	4,190	(2,427)	—	—
Net (loss) income	(39,224)	(6,416)	20,506	(5,474)
Less income attributable to non-controlling interest	2,834	2,486	2,190	54
Net (loss) income attributable to Charah Solutions, Inc.	<u>\$ (42,058)</u>	<u>\$ (8,902)</u>	<u>\$ 18,316</u>	<u>\$ (5,528)</u>
(Loss) earnings per common share:				
Basic	\$ (1.43)	\$ (0.33)	\$ 0.77	N/A
Diluted	\$ (1.43)	\$ (0.33)	\$ 0.75	N/A
Weighted-average shares outstanding used in loss per common share:				
Basic	29,495	26,610	23,710	N/A
Diluted	29,495	26,610	24,532	N/A
Pro forma net (loss) income information (see Note 1) (unaudited):				
Net (loss) income attributable to Charah Solutions, Inc. before provision for income taxes (unaudited)	\$ (37,868)	\$ (11,329)	\$ 18,316	\$ (5,528)
Pro forma provision (benefit) for income taxes (unaudited)	4,190	(2,214)	6,960	(2,101)
Pro forma net (loss) income attributable to Charah Solutions, Inc. (unaudited)	<u>\$ (42,058)</u>	<u>\$ (9,115)</u>	<u>\$ 11,356</u>	<u>\$ (3,427)</u>

See notes to consolidated & combined financial statements.

CHARAH SOLUTIONS, INC.

Consolidated & Combined Statements of Stockholders' and Members' Equity
(dollars in thousands unless otherwise indicated)

	Charah, LLC Members								Non-Controlling Interest	Total
						Retained Earnings (Accumulated Deficit)	Total			
	Voting Shares		Non-voting Shares							
	Number of Shares	Common Stock	Number of Shares	Common Stock	Additional Paid-in Capital					
Predecessor										
Balance, December 31, 2016	18,750	\$ 24	168,750	\$ 216	\$ 54	\$ 20,366	\$ 20,660	\$ 686	\$ 21,346	
Net (loss) income	—	—	—	—	—	(5,528)	(5,528)	54	(5,474)	
Distributions	—	—	—	—	—	(20,660)	(20,660)	—	(20,660)	
Balance, January 12, 2017	18,750	\$ 24	168,750	\$ 216	\$ 54	\$ (5,822)	\$ (5,528)	\$ 740	\$ (4,788)	

	Charah, LLC and Allied Power Management, LLC Combined				Non- Controlling Interest	Total
	Charah, LLC Members’ Interest	Allied Power Management, LLC Members’ Interest	Retained Earnings	Total		
Successor						
Balance, January 13, 2017	\$ —	\$ —	\$ —	\$ —	\$ 740	\$ 740
Net income	—	—	18,316	18,316	2,190	20,506
Issuance of original Series A member interests	116,418	—	—	116,418	—	116,418
Issuance of original Series B member interests	36,643	—	—	36,643	—	36,643
Issuance of Series A and B member interests	486	9,514	—	10,000	—	10,000
Shared-based compensation - Series A and B interests	1,945	135	—	2,080	—	2,080
Shared-based compensation - Series C profits interests	311	38	—	349	—	349
Distributions	(136,085)	—	—	(136,085)	(2,332)	(138,417)
Balance, December 31, 2017	\$ 19,718	\$ 9,687	\$ 18,316	\$ 47,721	\$ 598	\$ 48,319

See notes to consolidated & combined financial statements.

Charah Solutions, Inc.

	Common Stock (Shares)	Common Stock (Amount)	Additional Paid-In Capital	Charah, LLC Members' Interest	Allied Power Management, LLC Members' Interest	Retained Earnings (Losses)	Total	Non- Controlling Interest	Total
Successor									
Balance, December 31, 2017	—	\$ —	\$ —	\$ 19,718	\$ 9,687	\$ 18,316	\$ 47,721	\$ 598	\$ 48,319
Net (loss) income	—	—	—	—	—	(8,902)	(8,902)	2,486	(6,416)
Share based compensation expense	—	—	—	214	—	—	214	—	214
Distributions	—	—	—	(686)	—	—	(686)	(2,279)	(2,965)
Conversion from members' interest to common stock	23,436,398	234	28,699	(19,246)	(9,687)	—	—	—	—
Issuance of shares	5,294,117	53	59,188	—	—	—	59,241	—	59,241
Share based common stock issued	372,169	4	(4)	—	—	—	—	—	—
Shares repurchased	(19,696)	—	—	—	—	—	—	—	—
Share based compensation expense	—	—	3,913	—	—	—	3,913	—	3,913
Deferred offering costs	—	—	(8,916)	—	—	—	(8,916)	—	(8,916)
Balance, December 31, 2018	29,082,988	\$ 291	\$ 82,880	\$ —	\$ —	\$ 9,414	\$ 92,585	\$ 805	\$ 93,390
Net (loss) income	—	—	—	—	—	(42,058)	(42,058)	2,834	(39,224)
Share based compensation expense	—	—	2,513	—	—	—	2,513	—	2,513
Adoption of ASC 606, net of tax	—	—	—	—	—	(358)	(358)	—	(358)
Shares issued under share-based compensation plan	568,500	5	(5)	—	—	—	—	—	—
Distributions	—	—	—	—	—	—	—	(2,847)	(2,847)
Taxes paid related to net settlement of shares	(28,653)	—	(201)	—	—	—	(201)	—	(201)
Balance, December 31, 2019	29,622,835	\$ 296	\$ 85,187	\$ —	\$ —	\$ (33,002)	\$ 52,481	\$ 792	\$ 53,273

See notes to consolidated & combined financial statements.

CHARAH SOLUTIONS, INC.

Consolidated & Combined Statements of Cash Flows
(dollars in thousands unless otherwise indicated)

	Successor			Predecessor
	Year Ended December 31, 2019	Year Ended December 31, 2018	Period from January 13, 2017 through December 31, 2017	Period from January 1, 2017 through January 12, 2017
Cash flows from operating activities:				
Net (loss) income	\$ (39,224)	\$ (6,416)	\$ 20,506	\$ (5,474)
Adjustments to reconcile net (loss) income to net cash provided by (used in) operating activities:				
Depreciation and amortization	23,437	42,308	25,719	763
Amortization of debt issuance costs	1,206	11,631	4,150	—
Deferred income tax expense (benefit)	4,359	(2,995)	—	—
Loss on sale of assets	2,376	899	1,332	123
Income from equity method investment	(2,295)	(2,407)	(816)	(48)
Distributions received from equity investment	2,277	2,353	1,099	—
Non-cash share-based compensation	2,513	4,127	2,429	—
Payment related to deferred stock plan	—	—	(18,888)	—
Loss (gain) on interest rate swap	2,006	(1,089)	198	—
Interest accreted on contingent payments for acquisition	267	200	—	—
Increase (decrease) in cash due to changes in:				
Trade accounts receivable	10,208	(7,595)	4,814	(3,977)
Contract assets and liabilities	65,299	(93,282)	7,923	2,191
Inventory	11,085	(5,720)	(1,428)	278
Accounts payable	(69)	9,086	(3,296)	4,380
Asset retirement obligation	(10,934)	24,993	207	—
Accrued expenses and other liabilities	(3,858)	10,274	13,843	(2,654)
Net cash provided by (used in) operating activities	68,653	(13,633)	57,792	(4,418)
Cash flows from investing activities:				
Proceeds from the sale of equipment	2,312	1,682	2,062	—
Purchases of property and equipment	(18,071)	(22,036)	(12,690)	—
Payments for business acquisitions, net of cash received	—	(19,983)	—	—
Purchase of intangible assets	—	(31)	—	—
Net cash used in investing activities	(15,759)	(40,368)	(10,628)	—
Cash flows from financing activities:				
Net proceeds (payments) on line of credit	(799)	19,799	(43,800)	4,605
Proceeds from long-term debt	20,843	217,255	395,004	298
Principal payments on long-term debt	(69,268)	(255,777)	(242,090)	(440)
Payments of debt issuance costs	(1,394)	—	—	—
Taxes paid related to net settlement of shares	(201)	—	—	—
Payments of offering costs	—	(8,916)	—	—
Capital contribution to Allied Power Management, LLC	—	—	10,000	—
Issuance of common stock	—	59,241	—	—
Distributions to non-controlling interest	(2,847)	(2,279)	(2,333)	—
Distributions to members	—	(686)	(136,085)	—
Net cash (used in) provided by financing activities	(53,666)	28,637	(19,304)	4,463
Net (decrease) increase in cash, cash equivalents and restricted cash	(772)	(25,364)	27,860	45
Cash, cash equivalents and restricted cash, beginning of period	6,900	32,264	4,404	4,359
Cash, cash equivalents and restricted cash, end of period	\$ 6,128	\$ 6,900	\$ 32,264	\$ 4,404
Supplemental disclosures of cash flow information:				
Cash paid during the year for interest	\$ 12,044	\$ 22,842	\$ 9,747	\$ 104
Cash (refunded) paid during the year for taxes	\$ (1,833)	\$ 3,334	\$ —	\$ —

Supplemental Disclosures and Non-cash investing and financing transactions

As of December 31, 2019 (Successor), there was \$1,245 of property and equipment additions included in accounts payable and accrued expenses. In addition, included in the line of credit were gross proceeds from the Revolving Loan of \$134,914 and gross payments on the Revolving Loan of \$135,713.

During the year ended December 31, 2019 (Successor), the year ended December 31, 2018 (Successor), the period from January 13, 2017 through December 31, 2017 (Successor), the period from January 13, 2017 through December 31, 2017 (Successor), and the period from January 1, 2017 through January 12, 2017 (Predecessor), the Company purchased \$1,051, \$13,487, \$5,898 and \$0, respectively, of equipment with seller-provided financing.

During the period from January 1, 2017 through January 12, 2017 (Predecessor), the loan to a related party of \$7,865, receivables from affiliates of \$883, and assets and liabilities related to the un-acquired business amounting to \$11,912 were distributed to CEP Holdings, Inc. as non-cash distributions.

At January 12, 2017, Charah, LLC reflected a non-cash transaction to re-value its assets and liabilities resulting from Charah Management LLC completing a transaction with Bernhard Capital Partners Management, LP (“BCP”), a previously unrelated third party, pursuant to which BCP acquired a 76% equity position of Charah Management LLC.

See notes to consolidated & combined financial statements.

CHARAH SOLUTIONS, INC.

Notes to Consolidated & Combined Financial Statements (dollars in thousands except per share and unit data)

1. Nature of Business and Basis of Presentation

Organization

During 2016, Charah, Inc. converted from an S corporation to a limited liability company and changed its name to Charah, LLC, a Delaware limited liability company ("Charah"). In December 2016, Charah became a wholly owned subsidiary of CEP Holdings, Inc. In January 2017, Charah became a wholly-owned subsidiary of Charah Sole Member LLC, which itself is a wholly-owned subsidiary of Charah Management LLC, a Delaware limited liability company ("Charah Management"). Charah Management was a wholly-owned subsidiary of CEP Holdings, Inc.

On January 13, 2017, Charah Management completed a transaction with Bernhard Capital Partners Management, LP ("BCP"), a previously unrelated third party, pursuant to which BCP acquired a 76% equity position of Charah Management ("the BCP transaction"). Allied Power Management, LLC, a Delaware limited liability company ("Allied"), was formed and became a wholly-owned subsidiary of Allied Power Holdings, LLC, a Delaware limited liability company ("Allied Power Holdings"), in May 2017. In July 2017, Allied became a wholly-owned subsidiary of Allied Power Sole Member, LLC, which itself is a wholly-owned subsidiary of Allied Power Holdings. Allied Power Holdings has been under common control with Charah Management since April 2017.

Charah Solutions, Inc. and subsidiaries ("Charah Solutions," the "Company," "we," "us," or "our") was formed as a Delaware corporation in January 2018 and did not conduct any material business operations prior to the transactions described below other than certain activities related to its initial public offering, which was completed on June 18, 2018 (the "IPO"). Charah Solutions is a holding company, the sole material assets of which consist of membership interests in Charah Management and Allied Power Holdings. Through the Company's ownership of Charah Management and Allied Power Holdings, the Company owns the outstanding equity interests in Charah and Allied, the subsidiaries through which Charah Solutions operates its businesses. The historical financial data presented herein as of December 31, 2019 and for periods after June 18, 2018 corporate reorganization is that of Charah and Allied on a consolidated basis, and on a combined basis for periods prior to June 18, 2018 corporate reorganization described below.

References to "Successor" relate to the financial position and results of operations of Charah Solutions on a consolidated and combined basis for the years ended December 31, 2019 and 2018, Charah and Allied Power Management on a combined basis for the period including and after January 13, 2017, and references to "Predecessor" relate to the financial position and results of operations of Charah for the period through January 12, 2017.

Corporate Reorganization

On June 18, 2018, pursuant to the terms of the reorganization transactions completed in connection with the IPO, (i) (a) Charah Holdings LP, a Delaware limited partnership ("Charah Holdings") owned by BCP, contributed all of its interests in Charah Management and Allied Power Holdings to the Company in exchange for 17,514,745 shares of common stock, (b) CEP Holdings, Inc., a Delaware corporation owned by Charles E. Price and certain affiliates ("CEP Holdings"), contributed all of its interests in Charah Management and Allied Power Holdings to the Company in exchange for 4,605,465 shares of common stock, (c) Charah Management Holdings LLC, a Delaware limited liability company ("Charah Management Holdings"), contributed all of its interests in Charah Management and Allied Power Holdings to the Company in exchange for 907,113 shares of common stock, and (d) Allied Management Holdings, LLC, a Delaware limited liability company ("Allied Management Holdings"), contributed all of its interests in Charah Management and Allied Power Holdings to the Company in exchange for 409,075 shares of common stock, (ii) each of Charah Management Holdings and Allied Management Holdings distributed the shares of common stock received by them pursuant to clause (i) to their respective members in accordance with the respective terms of their limited liability company agreements and (iii) Charah Holdings distributed a portion of the shares of common stock it received in clause (i) above to certain direct and indirect blocker entities which ultimately merged into the Company, with the Company surviving, and affiliates of BCP received shares of common stock as consideration in the mergers.

Description of Business Operations

The Company provides mission-critical environmental and maintenance services to the power generation industry, enabling our customers to address challenges related to the remediation of coal ash ponds and landfills at open and closed power plant sites while continuously operating and providing necessary electric power to communities nationwide. Services offered include a suite of coal ash management and recycling, environmental remediation, and outage maintenance services. The Company also designs and implements solutions for complex environmental projects (such as coal ash pond closures) and facilitates coal

CHARAH SOLUTIONS, INC.

Notes to Consolidated & Combined Financial Statements, continued (amounts in thousands except per share data)

ash recycling through byproduct sales and other beneficial use services. The Company has corporate offices in Kentucky, North Carolina, and Louisiana, and principally operates in the eastern and mid-central United States.

The accompanying consolidated and combined financial statements include the assets, liabilities, stockholders' equity, members' equity, and results of operations of the Company and its consolidated subsidiaries. Intercompany transactions and balances have been eliminated in consolidation.

Under the Jumpstart Our Business Startups Act (the "JOBS Act"), the Company meets the definition of an "emerging growth company," which allows the Company to have an extended transition period for complying with new or revised accounting standards pursuant to Section 107(b) of the JOBS Act. The Company intends to take advantage of all of the reduced reporting requirements and exemptions, including the longer phase-in periods for the adoption of new or revised financial accounting standards under Section 107 of the JOBS Act until the Company is no longer an emerging growth company. Among other things, we are not required to provide an auditor attestation report on the assessment of the internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act of 2002 and our disclosure obligations regarding executive compensation may be reduced. We may take advantage of these provisions until the last day of our fiscal year following the fifth anniversary of the IPO, or December 31, 2023. However, if certain events occur prior to the end of such five-year period, including if we become a "large accelerated filer," our annual gross revenue exceeds \$1.07 billion, or we issue more than \$1.0 billion of non-convertible debt in any three-year period, we will cease to be an emerging growth company prior to the end of such five-year period.

Business Segments

The Company operates in two business segments:

Environmental Solutions (ES). The Environmental Solutions segment includes remediation and compliance services, as well as byproduct sales. Remediation and compliance services are associated with our customers' need for multi-year environmental improvement and sustainability initiatives, whether driven by regulatory requirements, by power generation customer initiatives, by our proactive engagement or by consumer expectations and standards. Byproduct sales support both our power generation customers' desire to recycle their recurring and legacy volumes of coal combustion residuals ("CCRs") commonly known as coal ash and ultimate end customers' need for high-quality, cost-effective raw material substitutes.

Maintenance and Technical Services (M&TS). The Maintenance and Technical Services segment includes fossil services and nuclear services. Fossil services are the recurring and mission-critical management of coal ash and the routine maintenance, outage services and staffing solutions for coal-fired power generation facilities. Nuclear services, which we market under the Allied Power brand name, include routine maintenance, outage services, facility maintenance, and staffing solutions for nuclear power generation facilities.

Unaudited Pro Forma Income Information

The unaudited pro forma income information gives effect to the corporate reorganization that occurred in connection with the closing of the IPO and the resulting legal entity of Charah Solutions, which is incorporated as a "C" Corporation. Prior to the corporate reorganization, the holding companies for Charah and Allied were limited liability companies and generally not subject to income taxes. The pro forma net income, therefore, includes an adjustment for income tax expense as if the holding companies for Charah and Allied had been "C" Corporations for all periods presented at an assumed combined federal, state and local effective income tax rate of 38% for the year ended December 31, 2017, and 25% for the periods from January 1, 2018 through June 17, 2018, plus the actual tax expense for the period from June 18, 2018 through December 31, 2018, excluding the tax related to the corporate reorganization. These rates approximate the calculated statutory tax rate for each period. The tax rate in the preceding sentence for the year ended December 31, 2017 does not reflect the impact of U.S. tax reform, which reduces the federal U.S. statutory tax rate from 35% to 21%, effective in 2018. The tax rates mentioned for the year ended December 31, 2018 reflect the impact of U.S. tax reform.

2. Summary of Significant Accounting Policies

Management's Use of Estimates

The preparation of consolidated and combined financial statements in conformity with accounting principles generally accepted in the United States of America ("GAAP") requires management to make estimates and assumptions, in particular estimates of legal reserves, costs to complete contracts in process, contract modifications and unapproved change orders, that affect the reported amounts in the consolidated and combined financial statements and accompanying notes. Actual results could differ from those estimates.

CHARAH SOLUTIONS, INC.

Notes to Consolidated & Combined Financial Statements, continued (amounts in thousands except per share data)

Balance Sheet Classification

The Company includes in current assets and liabilities contract assets, contract liabilities and retainage amounts payable, which may extend beyond one year. One year is used as the basis for classifying all other assets and liabilities.

Cash

The Company maintains cash in bank deposit accounts which, at times, may exceed federally insured limits. The Company has not experienced any losses in such accounts. The Company believes it is not exposed to any significant credit risk on cash.

Restricted Cash

We are required to maintain non-interest bearing escrow accounts associated with our non-revolving credit note with a bank and associated with one of our insurance policies. As of December 31, 2019, these accounts held \$1,215.

Previously, Charah was required to establish an escrow account for the post-closure care costs related to the structural fill sites. The post-closure care costs are also covered by financial guarantee and performance bonds. During the period from January 13, 2017 to December 31, 2017 (Successor), the requirement to maintain the escrow account was removed and the cash was returned to Charah.

Trade Accounts Receivable, Net

Trade accounts receivable, net consist of amounts due from customers. An allowance for doubtful accounts is recorded to the extent it is probable that a portion of a particular account will not be collected. Management determines the allowance for doubtful accounts by evaluating individual customer receivables and considering a customer's financial condition, credit history, and the current economic conditions. An allowance for doubtful accounts of \$146 and \$0 was included in trade accounts receivable, net as of December 31, 2019 (Successor) and 2018 (Successor), respectively.

Trade accounts receivable balances are considered past due based upon contract or invoice terms and are charged off when deemed uncollectible. The Company does not charge interest on customer accounts and generally does not require collateral on sales and services during the normal course of business. The Company has the right to file liens on the owner's property with regards to certain construction contracts.

Inventory

Inventories, mainly comprising ash for resale, are valued using the first-in, first-out ("FIFO") method. Inventories are stated at the lower of cost or net realizable value.

Property and Equipment

Property and equipment are stated at cost. Construction-in-progress represents costs incurred on the construction of assets that have not been completed or placed in service as of the end of the year. Depreciation is provided principally by the straight-line method over the estimated useful lives of the assets as follows:

Plant, machinery and equipment	2 - 15 years
Vehicles	2 - 10 years
Office equipment	2 - 10 years
Buildings and leasehold improvements	5 - 40 years

Repair and maintenance costs are expensed as incurred and expenditures for improvements are capitalized.

Structural Fill Sites

Cost Basis of Structural Fill Sites, Associated Site Improvement Costs, and Related Asset Retirement Obligation (ARO)

Prior to the BCP transaction (see Note 1), the acquisition cost of the structural fill sites was capitalized. As a result of the BCP transaction, the fair value of the site improvements related to the structural fill sites was recognized. The site improvement costs relate to items such as directly related engineering, liner material and installation, leachate collection systems, environmental monitoring equipment, on-site road and rail construction, and other infrastructure costs. The structural fill sites are a part of the Company's Environmental Solutions segment.

CHARAH SOLUTIONS, INC.

Notes to Consolidated & Combined Financial Statements, continued (amounts in thousands except per share data)

Following is a description of our asset retirement activities and our related accounting:

- Final capping and closure involve the installation of drainage and compacted soil layers and topsoil over areas where total airspace capacity has been consumed. Asset retirement obligations are recorded on a units-of-consumption basis as airspace is consumed. The liability is based on estimates of the discounted cash flows.
- Post closure involves the maintenance and monitoring of the structural fill sites. Generally, we are required to maintain and monitor the structural fill sites for a 30-year period. These maintenance and monitoring costs are recorded as an asset retirement obligation as airspace is consumed over the life of the structural fill sites. Post-closure obligations are recorded over the life of the structural fill sites on a units-of-consumption basis as airspace is consumed, based on estimates of the discounted cash flows associated with performing post-closure activities.

We develop our estimates of these obligations using input from our operations personnel. Our estimates are based on our interpretation of current requirements and proposed regulatory changes and are intended to approximate fair value. Absent quoted market prices, the estimate of fair value is based on the best available information, including the results of present value techniques. We use professional engineering judgment and estimated prices paid for similar work to determine the fair value of these obligations. We are required to recognize these obligations at market prices whether we plan to contract with third parties or perform the work ourselves. In those instances where we perform the work with internal resources, the incremental profit margin realized will be recognized as a component of operating income when the work is completed.

Once we have determined the final capping, closure, and post-closure costs, we inflate those costs to the expected time of payment and discount those expected future costs back to present value. During the year ended December 31, 2019 (Successor), the year ended December 31, 2018 (Successor), the period from January 13, 2017 through December 31, 2017 (Successor), and the period from January 1, 2017 through January 12, 2017 (Predecessor), we inflated these costs in current dollars until the expected time of payment using an inflation rate of 3.0%. We discounted these costs to present value using the credit-adjusted, risk-free rate effective at the time an obligation is incurred, consistent with the expected cash flow approach. Any changes in expectations that result in an upward revision to the estimated cash flows are treated as a new liability and discounted at the current rate while downward revisions are discounted at the historical weighted average rate of the recorded obligation. As a result, the credit-adjusted, risk-free discount rate used to calculate the present value of an obligation is specific to each individual asset retirement obligation. The weighted average rate applicable to our long-term asset retirement obligations at December 31, 2019 was approximately 5.25%.

We record the estimated fair value of final capping, closure, and post-closure liabilities for our structural fill sites based on the capacity consumed through the current period. Because these obligations are measured at estimated fair value using present value techniques, changes in the estimated cost or timing of future final capping, closure, and post-closure activities could result in a material change in these liabilities, related assets, and results of operations. We assess the appropriateness of the estimates used to develop our recorded balances annually, or more often if conditions warrant.

Changes in inflation rates or the estimated costs, timing, or extent of future final capping, closure, and post-closure activities typically result in both (i) a current adjustment to the recorded liability and structural fill site asset, and (ii) a change in liability and asset amounts to be recorded prospectively over the remaining permitted airspace. Any changes related to the capitalized and future cost of the structural fill assets are then recognized in accordance with our amortization policy, which would generally result in amortization expense being recognized prospectively over the remaining capacity of the permitted airspace. Changes in such estimates associated with airspace that has been fully utilized results in an adjustment to the recorded liability and landfill assets with an immediate corresponding adjustment to landfill airspace amortization expense.

Depreciation of Structural Fill Sites and Site Improvements

The depreciable basis of a structural fill site includes amounts previously expended and capitalized and projected asset retirement costs related to final capping, closure, and post-closure activities.

The value of the structural fill sites to the Company diminishes in direct correlation to the amount of airspace used for ash deposits. Depreciation is recorded on a units-of-consumption basis, applying expense as a rate per ton. The rate per ton is calculated by dividing the depreciable basis of the structural fill site by the number of tons expected to be placed into the structural fill sites. Our engineers, in consultation with third-party engineering consultants and surveyors, are responsible for determining remaining permitted airspace at our structural fill sites. The remaining permitted airspace is determined by comparing the existing structural fill sites topography to the expected final structural fill sites topography.

CHARAH SOLUTIONS, INC.

Notes to Consolidated & Combined Financial Statements, continued (amounts in thousands except per share data)

Once the remaining permitted airspace is determined in cubic yards, an airspace utilization factor (“AUF”) is established to calculate the remaining permitted capacity in tons. The AUF is established using the measured density obtained from previous surveys and is then adjusted to account for current and future expected compaction rates. The initial selection of the AUF is subject to a subsequent multi-level review by our engineering group, and the AUF used is reviewed on a periodic basis and revised as necessary.

After determining the costs and remaining permitted capacity at each of our structural fill sites, we determine the per ton rates that will be expensed as ash is received and deposited at the structural fill sites by dividing the costs by the corresponding number of tons. These rates per ton are updated annually, or more often, as significant facts change.

It is possible that actual results, including the amount of costs incurred, the timing of final capping, closure, and post-closure activities, or our airspace utilization, could ultimately turn out to be significantly different from our estimates and assumptions. To the extent that such estimates, or related assumptions, prove to be significantly different than actual results, lower profitability may be experienced due to higher depreciation rates or higher expenses; or higher profitability may result if the opposite occurs. Most significantly, if it is determined that expansion capacity should no longer be considered in calculating the recoverability of a structural fill site asset, we may be required to recognize an asset impairment or to incur significantly higher depreciation expense.

Depreciation for the structural fill sites and site improvements for the year ended December 31, 2019 (Successor), the year ended December 31, 2018 (Successor), the period from January 13, 2017 through December 31, 2017 (Successor), and the period from January 1, 2017 through January 12, 2017 (Predecessor), and the year ended December 31, 2016 (Predecessor) was \$4,190, \$33,956, \$17,603, and \$90, respectively.

The Company commenced closure of our structural fill sites during the year ended December 31, 2019. The remaining capacity of the active structural fill site at December 31, 2018 (Successor), December 31, 2017 (Successor), and January 12, 2017 (Predecessor) was 5.0 million tons (41%), 6.2 million tons (52%), and 9.2 million tons (77%), respectively.

Equity Method Investment

In January 2016, Charah organized a joint venture with VHSC Holdings, LLC, an unrelated third party. Charah has a 50% interest in the joint venture, which is accounted for by the equity method.

Goodwill and Indefinite Lived Intangible Assets

Goodwill represents the excess purchase price over the estimated fair value of net assets acquired in a business combination. Our goodwill included in the consolidated balance sheets as of December 31, 2019 and 2018 was \$74,213. Our intangible assets in the consolidated balance sheets as of December 31, 2019 and 2018 include a \$34,330 trade name that is considered to have an indefinite life.

Goodwill and indefinite-lived intangible assets are not amortized, but instead are tested for impairment at least annually or more often if events or changes in circumstances indicate that the fair value of the asset may have decreased below its carrying value. Goodwill is tested at the reporting unit level. We may elect to perform a qualitative assessment to determine whether it is more likely than not that the fair value is greater than its carrying value. If a qualitative assessment is not performed, or if as a result of a qualitative assessment it is not more likely than not that the fair value exceeds its carrying value, then the fair value is compared to its carrying value. Fair value is typically estimated using an income approach based on discounted cash flows. However, when appropriate, we may also use a market approach. The income approach is based on the long-term projected future cash flows of the asset and reporting units. We discount the estimated cash flows to present value using a weighted average cost of capital that considers factors such as market assumptions, the timing of the cash flows, and the risks inherent in those cash flows. We believe that this approach is appropriate because it provides a fair value estimate based upon the reporting units’ expected long-term performance considering the economic and market conditions that generally affect our business. The market approach estimates fair value by measuring the aggregate market value of publicly traded companies with similar characteristics to our business as a multiple of their reported earnings. We then apply that multiple to the reporting units’ earnings to estimate their fair values. We believe that this approach may also be appropriate in certain circumstances because it provides a fair value estimate using valuation inputs from entities with operations and economic characteristics comparable to our reporting units. Fair value is computed using several factors, including projected future operating results, economic projections, anticipated future cash flows, comparable marketplace data, and the cost of capital. There are inherent uncertainties related to these factors and to our judgment in applying them in our analysis. However, we believe our methodology for estimating the fair value of our reporting units and the trade name is reasonable. If the carrying value exceeds its fair value, the asset is written down to its implied fair value.

CHARAH SOLUTIONS, INC.

Notes to Consolidated & Combined Financial Statements, continued
(amounts in thousands except per share data)

We evaluate the indefinite-lived trade name each reporting period to determine whether events and circumstances continue to support an indefinite useful life.

We perform our annual impairment test as of October 1st of each year. During the years ended December 31, 2019 and 2018, we performed a quantitative assessment and determined there was no impairment. For the period between the impairment testing date and year-end, there were no indicators of impairment. If actual future results are not consistent with our assumptions and estimates, we may be required to record impairment charges in the future.

Definite Lived Intangible Assets

As of December 31, 2019 (Successor) and 2018 (Successor), definite lived intangible assets include customer relationships, technology, non-compete and other agreements, SCB trade name (Note 5), and a rail easement. These assets are amortized on a straight-line basis over their estimated useful lives as shown in the table below.

Definite Lived Intangible	Useful Life
Customer relationships	10 years
Technology	10 years
Non-compete agreement	2 years
SCB trade name	5 years
Rail easement	2 years

Purchase Option Liability

In the BCP transaction, Charah recorded the fair value of a bargain purchase liability for an option held by a customer and a third party for the structural fill sites. The purchase option liability is calculated as the difference between the estimated fair value of the structural fill sites at the date of the BCP transactions (see Note 1) and the option price to be paid by the customer or third party. The purchase options are exercisable after completion of work at the structural fill sites. The bargain purchase option is amortized over the structural fill sites' estimated useful lives. The following table reflects activity related to the bargain purchase liability:

	December 31,	
	2019	2018
Balance, beginning of period (Successor)	\$ 10,017	\$ 25,244
Amortization expense	(2,907)	(15,227)
Balance, end of period (Successor)	<u>\$ 7,110</u>	<u>\$ 10,017</u>

Fair Value Disclosure

Long-term debt bears interest at variable rates and book value approximates fair value, and is considered to be level 2 in the fair value hierarchy. The interest rate swap (within other liabilities at December 31, 2019 and within other assets at December 31, 2018) is considered to be level 2 in the fair value hierarchy. The Company did not have any recurring or non-recurring level 3 fair value measurements as of December 31, 2019 (Successor) or 2018 (Successor) other than the application of business combination accounting as described in Note 5 and the application of stock-based compensation accounting as described in Note 13. There have been no transfers between levels of the fair value hierarchy during the year ended December 31, 2019 (Successor), the year ended December 31, 2018 (Successor), the period from January 13, 2017 through December 31, 2017 (Successor), or the period from January 1, 2017 through January 12, 2017 (Predecessor).

Debt Issuance Costs

Debt issuance costs associated with our various credit agreements are amortized as interest expense over the term of the applicable agreement. Debt issuance costs are presented as a direct deduction from the carrying amount of the related liability.

Freight Costs

Freight costs charged to customers are included in revenue. Costs incurred by the Company for freight are included in cost of sales.

CHARAH SOLUTIONS, INC.

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Income Taxes

Charah Solutions is a “C” Corporation under the Internal Revenue Code of 1986, as amended (the “Code”), and, as a result, is subject to U.S. federal, state and local income taxes. In connection with the IPO, predecessor flow-through entities for income tax purposes were contributed to the Company by their owners and became indirect subsidiaries of the Company. Prior to the contribution to the Company and its conversion to a taxable corporation, the predecessor entities passed through their taxable income to their owners for U.S. federal, state, and local income tax purposes, and thus these entities were not subject to such income taxes, except for franchise tax at the state level (at less than 1% of modified pre-tax earnings). Accordingly, the financial data attributable to the predecessor entities prior to the contribution on June 18, 2018 contains no provision for U.S. federal income taxes or income taxes in any state or locality, other than franchise taxes.

As of June 18, 2018, the Company became subject to U.S. federal, state and local income taxes, and as a result of the conversion, and in accordance with Accounting Standards Codification (“ASC”) Topic 740, *Income Taxes*, the Company established a beginning net deferred tax liability of \$1.5 million and recognized a corresponding amount of income tax expense.

Income taxes are accounted for in accordance with ASC Topic 740. Income tax expense, or benefit, is calculated using the asset and liability method under which deferred tax assets and liabilities are recorded based on the difference between the financial statement and tax basis of assets and liabilities using enacted tax rates in effect for the year in which the differences are expected to reverse.

The Company assesses its deferred tax assets each quarter to determine whether the assets are more likely than not (probability of more than 50%) realizable under ASC Topic 740. The Company is required to record a valuation allowance for any portion of the tax assets that, based on the assessment, are not more likely than not realizable. The assessment considers, among other things, earnings in prior periods, forecasts of future taxable income, statutory carryforward periods, and tax planning strategies, to the extent feasible. The realization of deferred tax assets depends in large part on the generation of future taxable income during the periods in which the differences become deductible. The value of the deferred tax assets will also depend on applicable income tax rates. Judgment is required in determining the future tax consequences of events that have been recognized in the financial statements. Differences between anticipated and actual outcomes of these future tax consequences could have material impact on the financial statements. Changes in existing tax laws and tax rates also affect actual tax results and the valuation of deferred tax assets over time.

Stock/Share-Based Compensation Plans

In the year ended December 31, 2017, Charah Management and Allied Power Management each issued certain Series C member interests to employees. Additionally, certain employees of Allied Power Management were granted Series B member interests in both Charah Management and Allied Power Management.

The unvested Series C Profits Interests at June 18, 2018 were canceled as a result of the corporate reorganization that occurred upon the closing of the IPO. In connection with the corporate reorganization that occurred upon the closing of the IPO, the Series C Profits Interests were replaced by shares that are subject to time-based vesting conditions, as well as performance vesting conditions. The Company has issued further shares under the Charah Solutions, Inc. 2018 Omnibus Incentive Plan subject to time-based and performance vesting conditions.

The Company accounts for its stock/share-based compensation plans as equity-classified plans, in accordance with the fair value recognition provisions of ASC Topic 718, *Compensation-Stock Compensation*. The Company utilizes the Black-Scholes model, which requires the input of subjective assumptions. These assumptions include estimating (i) the volatility of the common stock price over the expected term, (ii) the expected term, and (iii) expected dividends. Where the vesting of the stock is also based upon performance measures, management determines the likelihood of meeting such measures. Changes in the subjective assumptions can materially affect the estimate of the fair value of stock-based compensation and consequently, the related amounts recognized on the consolidated and combined statements of operations.

Stock-based compensation expense is recognized in general and administrative expenses.

Recently Adopted Accounting Pronouncements

In May 2014, the Financial Accounting Standards Board (the “FASB”) issued Accounting Standards Update (“ASU”) No. 2014-09, *Revenue from Contracts with Customers* (“ASC 606”), which provides a five-step framework to determine when and how revenue is recognized. We adopted ASC 606 on January 1, 2019, using the modified-retrospective method. Our financial

CHARAH SOLUTIONS, INC.

Notes to Consolidated & Combined Financial Statements, continued (amounts in thousands except per share data)

results for reporting periods beginning January 1, 2019 are presented under the new accounting standard, while financial results for prior periods will continue to be reported in accordance with our historical accounting policy.

Revenue is measured based on the amount of consideration specified in a contract with a customer. Revenue is recognized when our performance obligations under the terms of the contract are satisfied which generally occurs with the transfer of control of the goods or services to the customer.

Contract Combination

To determine revenue recognition for contracts, we evaluate whether two or more contracts should be combined and accounted for as one single contract and whether the combined or single contract should be accounted for as more than one performance obligation. This evaluation requires significant judgment and the decision to combine a group of contracts or separate a combined or single contract into multiple performance obligations could change the amount of revenue and profit recorded in a given period. Contracts are considered to have a single performance obligation if the promise to transfer the individual goods or services is not separately identifiable from other promises in the contracts primarily because we provide a service that involves multiple inter-related and integrated tasks to achieve the completion of a specific, single project. For contracts with multiple performance obligations, we allocate the transaction price to each performance obligation using our best estimate of the stand-alone selling price of each distinct good or service in the contract.

Sales and Services Contracts

For sales and service contracts where we have the right to consideration from the customer in an amount that corresponds directly with the value received by the customer based on our performance to date, revenue is recognized at a point in time when services are performed and contractually billable. Certain service contracts contain provisions dictating fluctuating rates per unit for the certain services in which the rates are not directly related to changes in the Company's effort to perform under the contract. We recognize revenue based on the stand-alone selling price per unit for such contracts, calculated as the average rate per unit over the term of those contractual rates. This creates a contract asset or liability for the difference between the revenue recognized and the amount billed to the customer.

Under the typical payment terms of our services contracts, amounts are billed as work progresses in accordance with agreed-upon contractual terms, at periodic intervals (e.g., weekly, biweekly or monthly).

Construction Contracts

We recognize revenue over time, as performance obligations are satisfied, for substantially all of our construction contracts due to the continuous transfer of control to the customer. For most of our construction contracts, the customer contracts with us to provide a service that involves multiple inter-related and integrated tasks to achieve the completion of a specific, single project and are therefore accounted for as a single performance obligation. We recognize revenue using the cost-to-cost input method, based primarily on contract costs incurred to date compared to total estimated contract costs. This method is the most accurate measure of our contract performance because it depicts the company's performance in transferring control of goods or services promised to customers according to a reasonable measure of progress toward complete satisfaction of the performance obligation.

Contract costs include all direct material, labor and subcontractor costs and indirect costs related to contract performance. For costs incurred that do not relate directly to transferring a service to the customer, they are excluded from the input method used to recognize revenue. Project mobilization costs are generally charged to the project as incurred when they are an integrated part of the performance obligation being transferred to the client. Pre-contract costs are expensed as incurred unless they are expected to be recovered from the client.

The payment terms of our construction contracts from time to time require the customer to make advance payments as well as interim payments as work progresses. The advance payment generally is not considered a significant financing component as we expect to recognize those amounts in revenue within a year of receipt as work progresses on the related performance obligation.

Variable Consideration

It is common for our contracts to contain contract provisions that give rise to variable consideration such as unpriced change orders or volume discounts that may either increase or decrease the transaction price. We estimate the amount of variable consideration at the expected value or most likely amount, depending on which is determined to be more predictive of the amount to which the Company will be entitled. Variable consideration is included in the transaction price when it is probable that a significant reversal of cumulative revenue recognized will not occur or when the uncertainty associated with the variable consideration is

CHARAH SOLUTIONS, INC.

Notes to Consolidated & Combined Financial Statements, continued (amounts in thousands except per share data)

resolved. Our estimates of variable consideration and determination of whether to include such amounts in the transaction price are based largely on our assessment of legal enforceability, anticipated performance, industry business practices, and any other information (historical, current or forecasted) that is reasonably available to us. Variable consideration associated with unapproved change orders is included in the transaction price only to the extent of costs incurred.

We provide limited warranties to customers for work performed under our contracts. Such warranties are not sold separately, provide assurance that the services comply with the agreed-upon specifications and legal requirements and do not provide customers with a service in addition to assurance of compliance with agreed-upon specifications. Accordingly, these types of warranties are not considered to be separate performance obligations. Historically, warranty claims have not resulted in material costs incurred.

Contract Estimates and Modifications

Due to the nature of the work required to be performed on many of our performance obligations, the estimation of total revenue and cost at completion is complex, subject to many variables and requires significant judgment. As a significant change in one or more of these estimates could affect the profitability of our contracts, we routinely review and update our contract-related estimates through a disciplined project review process in which management reviews the progress and execution of our performance obligations and the estimated costs at completion. As part of this process, management reviews information including, but not limited to, outstanding contract matters, progress towards completion, program schedule and the associated changes in estimates of revenue and costs. Management must make assumptions and estimates regarding the availability and productivity of labor, the complexity of the work to be performed, the availability and cost of materials, the performance of subcontractors, and the availability and timing of funding from the customer, along with other risks inherent in performing services under all contracts where we recognize revenue over-time using the cost-to-cost method.

We recognize changes in contract estimates on a cumulative catch-up basis in the period in which the changes are identified. Such changes in contract estimates can result in the recognition of revenue in a current period for performance obligations which were satisfied or partially satisfied in prior periods. Changes in contract estimates may also result in the reversal of previously recognized revenue if the current estimate differs from the previous estimate. If at any time the estimate of contract profitability indicates an anticipated loss on the contract, we recognize the total loss in the period it is identified.

Contracts are often modified to account for changes in contract specifications and requirements. Most of our contract modifications are for goods or services that are not distinct from existing contracts due to the significant integration provided in the context of the contract and are accounted for as if they were part of the original contract. The effect of a contract modification on the transaction price and our measure of progress for the performance obligation to which it relates, is recognized as an adjustment to revenue (either as an increase in or a reduction of revenue) on a cumulative catch-up basis. We account for contract modifications when the modification results in the promise to deliver additional goods or services that are distinct and the increase in the price of the contract is for the same amount as the stand-alone selling price of the additional goods or services included in the modification.

We evaluate our contracts whether we are acting as the principal or as the agent when providing services, which we consider in determining if revenue should be reported on a gross or net basis. We determine the Company to be a principal if we control the specified service before that service is transferred to a customer.

Contract Assets and Liabilities

Billing practices are governed by the contract terms of each project based upon costs incurred, achievement of the milestones or predetermined schedules. Billings do not necessarily correlate with revenue recognized over time using the cost-to-cost input method. Contract assets include unbilled amounts typically resulting from revenue under long-term contracts when the revenue recognized exceeds the amount billed to the customer. Contract liabilities consist of billings in excess of revenue recognized as well as deferred revenue.

Contract assets also include retainage, which represents amounts withheld by our clients from billings pursuant to provisions in the contracts and may not be paid to us until the completion of specific tasks or the completion of the project and, in some instances, for even longer periods.

Our contract assets and liabilities are reported in a gross position on a contract-by-contract basis at the end of each reporting period. We include in current assets and liabilities contract assets and liabilities, which may extend beyond one year.

Practical Expedients and Exemptions

CHARAH SOLUTIONS, INC.

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(amounts in thousands except per share data)

Upon the adoption of ASC 606, we adopted the practical expedient in which we do not adjust the contract price for the effects of a significant financing component if the company expects, at contract inception, that the period between when the company transfers a service to a customer and when the customer pays for that service will be one year or less.

Impact of ASC 606 Adoption

We recognized the cumulative effect of initially applying ASC 606 as an adjustment to retained earnings in the balance sheet as of January 1, 2019 as follows:

	Balance at December 31, 2018	Adjustments due to ASC 606	Balance at January 1, 2019
<u>Assets</u>			
Trade accounts receivable, net	\$ 60,742	\$ (405)	\$ 60,337
Contract assets	86,710	405	87,115
Deferred tax assets	2,747	117	2,864
<u>Liabilities</u>			
Deferred revenue	—	(475)	(475)
<u>Equity</u>			
Retained earnings (losses)	\$ 9,414	\$ (358)	\$ 9,056

The adoption of ASC 606 had no impact on cash provided by or used in operating, investing, or financing activities on our accompanying consolidated statement of cash flows and no impact on our consolidated statement of comprehensive income. The impact of adoption on our consolidated balance sheet and statement of operations for the year ended December 31, 2019 was as follows:

	As Reported	Balances Without Adoption of ASC 606	Effect of Change Higher / (Lower)
<u>Assets</u>			
Accounts receivable, net	\$ 50,570	\$ 51,955	\$ (1,385)
Contract assets	20,641	19,256	1,385
<u>Liabilities</u>			
Deferred revenue	505	—	505
<u>Equity</u>			
Retained losses	\$ (33,002)	\$ (33,390)	\$ 388
<u>Statement of Operations</u>			
Revenue	\$ 554,868	\$ 554,898	\$ (30)
Loss before income taxes	(35,034)	(35,064)	30
Net loss	\$ (39,224)	\$ (39,254)	\$ 30

The impact of adoption on our current year financial results and our opening balance sheet was to recognize revenue based on the stand-alone selling price per unit for service contracts containing provisions for fluctuating rates per unit for the services in which the rates are not directly related to changes in the Company's effort to perform under the contract.

In November 2016, the FASB issued ASU No. 2016-18, *Statement of Cash Flows (Topic 230)*. This ASU requires that a statement of cash flows explain the change during the period in the total of cash, cash equivalents and amounts generally described as restricted cash or restricted cash equivalents. Upon adopting this ASU, amounts generally described as restricted cash or restricted

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cash equivalents will be included with cash and cash equivalents when reconciling the beginning-of-period and end-of-period total amounts shown on the consolidated statement of cash flows. ASU No. 2016-18 is effective for the Company for interim and annual periods beginning after December 15, 2018. The Company adopted ASU No. 2016-18 effective January 1, 2019, with retrospective application to our consolidated and combined statements of cash flows so that the consolidated and combined statements of cash flows present a reconciliation of the changes in cash and cash equivalents and restricted cash. As a result of this retrospective adoption, the amount of cash used in investing activities for the period from January 13, 2017 to December 31, 2017 increased by \$3,358 and the amount of cash and cash equivalents previously presented in the consolidated and combined statements of cash flows increased by \$3,358 to reflect the inclusion of restricted cash in the amount reported for changes in cash, cash equivalents and restricted cash as of the beginning and end of the period for the period from January 1, 2017 through January 12, 2017 and as of the beginning of the period for the period from January 13, 2017 through December 31, 2017.

In August 2016, the FASB issued ASU No. 2016-15, *Statement of Cash Flows: Classification of Certain Cash Receipts and Cash Payments*. This ASU addresses specific cash flow issues, including debt prepayment or debt extinguishment costs, contingent consideration payments made after a business combination, and proceeds from the settlement of insurance claims. This ASU is effective for the Company for fiscal years beginning after December 15, 2018, and interim periods within fiscal years beginning after December 15, 2019. The Company adopted this standard effective January 1, 2019, noting the effect that the adoption of this ASU on our consolidated and combined financial statements is immaterial.

Reclassifications

Certain reclassifications have been made to the consolidated balance sheets of prior periods and the accompanying notes to conform to the current period presentation, including the change in presentation of contract assets and liabilities upon adoption of ASC 606 and restricted cash in the consolidated statements of cash flows upon adoption of ASU No. 2016-18 as described above.

Recently Issued Accounting Pronouncements

In February 2016, the FASB issued ASU No. 2016-02, *Leases (Topic 842)*, requiring all leases to be recognized on the balance sheet as a right-of-use asset and a lease liability, unless the lease is a short-term lease (generally a lease with a term of 12 months or less). At the commencement date of the lease, the Company will recognize: (i) a lease liability for the Company's obligation to make payments under the lease agreement, measured on a discounted basis; and (ii) a right-of-use asset that represents the Company's right to use, or control the use of, the specified asset for the lease term. This ASU originally required recognition and measurement of leases at the beginning of the earliest period presented using a modified retrospective transition method. In July 2018, the FASB issued ASU No. 2018-11, which provided an additional (and optional) transition method that permits application of this ASU at the adoption date with recognition of a cumulative-effect adjustment to the opening balance of retained earnings in the period of adoption. In October 2019, the FASB delayed the effective date of this ASU, extending the effective date for non-public business entities and making the ASU effective for the Company for the fiscal year ending December 31, 2021, and interim periods within the fiscal year ending December 31, 2022, with early adoption permitted. The Company has not yet selected a transition method and is currently evaluating the effect that the adoption of this ASU will have on its consolidated and combined financial statements.

In June 2016, the FASB issued ASU No. 2016-13, *Financial Instruments - Credit Losses (Topic 326) - Measurement of Credit Losses on Financial Instruments*, which introduces a new model for recognizing credit losses on financial instruments based on an estimate of current expected credit losses. The new model will apply to: (1) loans, accounts receivable, trade receivables, and other financial assets measured at amortized cost, (2) loan commitments and certain other off-balance sheet credit exposures, (3) debt securities and other financial assets measured at fair value through other comprehensive income, and (4) beneficial interests in securitized financial assets. The amendments contained in this ASU will be applied through a modified retrospective approach through a cumulative-effect adjustment to retained earnings as of the beginning of the first reporting period in which the guidance is adopted. In November 2018, the FASB issued ASU No. 2018-19, which amended the effective date of ASU No. 2016-13 and clarified that receivables arising from operating leases are not within the scope of Subtopic 326-20. In October 2019, the FASB delayed the effective date of this ASU, extending the effective date for non-public business entities and making the ASU effective for the Company for the fiscal year ending December 31, 2023, and interim periods therein, with early adoption permitted. The Company is currently evaluating the effect that the adoption of this ASU will have on its consolidated and combined financial statements.

In January 2017, the FASB issued ASU No. 2017-04, *Intangibles - Goodwill and Other (Topic 350): Simplifying the Test for Goodwill Impairment*. This ASU simplifies the measurement of goodwill impairment by eliminating the requirement that an

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entity compute the implied fair value of goodwill based on the fair values of its assets and liabilities to measure impairment. Instead, goodwill impairment will be measured as the difference between the fair value of the reporting unit and the carrying value of the reporting unit. This ASU also clarifies the treatment of the income tax effect of tax-deductible goodwill when measuring goodwill impairment loss. In October 2019, the FASB delayed the effective date for implementation of ASU No. 2017-04. The Company will be required to adopt ASU No. 2017-04 for annual and any interim impairment tests for the periods beginning on January 1, 2023. ASU No. 2017-04 must be applied prospectively, with early adoption permitted. The Company is currently evaluating the effect that the adoption of this ASU will have on its consolidated financial statements.

In December 2019, the FASB issued ASU No. 2019-12, *Income Taxes (Topic 740) - Simplifying the Accounting for Income Taxes*. This ASU simplifies the accounting for income taxes by removing certain exceptions to the general principles in Topic 740 and also clarifies and amends existing guidance to improve consistent application. The ASU will be effective for annual reporting periods beginning after December 15, 2021 and interim periods in fiscal years beginning after December 15, 2022 and early adoption is permitted. The Company is still assessing the impact of ASU No. 2019-12 on its consolidated and combined financial statements.

3. Revenue

We disaggregate our revenue from customers by type of service as we believe it best depicts how the nature, amount, timing and uncertainty of our revenue and cash flows are affected by economic factors. See details in the tables below.

	Successor			Predecessor
	Year Ended December 31, 2019	Year Ended December 31, 2018	Period from January 13, 2017 through December 31, 2017	Period from January 1, 2017 through January 12, 2017
Environmental Services				
Product sales	\$ 97,814	\$ 80,851	\$ 22,865	\$ 885
Construction contracts	80,968	255,410	196,833	6,377
Services	1,614	6,844	12,883	189
Total Environmental Services	<u>180,396</u>	<u>343,105</u>	<u>232,581</u>	<u>7,451</u>
Maintenance and Technical Services				
Services	374,472	397,357	188,658	1,679
Total Maintenance and Technical Services	<u>374,472</u>	<u>397,357</u>	<u>188,658</u>	<u>1,679</u>
Total revenue	<u>\$ 554,868</u>	<u>\$ 740,462</u>	<u>\$ 421,239</u>	<u>\$ 9,130</u>

On December 31, 2019, we had \$54,918 of the transaction price allocated to remaining performance obligations. We expect to recognize approximately 93% of our remaining performance obligations as revenue within one year and 7% in year two. Revenue associated with our remaining performance obligations includes performance obligations related to our construction contracts. The balance of remaining performance obligations does not include variable consideration that was determined to be constrained as of December 31, 2019.

As of December 31, 2019, we included unapproved change orders associated with project scope changes of \$8,254 in determining the profit or loss on certain construction contracts. These change orders were approved subsequent to year-end.

4. Balance Sheet Items

Allowance for doubtful accounts

The following table presents the changes in the allowance for doubtful accounts:

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	December 31,	
	2019	2018
Balance, beginning of period (Successor)	\$ —	\$ —
Add: provision	146	—
Less: deduction and other adjustments	—	—
Balance, end of period (Successor)	<u>\$ 146</u>	<u>\$ —</u>

Property and equipment, net

The following table shows the components of property and equipment, net:

	December 31,	
	2019	2018
Plant, machinery and equipment	\$ 75,578	\$ 74,896
Structural fill site improvements	55,760	55,760
Vehicles	19,163	17,407
Office equipment	2,741	1,623
Buildings and leasehold improvements	262	262
Structural fill sites	7,110	7,110
Construction in progress	12,324	3,488
Total property and equipment	<u>\$ 172,938</u>	<u>\$ 160,546</u>
Less: accumulated depreciation	(87,644)	(71,605)
Property and equipment, net	<u>\$ 85,294</u>	<u>\$ 88,941</u>

Depreciation expense for the year ended December 31, 2019 (Successor), the year ended December 31, 2018 (Successor), the period from January 13, 2017 through December 31, 2017 (Successor), and the period from January 1, 2017 through January 12, 2017 (Predecessor) was \$17,944, \$49,231, \$22,404, and \$763, respectively. During the fourth quarter of the year ended December 31, 2019, the Company re-assessed the useful life estimates of certain assets adjusted to fair value through the application of "push-down" accounting in conjunction with the transaction on January 13, 2017 in which BCP acquired a 76% equity position in Charah Management. These assets are depreciated through cost of sales. The Company accounted for this as a change in estimate that was applied prospectively, effective as of October 1, 2019. This change in depreciable lives resulted in a decrease in the useful lives for these assets and an increase of \$941 in depreciation expense during the year ended December 31, 2019 and will result in an increase of \$3,763 and \$2,763 in depreciation expense during the years ending December 31, 2020 and 2021, respectively, and a reduction of \$7,466 for all years thereafter.

Accrued liabilities

	December 31,	
	2019	2018
Accrued expenses	\$ 20,456	\$ 22,473
Accrued payroll and bonuses	13,273	15,480
Accrued interest	1,761	—
Accrued liabilities	<u>\$ 35,490</u>	<u>\$ 37,953</u>

Asset Retirement Obligations

The Company owns and operates two structural fill sites that will have continuing maintenance and monitoring requirements subsequent to their closure. As of December 31, 2019 (Successor) and 2018 (Successor), the Company has accrued \$15,131 and \$26,065, respectively, for the asset retirement obligation.

The following table reflects the activity for the asset retirement obligation:

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	December 31,	
	2019	2018
Balance, beginning of period	\$ 26,065	\$ 1,072
Liabilities incurred	1,017	24,673
Liabilities settled	(13,391)	—
Accretion	1,126	320
Revision in estimate	314	—
Balance, end of period	15,131	26,065
Less: current portion	(9,944)	(14,704)
Non-current portion	\$ 5,187	\$ 11,361

5. Business Combination

On March 30, 2018, Charah Management completed a transaction with SCB Materials International, Inc. and affiliated entities (“SCB”), a previously unrelated third party, pursuant to which Charah acquired certain assets and liabilities of SCB for a purchase price of \$35,000, with \$20,000 paid at closing and \$15,000 to be paid over time in conjunction with certain performance metrics. The contract also contained various mechanisms for a working capital true-up. The acquisition was accounted for under the acquisition method of accounting in accordance with ASC Topic 805, *Business Combinations*. As of December 31, 2019 (Successor), the allocation of purchase price was finalized (as summarized below); fair value estimates of identifiable assets acquired and liabilities assumed are based on management’s estimates, judgments and assumptions. Goodwill was allocated to the Environmental Solutions segment. The total amount of goodwill that is expected to be deductible for tax purposes is \$2,025.

In November 2018, the \$15,000 to be paid over time was reduced by \$3,300. The present value of the future payments, using a discount rate of 2.50% was determined to be \$11,014. The Company expects the future payments to occur in 2021 and beyond. The allocation of purchase price for the acquisition has been reflected in the table below.

Cash acquired	\$	17
Net working capital, excluding cash		21,255
Property, plant and equipment		5,300
Trade name intangible assets		694
Customer relationship intangible assets		742
Technology		1,972
Non-compete and other agreements		289
Goodwill		745
Total purchase price	\$	31,014

From the date of acquisition, revenue of \$45,828 and earnings \$1,609 from the acquired business were included in the consolidated and combined statements of operations for the year ended December 31, 2018 (Successor).

The following unaudited information presents the pro forma consolidated revenue and net income for the periods indicated as if the acquisition had been included in the consolidated results of operations beginning January 1, 2017.

	Successor		Predecessor
	Year Ended December 31, 2018	Period from January 13, 2017 through December 31, 2017	Period from January 1, 2017 through January 12, 2017
Pro forma revenue	\$ 757,285	\$ 496,687	\$ 11,158
Pro forma net (loss) income attributable to Charah Solutions, Inc.	\$ (7,972)	\$ 18,877	\$ (5,447)

The above unaudited pro forma results have been calculated by combining the historical results of the Company and the acquired business as if the acquisition had occurred as of the beginning of the fiscal year prior to the acquisition date, and then adjusting the income tax provisions as if they had been calculated on the resulting consolidated and combined results. The pro forma results include estimates for additional depreciation related to the fair value of property, plant and equipment and intangible asset amortization.

The pro forma results reflect elimination of \$682 of direct acquisition costs that were incurred in the year ended December 31, 2018 (since for purposes of the pro forma presentation they have been reflected in 2017 instead of in 2018). For all

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periods presented, historical depreciation and amortization expense of the acquired business was adjusted to reflect the acquisition date fair value amounts of the related tangible and intangible assets. No other material pro forma adjustments were deemed necessary, either to conform the acquisition to the Company's accounting policies or for any other situation. The pro forma information is not necessarily indicative of the results that would have been achieved had the transactions occurred on the date indicated or that may be achieved in the future.

6. Equity Method Investments

The Company has an investment in a company that provides ash management and remarketing services to the electric utility industry. The Company accounts for its investment under the equity method of accounting because we have significant influence over the financial and operating policies of the company. The Company had a receivable due from the equity method investment of \$96 and \$108 at December 31, 2019 and 2018, respectively.

Summarized balance sheet information of our equity method investment entity as of:

	December 31,	
	2019	2018
Current assets	\$ 2,482	\$ 2,619
Noncurrent assets	395	508
Total assets	<u>\$ 2,877</u>	<u>\$ 3,127</u>
Current liabilities	321	607
Equity of Charah	5,078	5,060
Equity of joint venture partner	(2,522)	(2,540)
Total liabilities and members' equity	<u>\$ 2,877</u>	<u>\$ 3,127</u>

Summarized financial performance of our equity method investment entity is as follows:

	Successor			Predecessor
	Year Ended December 31, 2019	Year Ended December 31, 2018	Period from January 13, 2017 through December 31, 2017	Period from January 1, 2017 through January 12, 2017
<u>Operating Data</u>				
Revenue	\$ 9,354	\$ 11,076	\$ 7,573	\$ 300
Net income	\$ 4,590	\$ 4,813	\$ 1,632	\$ 96
The Company's share of net income	\$ 2,295	\$ 2,407	\$ 816	\$ 48

The following table reflects our proportional ownership activity in our investment account:

	Successor			Predecessor
	Year Ended December 31, 2019	Year Ended December 31, 2018	Period from January 13, 2017 through December 31, 2017	Period from January 1, 2017 through January 12, 2017
Opening balance	\$ 5,060	\$ 5,006	\$ 5,289	\$ 5,241
Distributions	(2,277)	(2,353)	(1,099)	—
Share of net income	2,295	2,407	816	48
Closing balance	<u>\$ 5,078</u>	<u>\$ 5,060</u>	<u>\$ 5,006</u>	<u>\$ 5,289</u>

7. Distributions to Stockholders, Receivable from Affiliates, and Related Party Transactions

Prior to the Company's June 18, 2018 corporate reorganization, the Company made certain distributions to stockholders and members to cover their tax liabilities. During the year ended December 31, 2019 (Successor), the year ended December 31, 2018 (Successor), the period from January 13, 2017 through December 31, 2017 (Successor), and the period from January 1, 2017

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through January 12, 2017 (Predecessor), the Company made distributions of \$0, \$686, \$136,085, and \$20,660, respectively, a portion of which was used to pay for income taxes. As of December 31, 2019 (Successor) and 2018 (Successor), the receivable from affiliates associated with these distributions were \$294 and \$759, respectively.

ATC Group Services LLC ("ATC"), an entity owned by BCP, our majority stockholder, provided environmental consulting and engineering services at certain service sites. Expenses to ATC were \$184, \$0, \$0, and \$0 during the year ended December 31, 2019 (Successor), the year ended December 31, 2018 (Successor), for the period from January 13, 2017 through December 31, 2017 (Successor), and the period from January 1, 2017 through January 12, 2017 (Predecessor). The Company had no receivables outstanding from ATC at December 31, 2019 (Successor) and 2018 (Successor). The Company had payables and accrued expenses, net of credit memos, due to ATC of \$62 and \$0 at December 31, 2019 (Successor) and 2018 (Successor), respectively.

Brown & Root Industrial Services, LLC ("B&R"), an entity 50% owned by BCP, our majority stockholder, provided subcontracted construction services at one of our remediation and compliance service sites. Expenses to B&R were \$1,565, \$19,401, \$98, and \$0 during the year ended December 31, 2019 (Successor), the year ended December 31, 2018 (Successor), for the period from January 13, 2017 through December 31, 2017 (Successor), and the period from January 1, 2017 through January 12, 2017 (Predecessor). The Company had no receivables outstanding from B&R at December 31, 2019 (Successor) and 2018 (Successor). The Company had payables and accrued liabilities, net of credit memos, due to B&R of \$254 and \$4,919 at December 31, 2019 (Successor) and 2018 (Successor), respectively.

The Company rented their corporate office through October 2019 and rents housing at work sites and a condo from Price Real Estate, LLC ("Price Real Estate"), an entity owned by a stockholder of the Company. The lease for the corporate office was a triple net lease requiring monthly payments of \$38. Other property is rented on a month-to-month basis. Rental expense associated with Price Real Estate of \$391, \$459, \$438, and \$15 was incurred during the year ended December 31, 2019 (Successor), the year ended December 31, 2018 (Successor), for the period from January 13, 2017 through December 31, 2017 (Successor), for the period from January 1, 2017 through January 12, 2017 (Predecessor), respectively. The Company had a receivable due from Price Real Estate of \$0 at December 31, 2019 (Successor) and 2018 (Successor). The Company had a payable due to Price Real Estate of \$2 and \$0 at December 31, 2019 (Successor) and 2018 (Successor), respectively.

PriceFlight, LLC ("PriceFlight"), an entity owned by a stockholder of the Company, provides flight services to the Company. Expenses to PriceFlight for flight services amounted to \$85, \$1,208, \$685, and \$21 during the year ended December 31, 2019 (Successor), the year ended December 31, 2018 (Successor), for the period from January 13, 2017 through December 31, 2017 (Successor), and for the period from January 1, 2017 through January 12, 2017 (Predecessor), respectively.

Management determined that Price Real Estate and PriceFlight are variable interest entities. The Company has variable interests in them through the common ownership and contractual agreements discussed above. The Company is not considered to be the primary beneficiary. Management considers the likelihood to be remote that the Company will be required to make future funds available to Price Real Estate and PriceFlight. However, were the Company required to make funds available the maximum exposure to the Company would be any excess of the debt obligations of Price Real Estate and PriceFlight over the fair value of their respective assets.

As further discussed in Note 9, in March 2020, the Company entered into an agreement with an investment fund affiliated with BCP to sell 26,000 shares of Preferred Stock.

8. Goodwill and Intangible Assets

The Company's goodwill and intangible assets consist of the following as of:

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	December 31, 2019		December 31, 2018	
	Gross Carrying Amount	Accumulated Amortization	Gross Carrying Amount	Accumulated Amortization
Definite-lived intangibles				
Customer relationships	\$ 78,942	\$ (22,938)	\$ 78,942	\$ (15,044)
Technology	2,003	(351)	2,003	(150)
Non-compete and other agreements	289	(253)	289	(109)
SCB trade name	694	(243)	694	(104)
Rail easement	110	(110)	110	(88)
Total	<u>\$ 82,038</u>	<u>\$ (23,895)</u>	<u>\$ 82,038</u>	<u>\$ (15,495)</u>
Indefinite-lived intangibles				
Charah trade name	\$ 34,330		\$ 34,330	
Goodwill	74,213		74,213	
Total	<u>\$ 108,543</u>		<u>\$ 108,543</u>	

As of December 31, 2019 and 2018, definite-lived intangible assets included customer relationships, technology, non-compete and other agreements, SCB trade name (see Note 5) and a rail easement. These assets are amortized on a straight-line basis over their estimated useful lives as shown in the table below. Amortization expense was \$8,400, \$8,304, \$7,191, and \$0 for the year ended December 31, 2019 (Successor), the year ended December 31, 2018 (Successor), the period from January 13, 2017 through December 31, 2017 (Successor), and the period from January 1, 2017 through January 12, 2017 (Predecessor), respectively.

As of December 31, 2019, the total estimated amortization expense of the Company's definite-lived intangible assets for each of the next five years and thereafter is as follows:

For the Year Ending December 31,

2020	\$ 8,269
2021	8,233
2022	8,233
2023	8,129
2024	8,095
Thereafter	17,184
Total	<u>\$ 58,143</u>

9. Credit Agreement

In January 2017, Charah entered into a \$110,000 revolving credit facility (the "Charah Revolving Credit Facility") with a bank with a maturity date of January 13, 2022. The agreement also provided for additional borrowings starting at \$38,000 that reduced to \$0 as of December 31, 2017. Interest was calculated using the London Inter-bank Offered Rate ("LIBOR") rate plus the Applicable Rate (as defined in the Charah Revolving Credit Facility). The Applicable Rate was based upon the consolidated leverage ratio and ranged from 1.75% to 3.50%. If certain stipulated criteria were met, the outstanding principal and accrued interest on the credit facility could be prepaid without penalty. The debt was repaid in full in October 2017.

In January 2017, Charah also entered into a \$13,000 equipment line scheduled to term out every six months or once the maximum borrowings had been reached. The debt was repaid in full in October 2017.

In August 2017, Allied entered into a \$20,000 revolving credit facility (the "Allied Revolving Credit Facility") with a bank, with its immediate parent company, its subsidiaries, and Charah serving as guarantors. Availability under the Allied Revolving Credit Facility was limited to a borrowing base. Interest was calculated using the LIBOR rate plus the Applicable Margin (as defined in the Allied Revolving Credit Facility). Based on the consolidated leverage ratio, the Applicable Rate (as defined in the Allied Revolving Credit Facility) ranged from 1.50% to 3.00%. The agreement was set to mature on August 17, 2019. A total of \$6,000 was borrowed against the revolving credit facility in September 2017. The debt was repaid in full in October 2017.

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In October 2017, Charah entered into a credit agreement with a bank providing for a revolving credit facility (the “Credit Facility”) with a principal amount of up to \$45,000. The interest rates per annum applicable to the loans under the Credit Facility were based on a fluctuating rate of interest measured by reference to, at the Company’s election, either (i) an adjusted LIBOR plus a 2.00% borrowing margin, or (ii) an alternative base rate plus a 1.00% borrowing margin. Customary fees were payable in respect of the Credit Facility and included (i) commitment fees in an annual amount equal to 0.50% of the daily unused portions of the Credit Facility, and (ii) a 2.00% fee on outstanding letters of credit. The Credit Facility had a maturity date of October 25, 2022. The Credit Facility was terminated in September 2018 and all amounts outstanding thereunder were repaid.

On September 21, 2018, we entered into a credit agreement (the “Credit Facility”) by and among us, the lenders party thereto from time to time and Bank of America, N.A., as administrative agent (the “Administrative Agent”). The Credit Facility includes:

- A revolving loan not to exceed \$50,000 (the “Revolving Loan”);
- A term loan of \$205,000 (the “Closing Date Term Loan”); and
- A commitment to loan up to a further \$25,000 in term loans, which expires in March 2020 (the “Delayed Draw Commitment” and the term loans funded under such Delayed Draw Commitment, the “Delayed Draw Term Loan,” together with the Closing Date Term Loan, the “Term Loan”).

After the Third Amendment all amounts associated with the Revolving Loan and the Term Loan under the Credit Facility will mature in July 2022 as discussed more fully below. The interest rates per annum applicable to the loans under the Credit Facility are based on a fluctuating rate of interest measured by reference to, at our election, either (i) the Eurodollar rate, currently the London Inter-bank Offered Rate (“LIBOR”), or (ii) an alternative base rate. Various margins are added to the interest rate based upon our consolidated net leverage ratio (as defined in the Credit Facility). Customary fees are payable in respect of the Credit Facility and include (i) commitment fees for the unused portions of the Credit Facility and (ii) fees on outstanding letters of credit. Amounts borrowed under the Credit Facility are secured by substantially all of the assets of the Company.

The Credit Facility contains various customary representations and warranties, and restrictive covenants that, among other things and subject to specified exceptions, restrict the ability of us and our restricted subsidiaries to grant liens, incur indebtedness (including guarantees), make investments, engage in mergers and acquisitions, make dispositions of assets, make restricted payments or change the nature of our or our subsidiaries' business. The Credit Facility contains financial covenants related to the consolidated net leverage ratio and the fixed charge coverage ratio (as defined in the Credit Facility), which have been modified as described below.

The Credit Facility also contains certain affirmative covenants, including reporting requirements, such as the delivery of financial statements, certificates and notices of certain events, maintaining insurance and providing additional guarantees and collateral in certain circumstances.

The Credit Facility includes customary events of default, including non-payment of principal, interest or fees as they come due, violation of covenants, inaccuracy of representations or warranties, cross-default to certain other material indebtedness, bankruptcy and insolvency events, invalidity or impairment of guarantees or security interests, material judgments and change of control.

The Revolving Loan provides a principal amount of up to \$50,000, reduced by outstanding letters of credit. As of December 31, 2019 (Successor), \$19,000 was outstanding on the Revolving Loan and \$11,980 in letters of credit were outstanding.

But for Amendment No. 2 to Credit Agreement and Waiver (the “Second Amendment”), as of June 30, 2019, we would not have been in compliance with the requirement to maintain a consolidated net leverage ratio of 3.75 to 1.00 under the Credit Facility. On August 13, 2019, we entered into the Second Amendment, pursuant to which, among other things, the required lenders agreed to waive such non-compliance.

In addition, pursuant to the terms of the Second Amendment, the Credit Facility was amended to revise the required financial covenant ratios, which have been modified as described below. As consideration for these accommodations, we agreed that amounts borrowed pursuant to the Delayed Draw Commitment would not exceed \$15,000 at any one time outstanding (without reducing the overall Delayed Draw Commitment amount). Further, the margin of interest charged on all outstanding loans was increased to 4.00% for loans based on LIBOR and 3.00% for loans based on the alternative base rate. The Second Amendment revised the amount of (i) the commitment fees to 0.35% at all times for the unused portions of the Credit Facility and (ii) fees on outstanding letters of credit to 3.35% at all times. The Second Amendment also added a requirement to make two additional

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scheduled prepayments of outstanding loans under the Credit Facility, including a payment of \$50,000 on or before September 13, 2019 and an additional payment of \$40,000 on or before March 31, 2020. The \$50,000 payment was made before September 13, 2019, using proceeds of the Brickhaven deemed termination payment.

The Second Amendment also included revisions to the restrictive covenants, including removing certain exceptions to the restrictions on our ability to make acquisitions, to make investments and to make dividends or other distributions. After giving effect to the Second Amendment, we will not be permitted to make any distributions or dividends to our stockholders without the consent of the required lenders.

After the end of our fiscal year ended, December 31, 2019, in March 2020, the Company entered into Amendment No. 3 to Credit Agreement (the “Third Amendment”).

Pursuant to the terms of the Third Amendment, the Credit Facility was amended to waive the mandatory \$40,000 prepayment due on or before March 31, 2020, and to revise the required financial covenant ratios such that, after giving effect to the Third Amendment, we are not required to comply with any financial covenants through December 30, 2020. After December 30, 2020, we will be required to comply with a maximum consolidated net leverage ratio of 6.50 to 1.00 from December 31, 2020 through June 29, 2021, decreasing to 6.00 to 1.00 from June 30, 2021 through December 30, 2021, and to 3.50 to 1.00 as of December 31, 2021 and thereafter. After giving effect to the Third Amendment, we will also be required to comply with a minimum fixed charge coverage ratio of 1.00 to 1.00 as of December 31, 2020, increasing to 1.20 to 1.00 as of March 31, 2021 and thereafter. In the event that we are unable to comply in the future with such financial covenants upon delivery of our financial statements pursuant to the terms of the Credit Facility, an Event of Default (as defined in the Credit Facility) will have occurred and the Administrative Agent can then, following a specified cure period, declare the unpaid principal amount of all outstanding loans, all interest accrued and unpaid thereon, and all other amounts payable to be immediately due and payable by the Company.

The Third Amendment increased the maximum amount available to be borrowed pursuant to the Delayed Draw Commitment from \$15,000 to \$25,000, subject to certain quarterly amortization payments. The Third Amendment also included revisions to the restrictive covenants, including increasing the amount of indebtedness that the Company may incur in respect of certain capitalized leases from \$50,000 to \$75,000.

Under the Third Amendment, the Company has agreed to make monthly amortization payments in respect of term loans beginning in April 2020, and to move the maturity date for all loans under the Credit Agreement to July 31, 2022 (the “Maturity Date”). In addition, if at any time after August 13, 2019, the outstanding principal amount of the Delayed Draw Term Loans exceeds \$10,000, we will incur additional interest at a rate equal to 10.0% per annum on all daily average amounts exceeding \$10,000 payable at March 31, 2020 and the Maturity Date. Further, the Third Amendment requires mandatory prepayments of revolving loans with any cash held by the Company in excess of \$10,000, which excludes the amount of proceeds received in respect of the Preferred Stock Offering (as defined below) to the extent such funds are used for liquidity and general corporate purposes. The Company has also agreed to an increase of four percent (4%) to the interest rate applicable to the Closing Date Term Loan that will be compounded monthly and paid in kind by adding such portion to the outstanding principal amount.

As a condition to entering into the Second Amendment, we are required to pay the Administrative Agent an amendment fee (the “Second Amendment Fee”) in an amount equal to 1.50% of the total credit exposure under the Credit Agreement, immediately prior to the effectiveness of the Second Amendment. Of the Second Amendment Fee, 0.50% was due and paid on October 15, 2019 and 1.00% of such Second Amendment Fee will become due and payable on August 16, 2020 if the facility has not been terminated on or prior to August 15, 2020. We are also required to pay the Administrative Agent an amendment fee associated with the Third Amendment (the “Third Amendment Fee”) in an amount equal to 0.20% of the total credit exposure under the Credit Agreement, immediately prior to the effectiveness of the Third Amendment, with such Third Amendment Fee being due and payable on June 30, 2020. Finally, we will pay an additional fee with respect to the Third Amendment in the amount of \$2,000 with such fee being due and payable on the Maturity Date; provided that if the facility is terminated by December 31, 2020, 50% of this fee shall be waived.

As a condition to the Third Amendment, the Company entered into an agreement with an investment fund affiliated with BCP (the “Holder”) to sell 26,000 shares of Series A Preferred Stock, par value \$0.01 (the “Preferred Stock”) for approximately \$25,220 in a private placement (the “Preferred Stock Offering”). The Preferred Stock will have an initial liquidation preference of \$1 (one thousand dollars) per share and will pay a dividend rate of 10% per annum in cash, or 13% if the Company elects to pay dividends in kind by adding such amount to the liquidation preference. The Company’s intention is to pay dividends in kind for the foreseeable future. Proceeds from the Preferred Stock Offering will be used for liquidity and general corporate purposes.

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Notes to Consolidated & Combined Financial Statements, continued (amounts in thousands except per share data)

Following the three-month anniversary of the date of issuance, the Preferred Stock may be converted at the option of the holders into shares of the Company's common stock at a conversion price of \$2.77 per share (the "Conversion Price"), which represents a 30% premium to the 20-day volume-weighted average price ended March 4, 2020. Following the third anniversary of the date of issuance, the Company may, subject to certain requirements, give notice to the holders of the Preferred Stock of the Company's intent to mandatorily convert the Preferred Stock, and the holders of the Preferred Stock will have the option to either agree to such conversion or force the Company to redeem the Preferred Stock for cash. Following the seven-year anniversary of the date of issuance, the holders of the Preferred Stock shall have the right, subject to applicable law, to require the Company at any time to redeem the Preferred Stock, in whole or in part, from any source of funds legally available for such purpose.

In connection with certain change of control transactions, the holders of the Preferred Stock will be entitled to cause the Company to repurchase the Preferred Stock for cash in an amount equal to the greater of (i) the liquidation preference plus accrued and unpaid dividends (plus, a make-whole premium equal to the net present value of dividend payments through the third anniversary of the issue date, for any transaction occurring prior to such date, subject to certain limitations) and (ii) the amount each holder would be entitled to receive if the Preferred Stock were converted prior to such transaction. The Company will have the right to redeem the Preferred Stock starting on the third anniversary of the issue date at the greater of (i) the closing sale price multiplied by the number of shares of common stock issuable upon conversion and (ii) certain premiums to the liquidation preference that will decrease each year following the third anniversary of the issuance date.

From April 5, 2020, until conversion, the holders of the Preferred Stock will vote together with Company's common stock on an as-converted basis and will also have rights to vote on certain matters impacting the Preferred Stock. After April 5, 2020, the holders of the Preferred Stock will have the right to either elect one member to the Company's board of directors or appoint one non-voting board observer.

10. Notes Payable

The following table summarizes the significant components of debt at each balance sheet date and provides maturities and interest rate ranges for each major category as of December 31, 2019 and 2018:

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Notes to Consolidated & Combined Financial Statements, continued
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Successor	December 31,	
	2019	2018
Various equipment notes entered into in November 2017, payable in monthly installments ranging from \$6 to \$24, including interest at 5.2%, maturing in December 2022 through December 2023. The notes are secured by equipment with a net book value of \$3,341 as of December 31, 2019.	\$ 3,937	\$ 4,949
Various equipment notes entered into in 2018, payable in monthly installments ranging from \$1 to \$39, including interest ranging from 5.6% to 6.8%, maturing in March 2023 through May 2025. The notes are secured by equipment with a net book value of \$9,768 as of December 31, 2019.	10,429	12,293
Various equipment notes entered into in 2019, payable in monthly installments ranging from \$2 to \$23, including interest ranging from 3.9% to 6.4%, maturing in April 2021 through December 2024. The notes are secured by equipment with a net book value of \$4,340 as of December 31, 2019.	4,333	—
In June 2018, the Company entered into a \$12,000 non-revolving credit note with a bank. The credit note converted to a term loan on April 10, 2019 and was amended in November and December 2019. Pursuant to the terms of the amendment, this loan was amended to require a maturity date of December 31, 2020 and interest on borrowings to be calculated at a fixed rate per annum equal to 5.9%. The note is secured by equipment with a net book value of \$8,291 as of December 31, 2019.	9,900	8,299
In July 2019, the Company entered into a commercial insurance premium financing agreement, payable in monthly installments of \$169, including interest of 4.4%, maturing in March 2020.	506	—
A \$10,000 equipment line with a bank, entered into in December 2017, secured by all equipment purchased with the proceeds of the loan. Interest is calculated on any outstanding amounts using a fixed rate of 4.5%. The equipment line converted to a term loan in September 2018, with a maturity date of June 22, 2023. The term loan is secured by equipment with a net book value of \$6,666 as of December 31, 2019.	7,719	9,563
Pursuant to the terms of the Third Amendment, the Closing Date Term Loan and the Delayed Draw Term Loan entered into in September 2018 as part of the Syndicated Credit Facility (see also Note 9), maturing July 2022. The interest rate applicable to the Closing Date Term Loan and the Delayed Draw Term Loan is based on a fluctuating rate of interest measured by reference to, at the Company's election, either (i) the Eurodollar rate, currently the LIBOR rate, or (ii) an alternative base rate. With respect to the Closing Date Term Loan, principal payments required are \$2,563 in March 2020, \$854 monthly from April 2020 through September 2020, \$1,153 monthly from October 2020 through December 2020, \$1,280 monthly from January 2021 through December 2021, and \$1,500 monthly thereafter. With respect to the Delayed Draw Term Loan, principal payments required are \$2,500 in June 2020 and \$833 quarterly from July 2020 through March, 2021. Beginning in April 2021, the then outstanding principal balance of the Delayed Draw Term Loans will be payable in sixteen equal installments monthly thereafter. The term loan is secured by substantially all the assets of the Company and is subject to certain financial covenants.	152,188	202,438
Total	189,012	237,542
Less debt issuance costs	(3,441)	(3,252)
	185,571	234,290
Less current maturities	(34,873)	(23,268)
Notes payable due after one year	\$ 150,698	\$ 211,022

Included in interest expense, net in the consolidated statements of operations for the year ended December 31, 2018 (Successor) was \$12.5 million of costs incurred in conjunction with the refinancing of our term loan, consisting of a \$10.4 million non-cash write-off of debt issuance costs and a \$2.1 million prepayment penalty.

In January 2017, Charah entered into a \$14,000 term note, payable to a bank in quarterly principal payments of \$811 through July 2021 at which point all outstanding principal, accrued interest, and fees would have been due. Interest was calculated using the LIBOR rate plus the Applicable Rate. This note was repaid in full in October 2017.

In January 2017, Charah entered into a \$42,000 equipment loan split into eight notes with payoff terms between 24 and 60 months with seven having an interest rate of 5.25% and one having an interest rate of 4.83%. The notes were repaid in full in October 2017.

Future maturities of notes payable at December 31 are as follows and reflects the waiver of the mandatory \$40,000 prepayment due on or before March 31, 2020 and the new payment terms noted in the Third Amendment:

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For the Year Ending December 31,

2020	\$	34,873
2021		21,556
2022		124,516
2023		5,217
2024		2,472
Thereafter		378
Total	\$	<u>189,012</u>

11. Interest Rate Swap

To manage interest rate risk in a cost-efficient manner, the Company entered into an interest rate swap in December 2017 whereby the Company agreed to exchange with the counterparty, at specified intervals, the difference between fixed and variable interest amounts calculated by reference to a notional amount. The interest rate swap is not designated for hedge accounting. The change in fair value of the interest rate swap is immediately recognized in earnings, within interest expense, net.

As of both December 31, 2019 and 2018, the notional amount of the interest rate swap was \$150,000. A fair value liability of \$1,116 was recorded in the combined balance sheet within other liabilities as of December 31, 2019 and a fair value asset of \$891 was recorded in the consolidated balance sheet within other assets as of December 31, 2018. The total amount of loss added to interest expense, net for year ended December 31, 2019 (Successor) and the period from January 13, 2017 through December 31, 2017 (Successor) was \$2,007 and \$198, respectively. The total amount of gain subtracted from interest expense, net for the year ended December 31, 2018 (Successor) was \$1,089. There was no impact in the period from January 1, 2017 through January 12, 2017 (Predecessor).

12. Contract Assets and Liabilities

The timing of revenue recognition, billings and cash collections results in accounts receivable, contract assets, and contract liabilities on the consolidated balance sheets.

Our contract assets are as follows:

	December 31,	
	2019	2018
Costs and estimated earnings in excess of billings	\$ 19,256	\$ 86,710
Retainage	1,385	—
Total contract assets	<u>\$ 20,641</u>	<u>\$ 86,710</u>

The decrease in costs and estimated earnings in excess of billings in 2019 was primarily attributable to the early completion of the significant Brickhaven ash remediation contract, which accelerated revenue and expenses related to this contract into 2018, and the collection of the related billings in 2019. This decrease was offset by the reclassification of retainage receivable from account receivables, net to contract assets due to the adoption of ASC 606.

Our contract liabilities are as follows:

	December 31,	
	2019	2018
Deferred revenue	\$ 505	\$ —
Billings in excess of costs and estimated earnings	77	1,352
Total contract liabilities	<u>\$ 582</u>	<u>\$ 1,352</u>

The decrease in contract liabilities was primarily related to normal business operations offset by the impact of the adoption of ASC 606.

We recognized revenue of \$1,352 for the year ended December 31, 2019 that was previously included in the contract liability balance at December 31, 2018.

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Costs and estimated earnings on uncompleted contracts as of:

	December 31,	
	2019	2018
Costs incurred on uncompleted contracts	\$ 65,343	\$ 314,700
Estimated earnings	9,618	96,176
Total costs and earnings	74,961	410,876
Less billings to date	(55,782)	(325,518)
Costs and estimated earnings in excess of billings	\$ 19,179	\$ 85,358

The net balance in process is classified on the consolidated balance sheets as of:

	December 31,	
	2019	2018
Costs and estimated earnings in excess of billings	\$ 19,256	\$ 86,710
Billings in excess of costs and estimated earnings	(77)	(1,352)
Net balance in process	\$ 19,179	\$ 85,358

Anticipated losses on long-term contracts are recognized when such losses become evident. As of December 31, 2019 and 2018, accruals for anticipated losses on long-term contracts were \$322 and \$677, respectively.

13. Stock/Unit-Based Compensation

Effective January 1, 2009, Charah established the Plan, whereby certain key employees were issued units that settle in shares of non-voting common stock upon the occurrence of certain specified events. Units issued under the Plan were classified as liabilities, due to a call option which allowed Charah to repurchase the non-voting common stock immediately after settlement of the units for an amount other than the fair value of the non-voting common stock. Compensation cost was recognized for issued units based upon the fair value of the units at the end of each reporting period and the percentage of requisite service rendered by the employees holding the units.

The Plan was terminated in December 2016 and all units became 100% vested and were converted into shares of non-voting common stock that did not continue past the date of the investment by BCP on January 13, 2017.

Units of the Plan had a value based on the value of one share of Charah's non-voting common stock. Participant units vested at the rate of 20% per year of service and become fully vested and non-forfeitable after the completion of five years of service from the issuance of the units. Benefits under the Plan were settled in shares of non-voting common stock, based upon the ratio of one unit's value to the value of one share of non-voting common stock as of the date of issuance of the unit. Participants were required to enter into a shareholder agreement which restricted the transfer of units and non-voting common stock issued under the Plan.

At inception of the Plan, 63 units were authorized. During 2016, Charah issued 10 units. In December 2016, all units became 100% vested. The 53 units issued and vested were converted into 49,860 shares of non-voting common stock based on the ratio described above. The 50 shares of non-voting common stock were valued at \$34,554, based on the purchase price associated with the transaction with BCP in January 2017, of which in 2016 Charah paid \$15,666, and the remaining \$18,888 was recorded as a current liability at December 31, 2016 (Predecessor). Charah paid the remaining \$18,888 in January 2017.

The Limited Liability Company Agreement for Charah Management provided for the issuance of up to 1 Series C profits interests (the "Charah Series C Profits Interests"). In 2017, Charah Management adopted the Charah Series C Profits Interest Plan and issued 1 of such units to employees. The Charah Series C Profits Interests participated in distributions to Charah members based on specified rates of return being realized to the Charah Series A and Charah Series B membership interests. The Charah Series C Profits Interest Plan is no longer in place following our corporate reorganization and the IPO. The Charah Series C Profits Interests would have vested ratably in each of the first five anniversaries of their grant date with vesting accelerated upon a change of control. There were 1 Charah Series C Profits Interests unvested at June 18, 2018, which were canceled as a result of the corporate reorganization that occurred upon the closing of the IPO (see further discussion below). The Charah Series C Profits Interests were valued based upon a contingent claims analysis to allocate the total implied equity value as of the valuation date amongst the

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various equity securities classes, with breakpoints estimated considering relative seniority, liquidation preferences, and conversion features. An assumed volatility of 30% based upon a comparable public company analysis was used in the determination of fair value. The weighted-average grant date fair value of the Charah Series C Profits Interests granted during 2017 was \$3,198 per unit, resulting in \$2,100 of total compensation costs, which was expected to vest over five years.

During the year ended December 31, 2019 (Successor), the year ended December 31, 2018 (Successor), the period from January 13, 2017 through December 31, 2017 (Successor), and the period from January 1, 2017 through January 12, 2017 (Predecessor), compensation expense of \$0, \$214, \$311, and \$0, respectively, was recognized related to the Charah Series C Profits Interests.

The Limited Liability Company Agreement for Allied provided for the issuance of up to 1,000 Allied Series C profits interests (the "Allied Series C Profits Interests"). In 2017, Allied adopted the Allied Series C Profits Interest Plan and issued 550 of such units to employees. The Allied Series C Profits Interest Plan is no longer in place following our corporate reorganization and the IPO. The Allied Series C Profits Interests participated in distributions to Allied members based upon specified rates of return being realized to the Allied Series A and Allied Series B membership interests. The Allied Series C Profits Interests vested immediately upon grant. The Allied Series C Profits Interests were valued based upon a contingent claims analysis to allocate the total implied equity value as of the valuation date amongst the various equity securities classes, with breakpoints estimated considering relative seniority, liquidation preferences, and conversion features. An assumed volatility of 32.5% based upon a comparable public company analysis was used in the determination of fair value. The weighted average grant date fair value of the Allied Series C Profits Interests granted during 2017 was \$69 per unit. During the year ended December 31, 2019 (Successor), the year ended December 31, 2018 (Successor), the period from January 13, 2017 through December 31, 2017 (Successor), and the period from January 1, 2017 through January 12, 2017 (Predecessor), compensation expense of \$0, \$0, \$38, and \$0, respectively, was recognized related to the Allied Series C Profits Interests.

In conjunction with the funding of the investment in Allied Power Holdings in July 2017, select individuals, including members of the management team at Allied, were given the opportunity to invest in, via an aggregator entity, Allied Management Holdings, alongside, and on the same basis as, the existing investment group. In exchange for their investment, common equity interests (Series B) in both Allied Power Holdings and Charah Management were issued. For those members of management, 1,900 Charah Management LLC Series B Membership Interests and 100 Allied Power Management LLC Series B Membership Interests were granted as a deemed contribution and a portion was invested via a cash contribution. All rights under these membership interests were fully vested at the time of the grant. There was \$2,080 of compensation expense recorded in the period from January 13, 2017 through December 31, 2017 (Successor) related to these Series B membership interest grants. No compensation expense was recognized during the year ended December 31, 2019 (Successor), the year ended December 31, 2018 (Successor) and the period from January 1, 2017 through January 12, 2017 (Predecessor).

In connection with the corporate reorganization that occurred upon the closing of the IPO, the holders of Charah Series C Profits Interests and Allied Series C Profits Interests received 1,216 shares of common stock (the "Management Reorganization Consideration") in exchange for the contribution to the Company of their Charah Series C Profits Interests and Allied Series C Profits Interests. Of these shares, 304 vested immediately and 912 shares are subject to time-based vesting conditions, as well as performance vesting conditions, based on specified EBITDA targets and achievement of certain safety metrics, which will be determined at future dates. In addition, 273 shares of common stock were issued under the Charah Solutions, Inc. 2018 Omnibus Incentive Plan (see further discussion below). Of these shares, 68 shares vested immediately and 205 shares are subject to the same time-based vesting conditions and performance vesting conditions as the shares issued in accordance with the Management Reorganization Consideration. The fair value of the awards was calculated initially as \$12 per share, and will be updated thereafter for changes at each reporting period until the performance targets are approved by the Company's board of directors. The fair value of the awards is recognized over the required service period for each grant. As of December 31, 2019 (Successor), 501 of the shares subject to time-based and performance vesting conditions were vested.

Upon the closing of the IPO, the board of directors of the Company adopted the Charah Solutions, Inc. 2018 Omnibus Incentive Plan (the "2018 Plan"), pursuant to which employees, consultants, and directors of the Company and its affiliates, including named executive officers, are eligible to receive awards. The 2018 Plan provides for the grant of stock options, stock appreciation rights, restricted stock, restricted stock units, bonus stock, dividend equivalents, other stock-based awards, substitute awards, annual incentive awards, and performance awards intended to align the interests of participants with those of Company stockholders. The Company has reserved 3,007 shares of common stock for issuance under the 2018 Plan, and all future equity awards described above will be issued pursuant to the 2018 Plan. In June 2018, the Company issued 44 shares under the 2018 Plan that vest after one year. The fair value of the awards was calculated as \$12 per share, which will be recognized over the one-year

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vesting period. In August 2018, the Company issued 45 shares under the 2018 Plan that vest after one year. The fair value of the awards was calculated as \$7.67 per share, which will be recognized over the one-year vesting period. As of December 31, 2019 (Successor), 68 of the shares were vested and 21 had been forfeited.

During the year ended December 31, 2019 (Successor), the Company granted 769 restricted stock units (“RSUs”) under the 2018 Plan that are time-based. Of these RSUs, 2 vested immediately, 128 vest after one year, 550 vest in equal installments over three years, and 89 vest in equal installments over four years. The fair value of these RSUs is based on the market price of the Company’s shares on the grant date. As of December 31, 2019, 2 of the shares were vested. During the year ended December 31, 2019, we also granted 331 performance share units (“PSUs”) under the 2018 Plan that cliff vest after three years. The vesting of these PSUs is dependent upon the Company’s achievement of certain stock price metrics. The fair value of the PSUs was determined using a binomial lattice model based upon the grant date stock price, a risk-free interest rate of 2.29% based upon the U.S. Treasury yield curve in effect at the time of the grants, and an assumed volatility rate of 30% based upon a comparable public company analysis. As of December 31, 2019, none of the shares were vested.

A summary of the Company’s non-vested share activity for the year ended December 31, 2019 is as follows:

	Shares	Weighted Average Grant Date Fair Value	Weighted Average Remaining Contractual Terms (Years)	Aggregate Intrinsic Value
Outstanding as of December 31, 2018	1,199	\$ 11.84	0.77	10,009
Granted	1,100	5.90		
Forfeited	(308)	9.83		
Vested	(570)	10.47		
Outstanding as of December 31, 2019	1,421	\$ 6.72	1.26	\$ 3,464

During the year ended December 31, 2019 (Successor) and December 31, 2018 (Successor), \$2,513 and \$3,913 of compensation expense was recognized related to the shares issued in accordance with the Management Reorganization Consideration and the 2018 Plan. As of December 31, 2019 (Successor), total unrecognized stock-based compensation expense related to non-vested awards, net of estimated forfeitures, was approximately \$3,377, and is expected to be recognized over a weighted-average period of approximately 1.74 years. The total fair value of awards vested was \$5,969 for the year ended December 31, 2019 (Successor).

14. Defined Contribution Retirement Plan

Charah and Ash Management Services (“AMS”) provide a defined contribution employee benefit plan (the “Charah and AMS 401(k) Plan”) qualified under Section 401(k) of the Code to employees who have completed 90 days of service and have attained age 18. Participants may contribute up to the lesser of 90% of eligible compensation or the maximum allowed under the Code. Charah and AMS make safe harbor contributions to participant accounts equal to 3% of the participant’s annual compensation, commencing the quarter after the employee completes one year of service. Charah and AMS may also make discretionary contributions, and the contributions may vary from year to year, for employees who have met one year of employment. Participants are immediately vested in their elective contributions and safe harbor contributions. Participants are vested in discretionary contributions after completing six years of service. During the year ended December 31, 2019 (Successor), the year ended December 31, 2018 (Successor), the period from January 13, 2017 through December 31, 2017 (Successor), and the period from January 1, 2017 through January 12, 2017 (Predecessor), Charah and AMS contributed \$1,014, \$932, \$861, and \$29, respectively to the Charah and AMS 401(k) Plan.

Allied provides a defined contribution employee benefit plan (the “Allied 401(k) Plan”) qualified under Section 401(k) of the Code to employees who have completed one year of eligibility service and have attained age 21, commencing the quarter following the anniversary of one year of eligibility service. Participants may contribute up to the lesser of 100% of eligible compensation or the maximum allowed under the Code. Allied makes safe harbor contributions to participant accounts equal to (i) 100% of the employee contributions that are not in excess of 3% of employee compensation, plus (ii) 50% of the amount of the employee contributions that exceed 3% of employee compensation but that do not exceed 5% of employee compensation, commencing with an employee’s eligibility for participation in the plan. Allied may also make discretionary matching contributions. Participants are immediately vested in their elective contributions and safe harbor contributions as well as the discretionary matching

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contributions. During the year ended December 31, 2019 (Successor), the year ended December 31, 2018 (Successor), and for the period from June 1, 2017 (inception) through December 31, 2017, Allied contributed \$760, \$770, and \$258, respectively, to the Allied 401(k) Plan.

15. Commitments and Contingencies

We are party to a lawsuit filed against North Carolina by an environmental advocacy group alleging that the issuance by the state of certain permits associated with our Brickhaven clay mine reclamation site exceeded the state's power. Although the state's authority to issue the bulk of the permits (i.e., the allowance to reclaim the original site with coal ash) was upheld, the portion of the permits that allows us to "cut and prepare" an additional portion of the site was held by the North Carolina Superior Court to exceed the relevant agency's statutory authority. The North Carolina Superior Court's decision was reversed and remanded back to the North Carolina Office of Administrative Hearing ("NCOAH") due to the North Carolina Superior Court's having used an improper standard of review. While the NCOAH upheld the state's authority to issue the bulk of the permits, it too held that a portion of the permits that allowed us to "cut and prepare" an additional portion of the site was in excess of the relevant agency's authority. We have filed a petition for judicial review with the North Carolina Superior Court. All customer related work at the Brickhaven site has been completed.

Allied and its affiliate, Allied Power Resources, LLC, have been named in a collective action lawsuit filed in the U.S. District Court for the Northern District of Illinois, alleging violations of the Fair Labor Standards Act, and which includes related class claims alleging violations of the Illinois Minimum Wage Law and the Pennsylvania Minimum Wage Act for failure to pay overtime. This case is one of a series filed against companies in the oil, gas and energy industries in Illinois and Texas. The parties mediated this case in November 2018 and reached a settlement, which received conditional approval from the court. The parties are working on implementing the settlement terms and the plaintiffs in the case will submit a motion for final approval in June 2020 prior to the court's scheduled hearing.

In addition to the above matters, we are from time to time party to various lawsuits, claims and other legal proceedings that arise in the ordinary course of our business. With respect to all such lawsuits, claims and proceedings, we record reserves when it is probable a liability has been incurred and the amount of loss can be reasonably estimated. Although it is difficult to predict the ultimate outcome of these lawsuits, claims and proceedings, we do not believe that the ultimate disposition of any of these matters, individually or in the aggregate, would have a material adverse effect on our results of operations, financial position or cash flows. We maintain liability insurance for certain risks that is subject to certain self-insurance limits.

Included in general and administrative expense in the consolidated statements of operations for the year ended December 31, 2018 (Successor) was approximately \$20.0 million related to legal settlements. We believe amounts previously recorded are sufficient to cover any liabilities arising from the proceedings with all outstanding legal claims. Except as reflected in such accruals, we are currently unable to estimate a range of reasonably possible loss, or a range of reasonably possible loss in excess of the amount accrued, for outstanding legal matters.

16. Multiemployer Pension Plan

AMS contributes to union-sponsored multiemployer retirement defined benefit pension plans (the "multiemployer plans") under the terms of collective bargaining agreements that cover its union-represented employees. The risks of participating in the multiemployer plans are different from single-employer plans in the following aspects:

- Assets contributed to the multiemployer plans by one employer may be used to provide benefits to employees of other participating employers.
- If a participating employer stops contributing to the multiemployer plans, the unfunded obligations of the multiemployer plans may be borne by the remaining participating employers.
- If AMS chooses to stop participating in the multiemployer plans, AMS may be required to pay the multiemployer plans an amount based on the underfunded status of the multiemployer plans, referred to as a withdrawal liability.

The primary multiemployer plan to which AMS made contributions for the year ended December 31, 2019 (Successor), the year ended December 31, 2018 (Successor), the period from January 13, 2017 through December 31, 2017 (Successor), the period from January 1, 2017 through January 12, 2017 (Predecessor), and the year ended December 31, 2016 (Predecessor), is outlined in the table below. The "EIN/Pension Plan Number" column provides the Employer Identification Number ("EIN"). The most recent Pension Protection Act zone status available in 2018 is for the respective multiemployer plan's year-end within those

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years, unless otherwise noted. The zone status is based on information that AMS received from the multiemployer plans and is certified by the respective multiemployer plan's actuary. Among other factors, multiemployer plans in the red zone (critical) are generally less than 65% funded, multiemployer plans in the yellow zone (endangered) are less than 80% funded, and multiemployer plans in the green zone (neither critical and declining, critical, or endangered) are at least 80% funded. The "FIP/RP Status Pending/Implemented" column indicates multiemployer plans for which a financial improvement plan ("FIP") or a rehabilitation plan ("RP") is either pending or has been implemented. The last column lists the expiration dates of the collective bargaining agreements to which the multiemployer plans are subject.

Pension Fund	EIN/Pension Plan Number	Pension Protection Act Zone Status	FIP/RP Status Pending/Implemented	Successor			Predecessor			Expiration Date of Collective Bargaining Agreement
				Year ended December 31, 2019	Year ended December 31, 2018	Period from January 13, 2017 through December 31, 2017	Period from January 1, 2017 through January 12, 2017			
				Contributions to Funds by AMS	Contributions to Funds by AMS	Contributions to Funds by AMS	Contributions to Funds by AMS	Surcharge Imposed		
Central states, southeast and southwest areas pension plan	36-6044243	Red - Critical and declining	Progress under FIP or RP	\$ 47	\$ 34	\$ 59	\$ —	No		Continuous with notice period by either party
Employer Teamsters Locals 175 & 505 pension trust fund	55-6021850	Red - Critical	Progress under FIP or RP	\$ 112	\$ 92	\$ —	\$ —	Yes		2021

17. Business Segment and Related Information

The Company has identified two reportable segments, Environmental Solutions and Maintenance and Technical Services, as each met the quantitative threshold of generating revenue equal to or greater than 10% of the combined revenue of all operating segments.

The accounting policies applied to determine the segment information are the same as those described in the summary of significant accounting policies. Management evaluates the performance of each segment based on segment gross profit, which is calculated as revenue less cost of sales. For the year ended December 31, 2019 (Successor), the year ended December 31, 2018 (Successor), the period from January 13, 2017 through December 31, 2017 (Successor), and the period from January 1, 2017 through January 12, 2017 (Predecessor), there were no inter-segment revenue or other intersegment transactions. Segment assets are also evaluated by management based on each segment's investment in property and equipment. Assets (other than property and equipment and goodwill) are not allocated to segments.

Summarized financial information with respect to the reportable segments is as follows:

Successor

Year Ended December 31, 2019

	ES	M&TS	All Other	Total
Revenue	\$ 180,396	\$ 374,472	\$ —	\$ 554,868
Segment gross profit	11,486	28,890	—	40,376
Segment depreciation and amortization expense	6,924	8,566	7,947	23,437
Expenditures for segment assets	10,072	7,999	—	18,071

Year Ended December 31, 2018

	ES	M&TS	All Other	Total
Revenue	\$ 343,105	\$ 397,357	\$ —	\$ 740,462
Segment gross profit	69,464	28,264	—	97,728
Segment depreciation and amortization expense	27,943	6,394	7,971	42,308
Expenditures for segment assets	11,728	10,284	24	22,036

CHARAH SOLUTIONS, INC.

Notes to Consolidated & Combined Financial Statements, continued (amounts in thousands except per share data)

Period from January 13, 2017 through December 31, 2017	ES	M&TS	All Other	Total
Revenue	\$ 232,581	\$ 188,658	\$ —	\$ 421,239
Segment gross profit	64,433	17,898	—	82,331
Segment depreciation and amortization expense	23,169	2,361	189	25,719
Expenditures for segment assets	6,107	6,583	—	12,690

Predecessor

Period from January 1, 2017 through January 12, 2017	ES	M&TS	All Other	Total
Revenue	\$ 7,451	\$ 1,679	\$ —	\$ 9,130
Segment gross profit	1,412	417	—	1,829
Segment depreciation and amortization expense	688	70	5	763
Expenditures for segment assets	—	—	—	—

Successor

As of December 31, 2019	ES	M&TS	All Other	Total
Segment property and equipment, net	\$ 47,856	\$ 37,251	\$ 187	\$ 85,294
Segment goodwill	57,591	16,622	—	\$ 74,213

As of December 31, 2018	ES	M&TS	All Other	Total
Segment property and equipment, net	\$ 47,467	\$ 41,155	\$ 319	\$ 88,941
Segment goodwill	57,591	16,622	—	\$ 74,213

The following is a reconciliation of segment gross profit to net (loss) income:

	Successor			Predecessor
	Year Ended December 31, 2019	Year Ended December 31, 2018	Period from January 13, 2017 through December 31, 2017	Period from January 1, 2017 through January 12, 2017
Segment gross profit	\$ 40,376	\$ 97,728	\$ 82,331	\$ 1,829
General and administrative expenses	(60,870)	(76,752)	(48,495)	(3,170)
Interest expense, net	(16,835)	(32,226)	(14,146)	(4,181)
Income from equity method investment	2,295	2,407	816	48
Income tax expense (benefit)	4,190	(2,427)	—	—
Net (loss) income	\$ (39,224)	\$ (6,416)	\$ 20,506	\$ (5,474)

The following is a reconciliation of segment assets to total assets as of:

	December 31,	
	2019	2018
Segment property and equipment, net	\$ 85,294	\$ 88,941
Segment goodwill	74,213	74,213
Non-segment assets	196,249	295,747
Total assets	\$ 355,756	\$ 458,901

18. Income Taxes

The Company is a “C” Corporation under the Code and, as a result, is subject to U.S. federal, state, and local income taxes. The Company’s subsidiaries previously operated as partnerships for income tax purposes. Prior to the contribution of assets and liabilities to the Company on June 18, 2018, the subsidiaries passed through their taxable income to their owners for U.S. federal and other state and local income tax purposes and, thus, the subsidiaries were not subject to U.S. federal income taxes or

CHARAH SOLUTIONS, INC.

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other state or local income taxes, except for franchise tax at the state level. Accordingly, the financial data attributable prior to the contribution on June 18, 2018 contains no provision for U.S. federal income taxes or income taxes in any state or locality other than franchise taxes.

The Company has determined its opening balance for deferred income tax assets and liabilities to be a net deferred tax liability of \$1,508 based on the future tax effects of temporary differences between the financial statement value and tax basis of assets and liabilities contributed to the Company upon conversion as a taxable corporation on June 18, 2018. In accordance with ASC Topic 740, the tax effects have been recorded as a separate item of income tax expense.

The components of the provision for income taxes for the year ended December 31, 2019 and 2018 is as follows:

	Year Ended December 31,	
	2019	2018
Current income tax (benefit) expense:		
Federal	\$ —	\$ —
State	(169)	568
	<u>(169)</u>	<u>568</u>
Deferred income tax expense (benefit):		
Federal	2,389	(1,279)
State	1,970	(1,716)
	<u>4,359</u>	<u>(2,995)</u>
Total income tax expense (benefit)	<u>\$ 4,190</u>	<u>\$ (2,427)</u>

Pre-tax book loss for the period June 18, 2018 to December 31, 2018 (Successor) was \$16,588 including income attributable to non-controlling interest of \$1,627, which is not subject to income tax at the Company level. The Company's effective income tax rate on consolidated book income for the period is 14.6%. The Company's foreign subsidiary's book income was insignificant and there was no current or deferred foreign income tax expense for the year ended December 31, 2018 (Successor).

A reconciliation of income tax expense (benefit) based on the federal statutory income tax rate of 21% to the actual income tax benefit for the year ended December 31, 2019 and 2018 (Successor) is as follows:

	Year Ended December 31,	
	2019	2018
Income tax benefit at the federal statutory rate (21%)	\$ (7,357)	\$ (1,857)
State income tax expense (benefit), net of federal tax benefit	1,369	(907)
Income tax expense upon conversion to corporation	—	1,818
Non-controlling interest	(595)	(522)
Stock compensation	78	374
Income prior to conversion	—	(1,446)
Valuation allowance	10,368	—
Other	327	113
Expense (benefit) from income taxes	<u>\$ 4,190</u>	<u>\$ (2,427)</u>

The Company accounts for income taxes in accordance with ASC Topic 740, which requires an asset and liability approach for measuring deferred taxes based on temporary differences between the financial statement and tax basis of assets and liabilities existing at each balance sheet date using enacted tax rates for the years in which taxes are expected to be paid or recovered.

The components of the Company's deferred tax assets and liabilities as of December 31, 2019 and 2018 (Successor) are as follows:

CHARAH SOLUTIONS, INC.

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	As of December 31,	
	2019	2018
Deferred tax assets:		
Loss carryovers	\$ 13,780	\$ 850
Asset retirement obligation	3,810	6,489
Other accrued expenses and reserves	3,789	2,636
Purchase option liability	1,790	2,494
Accrued bonus	722	1,622
Deferred tax assets	23,891	14,091
Valuation allowance	(12,908)	—
Net deferred tax asset	10,983	14,091
Deferred tax liabilities:		
Fixed assets, including land	10,434	9,641
Intangible assets	1,492	818
Prepaid expenses	549	885
Deferred tax liabilities	12,475	11,344
Net deferred tax (liability) asset	\$ (1,492)	\$ 2,747

The Company has net operating loss carryforwards of approximately \$41,000 for federal income tax purposes and an interest expense carryover of \$13,000 as of December 31, 2019. Both net operating loss and interest expense carryovers have unlimited carryover periods. Net operating losses for state tax purposes vary by state due mainly to apportionment.

Net deferred tax liabilities were \$1,492 at December 31, 2019 and net deferred tax assets were \$2,747 at December 31, 2018. We consider both positive and negative evidence when measuring the need for a valuation allowance. The weight given to the evidence is commensurate with the extent to which it may be objectively verified. Current and cumulative financial reporting results are a source of objectively verifiable evidence. We give operating results during the most recent three-year period a significant weight in our analysis. We typically only consider forecasts of future profitability when positive cumulative operating results exist in the most recent three-year period. We perform scheduling exercises to determine if sufficient taxable income of the appropriate character exists in the periods required in order to realize our deferred tax assets with limited lives prior to their expiration. Realization of net operating losses and other carryforwards is dependent upon generating sufficient taxable income in the appropriate jurisdiction prior to the expiration of the carryforward periods, which involves business plans, planning opportunities and expectations about future outcomes.

Furthermore, we consider tax planning strategies available to accelerate taxable amounts if required to utilize expiring deferred tax assets. A valuation allowance is not required to the extent that, in our judgment, positive evidence exists with a magnitude and duration sufficient to result in a conclusion that it is more likely than not that our deferred tax assets will be realized. A valuation allowance is recorded if it is more likely than not that a portion of our deferred tax assets will not be realized. We evaluate both the positive and negative evidence in determining the need for a valuation allowance on our deferred tax assets.

Based on the available evidence as of December 31, 2019, we were not able to conclude it was more likely than not certain deferred tax assets will be realized. Therefore, a valuation allowance of \$12,908 was recorded against our deferred tax assets. We will continue to evaluate the need for a valuation allowance on our deferred tax assets in future periods.

The Company classifies any interest and penalties related to income taxes assessed as part of income tax expense. The Company has concluded that there are no significant uncertain tax positions requiring recognition in the financial statements, nor has the Company been assessed interest or penalties by any major tax jurisdiction to any open tax periods.

The Company's income tax returns for the year ended December 31, 2018 (Successor) have been timely filed with the U.S. federal, state and local governments. The statute of limitations is open for the federal income tax return and certain state returns through October 15, 2022 and for most of the remaining state returns through October 15, 2023. The examination of prior period tax returns filed for partnerships, the interests of which were contributed to the Company in the reorganization, could impact the Company's tax expense and balance sheet tax accounts.

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The Company acquired a foreign subsidiary at reorganization, and the subsidiary is subject to examination in its local country for 2018 and prior calendar years. The Company is not aware of any potential adjustments for 2018 or prior years and any potential adjustment is not expected to be material to the financial statements.

19. Operating Leases

The Company leases buildings, vehicles and equipment under various non-cancellable agreements classified as operating leases, which expire through December 2026 and require various minimum annual rentals.

Future minimum lease payments are as follows:

For the Year Ending December 31,	Operating Leases
2020	\$ 7,396
2021	4,734
2022	3,965
2023	3,426
2024	1,389
Thereafter	98
Total	<u>\$ 21,008</u>

The total rent expense, excluding the related party leases (see Note 7), included in the consolidated and combined statements of operations for the year ended December 31, 2019 (Successor), the year ended December 31, 2018 (Successor), the period from January 13, 2017 through December 31, 2017 (Successor), and the period from January 1, 2017 through January 12, 2017 (Predecessor) was \$19,549, \$6,150, \$5,574, and \$179, respectively.

20. Members' Equity

During 2016, 50 shares of non-voting common stock were issued in accordance with the Deferred Stock Plan (see Note 13).

Charah, LLC's voting and non-voting shares at January 12, 2017 (Predecessor) were cancelled in connection with the BCP transaction and Series A and Series B members' interests were issued. Charah, LLC had 200,000 Series A members' interests authorized, of which 104,110 were issued and outstanding as of December 31, 2017 (Successor). The Series A members' interests were issued between January 13, 2017 and December 31, 2017 (Successor) in connection with the BCP transaction in exchange for BCP's investment of \$104,100. Charah, LLC had 100,000 Series B members' interests authorized, of which 35,199 were issued and outstanding as of December 31, 2017. The Series B members' interests were issued between January 13, 2017 and December 31, 2017 (Successor) in connection with the BCP transaction in exchange for an investment of \$32,800 from members of Charah, LLC's management and \$2,400 with the formation of Allied Power Management, LLC, as described below. Series A and Series B both participated in distributions.

Allied Power Management, LLC had 200,000 Series A members' interests authorized, of which 7,211 were issued and outstanding as of December 31, 2017 (Successor). The Series A members' interests were issued between January 13, 2017 and December 31, 2017 (Successor) in exchange for an investment of \$7,200. Allied Power Management, LLC had 100,000 Series B members' interests authorized, of which 2,438 were issued and outstanding as of December 31, 2017 (Successor). The Series B members' interests were issued between January 13, 2017 and December 31, 2017 (Successor). The Series B members' interests were issued in connection with the formation of Allied Power Management, LLC in exchange for an investment of \$2,400 by the existing members of Charah, LLC and members of Allied Power Management, LLC, with the purpose of creating common ownership of the two entities. Series A and Series B both participated in distributions.

Upon the IPO, the Series A and Series B shares were exchanged for shares in Charah Solutions (see Note 1).

21. (Loss) Earnings Per Share

Basic (loss) earnings per share is computed by dividing net (loss) income attributable to the Company's stockholders by the weighted average number of shares outstanding during the period. Diluted (loss) earnings per share reflects all potential dilutive ordinary shares outstanding during the period and is computed by dividing net (loss) income available to the Company's stockholders by the weighted average number of shares outstanding during the period increased by the number of additional shares that would

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have been outstanding as dilutive securities. For the periods prior to the IPO, the average number of ordinary shares outstanding used to calculate basic and diluted (loss) earnings per share was based on the ordinary shares that were outstanding at the time of the IPO.

As a result of the net loss per share for the years ended December 31, 2019 (Successor) and 2018 (Successor), the inclusion of all potentially dilutive shares would be anti-dilutive. Therefore, dilutive shares (in thousands) of 1,329 and 1,020 were excluded from the computation of the weighted average shares for diluted net loss per share for the years ended December 31, 2019 (Successor) and 2018 (Successor), respectively.

Basic and diluted (loss) earnings per share is determined using the following information:

	Successor			Predecessor
	Year Ended December 31, 2019	Year Ended December 31, 2018	Period from January 13, 2017 through December 31, 2017	Period from January 1, 2017 through January 12, 2017
Numerator:				
Net (loss) income attributable to Charah Solutions, Inc.	\$ (42,058)	\$ (8,902)	\$ 18,316	\$ (5,528)
Denominator (in thousands):				
Weighted average shares outstanding	29,495	26,610	23,710	N/A
Dilutive share-based awards	—	—	822	N/A
Total weighted average shares outstanding, including dilutive shares	29,495	26,610	24,532	N/A
Basic (loss) earnings per share	\$ (1.43)	\$ (0.33)	\$ 0.77	N/A
Diluted (loss) earnings per share	\$ (1.43)	\$ (0.33)	\$ 0.75	N/A

22. Major Customers

The Company derived approximately 52% and 12% of its consolidated revenue from two customers during the year ended December 31, 2019 (Successor), approximately 46% and 35% of its consolidated and combined revenue from two customers during the year ended December 31, 2018 (Successor), approximately 32% and 49% from two customers during the period from January 13, 2017 through December 31, 2017 (Successor), and approximately 68% from one customer during the period from January 1, 2017 through January 12, 2017 (Predecessor). Accounts receivable from the two customers at December 31, 2019 (Successor) and 2018 (Successor) were \$12,009 and \$35,106, respectively.

23. Quarterly Financial Data (Unaudited)

The following table summarizes the unaudited quarterly results of operations for the year ended December 31, 2019 and 2018:

Successor 2019	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
Revenue	\$ 163,258	\$ 120,936	\$ 121,113	\$ 149,561
Operating income (loss)	1,394	(19,465)	(237)	(2,186)
Net loss attributable to Charah Solutions, Inc.	(2,819)	(18,026)	(3,313)	(17,900)
Basic loss per share	(0.10)	(0.61)	(0.11)	(0.60)
Diluted loss per share	(0.10)	(0.61)	(0.11)	(0.60)

CHARAH SOLUTIONS, INC.**Notes to Consolidated & Combined Financial Statements, continued**
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Successor	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
2018				
Revenue	\$ 155,529	\$ 195,723	\$ 186,002	\$ 203,208
Operating income (loss)	4,717	11,612	(5,919)	10,566
Net income (loss) attributable to Charah Solutions, Inc.	806	3,220	(17,395)	4,467
Basic earnings (loss) per share	0.03	0.13	(0.60)	0.15
Diluted earnings (loss) per share	0.03	0.13	(0.60)	0.15

Basic and diluted (loss) earnings per common share for each of the quarters presented above is based on the respective weighted average number of common and dilutive potential common shares outstanding for each quarter, and the sum of the quarters may not necessarily be equal to the full year basic and diluted earnings per common share amounts.

Schedule II. Valuation and Qualifying Accounts

The table below presents valuation and qualifying accounts:

	Balance at Beginning of Period	Charged to Expense	Deductions	Balance at End of Period
Year ended December 31, 2019:				
Allowance for doubtful accounts	—	146	—	146
Valuation allowance for deferred taxes	—	(12,908)	—	(12,908)

DESCRIPTION OF SECURITIES OF THE COMPANY

Except as otherwise indicated or unless the context requires otherwise, all references herein to the “Company,” “we,” “us,” “our” and similar terms refer to Charah Solutions, Inc.

The authorized capital stock of the Company consists of 200,000,000 shares of common stock, \$0.01 par value per share (the “Common Stock”), and 50,000,000 shares of preferred stock, \$0.01 par value per share. Our Common Stock is the only class or series of our securities which has been registered under Section 12 of the Securities Exchange Act of 1934, as amended. The description below summarizes certain general terms and provisions of the Common Stock and our Series A Preferred Stock (the “Preferred Stock”).

The following summary of the capital stock, Amended and Restated Certificate of Incorporation and Amended and Restated Bylaws of the Company does not purport to be complete and is qualified in its entirety by reference to the provisions of applicable law and to our Amended and Restated Certificate of Incorporation and Amended and Restated Bylaws, which we have previously filed with the U.S. Securities and Exchange Commission.

Common Stock

Voting Rights. Holders of shares of Common Stock are entitled to one vote per share held of record on all matters to be voted upon by the stockholders. The holders of Common Stock do not have cumulative voting rights in the election of directors.

Dividend Rights. Holders of shares of our Common Stock are entitled to ratably receive dividends when and if declared by our board of directors out of funds legally available for that purpose, subject to any statutory or contractual restrictions on the payment of dividends and to any prior rights and preferences that may be applicable to any outstanding preferred stock.

Liquidation Rights. Upon our liquidation, dissolution, distribution of assets or other winding up, the holders of Common Stock are entitled to receive ratably the assets available for distribution to the stockholders after payment of liabilities and the liquidation preference that may be applicable to any outstanding preferred stock plus any other applicable premiums of any of our outstanding shares of preferred stock.

Other Matters. The shares of Common Stock have no preemptive or conversion rights and are not subject to further calls or assessment by us. There are no redemption or sinking fund provisions applicable to the Common Stock. All outstanding shares of our Common Stock are fully paid and non-assessable.

Preferred Stock

Our Amended and Restated Certificate of Incorporation authorizes our board of directors, subject to any limitations prescribed by law, without further stockholder approval, to establish and to issue from time to time one or more classes or series of preferred stock, par value \$0.01 per share, covering up to an aggregate of 50,000,000 shares of preferred stock. Each class or series of preferred stock will cover the number of shares and will have the powers, preferences, rights, qualifications, limitations and restrictions determined by the board of directors, which may include, among others, dividend rights, liquidation preferences, voting rights, conversion rights, preemptive rights and redemption rights. Except as provided by law or in a preferred stock designation, the holders of preferred stock will not be entitled to vote at or receive notice of any meeting of stockholders.

Series A Preferred Stock

On March 16, 2020, the date of issuance, each share of Preferred Stock had an initial Liquidation Preference (as defined in the Certificate of Designations for such Preferred Stock) of \$1,000, for a total initial Liquidation Preference of \$26,000,000 as of the date of issuance. The Preferred Stock will be entitled to a dividend at a rate of 10% of the Liquidation Preference per annum payable in cash on a quarterly basis, or at the election of the Company, a dividend at the rate of 13% of the Liquidation Preference per annum payable by accruing such dividend and adding it to the Liquidation Preference. Any increase in the Liquidation Preference will, among other things, increase the number of shares of Common Stock issuable upon conversion of each share of Preferred Stock. The Preferred Stock will also participate in dividends on our Common Stock on an as-converted basis.

The Preferred Stock will be convertible at the option of the holders at any time after the three month anniversary of the issuance of Preferred Stock into the number of shares of Common Stock per share of Preferred Stock (such rate, the “Conversion Rate”) equal to the quotient of (i) the Liquidation Preference on the conversion date divided by (ii) a conversion price of \$2.77 per share, subject to customary anti-dilution adjustments and customary provisions related to partial dividend periods.

At any time following the three year anniversary of the issuance of the Preferred Stock, the Company may give 30 days’ notice to the holders of the Preferred Stock that it intends to cause the conversion of the Preferred Stock at the Conversion Rate, provided the closing sale price of the Common Stock equals or exceeds 120% of the Conversion Price for the 20 trading days ending on

the date immediately prior to the date of delivery of the Company's notice to convert and subject to certain other customary requirements. Upon delivery of such notice, each holder of the Preferred Stock proposed to be converted will have the option, at its discretion, to have its Preferred Stock converted at the then-applicable Conversion Rate or redeemed in cash at the then-applicable Redemption Price (as defined below).

If the Company undergoes certain change of control transactions, the Company will be required to immediately make an offer to repurchase all of the then-outstanding shares of Preferred Stock for cash consideration per share equal to the greater of (i) 100% of the Liquidation Preference, plus accrued and unpaid dividends, plus, if applicable for a transaction occurring prior to the third anniversary of the date of issuance a make-whole premium determined pursuant to a calculation of the present value of the dividends that would have accrued through such anniversary, discounted at a rate equal to the applicable treasury rate plus 0.50% (the "Make-Whole Premium"); provided that if the transaction occurs prior to the first anniversary of the date of issuance, the Make-Whole Premium shall be no greater than \$4.0 million and (ii) the closing sale price of the Common Stock on the date of such redemption multiplied by the number of shares of Common Stock issuable upon conversion of the outstanding Preferred Stock.

At any time following the three-year anniversary of the issuance of the Preferred Stock, the Company may redeem the Preferred Stock, in whole or in part, for an amount in cash equal to the greater of (i) the closing sale price of the Common Stock on the date the Company delivers such notice multiplied by the number of shares of Common Stock issuable upon conversion of the outstanding Preferred Stock and (ii) (x) if the redemption occurs prior to the fourth anniversary of the date of the date of issuance, 103% of the Liquidation Preference, plus accrued and unpaid dividends, or (y) if the redemption occurs on or after the fourth anniversary of the date of the closing, the Liquidation Preference plus accrued and unpaid dividends (the foregoing clauses (i) or (ii), as applicable, the "Redemption Price").

At any time following the seven-year anniversary of the issuance, the holders of the Preferred Stock will have the option to require the Company to redeem any or all of the then-outstanding shares of Preferred Stock for cash consideration equal to the Liquidation Preference, plus accrued and unpaid dividends.

In addition, from and after April 5, 2020, the holders of Preferred Stock will be entitled to either (i) appoint one director to our board of directors or (ii) one non-voting observer to our board of directors. Any director or board observer appointed by the holders of the Preferred Stock will have representation on each committee of the board of the Company, subject to applicable legal and stock exchange requirements.

Until conversion, the holders of the Preferred Stock will vote together with our Common Stock on an as-converted basis and also have rights to vote as a separate class on certain customary matters impacting the Preferred Stock. However, the Preferred Stock is not convertible into our Common Stock and is not entitled to the board election rights described above, and the voting power of such Preferred Stock is limited to 0.99% of the voting power of the Common Stock outstanding prior to the issuance of the Preferred Stock, in each case, until April 5, 2020, and in the case of conversion into our Common Stock, until June 16, 2020, the three month anniversary of the issuance of the Preferred Stock.

Anti-Takeover Effects of Provisions of Our Amended and Restated Certificate of Incorporation, Our Amended and Restated Bylaws and Delaware Law

Some provisions of Delaware law, and our Amended and Restated Certificate of Incorporation and our Amended and Restated Bylaws described below, contain provisions that could make the following transactions more difficult: acquisitions of us by means of a tender offer, a proxy contest or otherwise; or removal of our incumbent officers and directors. These provisions may also have the effect of preventing changes in our management. It is possible that these provisions could make it more difficult to accomplish or could deter transactions that stockholders may otherwise consider to be in their best interest or in our best interests, including transactions that might result in a premium over the market price for our shares.

These provisions, summarized below, are expected to discourage coercive takeover practices and inadequate takeover bids. These provisions are also designed to encourage persons seeking to acquire control of us to first negotiate with us. We believe that the benefits of increased protection and our potential ability to negotiate with the proponent of an unfriendly or unsolicited proposal to acquire or restructure us outweigh the disadvantages of discouraging these proposals because, among other things, negotiation of these proposals could result in an improvement of their terms.

Delaware Law

We are not subject to the provisions of Section 203 of the General Corporation Law of the State of Delaware ("DGCL") regulating corporate takeovers. In general, those provisions prohibit a Delaware corporation, including those whose securities are listed for trading on the NYSE, from engaging in any business combination with any interested stockholder for a period of three years following the date that the stockholder became an interested stockholder (as such term is defined in the DGCL), unless:

- the transaction is approved by the board of directors before the date the interested stockholder attained that status;

- upon consummation of the transaction that resulted in the stockholder becoming an interested stockholder, the interested stockholder owned at least 85% of the voting stock of the corporation outstanding at the time the transaction commenced; or
- on or after such time the business combination is approved by the board of directors and authorized at a meeting of stockholders by at least two-thirds of the outstanding voting stock that is not owned by the interested stockholder.

Amended and Restated Certificate of Incorporation and Amended and Restated Bylaws

Provisions of our Amended and Restated Certificate of Incorporation and our Amended and Restated Bylaws may delay or discourage transactions involving an actual or potential change in control or change in our management, including transactions in which stockholders might otherwise receive a premium for their shares, or transactions that our stockholders might otherwise deem to be in their best interests. Therefore, these provisions could adversely affect the price of our Common Stock.

Among other things, our Amended and Restated Certificate of Incorporation and Amended and Restated Bylaws:

- establish advance notice procedures with regard to stockholder proposals relating to the nomination of candidates for election as directors or new business to be brought before meetings of our stockholders. These procedures provide that notice of stockholder proposals must be timely given in writing to our corporate secretary prior to the meeting at which the action is to be taken. Generally, to be timely, notice must be received at our principal executive offices not less than 90 days nor more than 120 days prior to the first anniversary date of the annual meeting for the preceding year. Our Amended and Restated Bylaws specify the requirements as to form and content of all stockholders' notices. These requirements may preclude stockholders from bringing matters before the stockholders at an annual or special meeting;
- provide our board of directors the ability to authorize undesignated preferred stock. This ability makes it possible for our board of directors to issue, without stockholder approval, preferred stock with voting or other rights or preferences that could impede the success of any attempt to change control of us. These and other provisions may have the effect of deterring hostile takeovers or delaying changes in control or management of our company;
- provide that, subject to the rights of holders of any series of preferred stock, the authorized number of directors may be changed only by resolution of the board of directors;
- provide that, after Bernhard Capital Partners Management, LP ("BCP") and its affiliates no longer collectively hold more than 35% of the voting power of our Common Stock, all vacancies, including newly created directorships, may, except as otherwise required by law or, if applicable, the rights of holders of a series of preferred stock, be filled by the affirmative vote of a majority of directors then in office, even if less than a quorum (prior to such time, vacancies may also be filled by stockholders holding a majority of the outstanding shares entitled to vote);
- provide that, after BCP and its affiliates no longer collectively hold more than 35% of the voting power of our Common Stock, any action required or permitted to be taken by the stockholders must be effected at a duly called annual or special meeting of stockholders and may not be effected by any consent in writing in lieu of a meeting of such stockholders, subject to the rights of the holders of any series of preferred stock with respect to such series;
- provide that, after BCP and its affiliates no longer collectively hold more than 35% of the voting power of our Common Stock, our Amended and Restated Certificate of Incorporation and Amended and Restated Bylaws may be amended by the affirmative vote of the holders of at least two-thirds of our then outstanding shares of stock entitled to vote thereon;
- provide that, after BCP and its affiliates no longer collectively hold more than 35% of the voting power of our Common Stock, special meetings of our stockholders may only be called by the board of directors;
- provided that, after BCP and its affiliates no longer collectively hold more than 35% of the voting power of our Common Stock, the affirmative vote of the holders of at least 75% in voting power of all then outstanding Common Stock entitled to vote generally in the election of directors, voting together as a single class, is required to remove any or all of the directors from office at any time, and directors will be removable only for "cause";
- provide that our board of directors is divided into three classes of directors, with each class as nearly equal in number as possible, serving staggered three-year terms, other than directors that may be elected by holders of preferred stock, if any. This system of electing and removing directors may tend to discourage a third party from making a tender offer or otherwise attempting to obtain control of us, because it generally makes it more difficult for stockholders to replace a majority of the directors;
- provide that we renounce any interest in existing and future investments in other entities by, or the business opportunities of, BCP and its affiliates and that they have no obligation to offer us those investments or opportunities; and
- provide that our Amended and Restated Bylaws can be amended by the board of directors, except to the extent that such amendment would be contrary or inconsistent with that certain stockholder's agreement dated as of June 18, 2018, by

and among CEP Holdings, Inc., BCP and certain members of our management, for so long as the such agreement remains in effect.

Forum Selection

Our Amended and Restated Certificate of Incorporation provides that unless we consent in writing to the selection of an alternative forum, the Court of Chancery of the State of Delaware will, to the fullest extent permitted by applicable law, be the sole and exclusive forum for:

- any derivative action or proceeding brought on our behalf;
- any action asserting a claim of breach of a fiduciary duty owed by any of our directors, officers, employees, agents or stockholders to us or our stockholders;
- any action asserting a claim against us or any director, officer, employee or agents of ours arising pursuant to any provision of the DGCL, our Amended and Restated Certificate of Incorporation or our Amended and Restated Bylaws; or
- any action asserting a claim that is governed by the internal affairs doctrine.

Our Amended and Restated Certificate of Incorporation also provides that any person or entity purchasing or otherwise acquiring or holding any interest in shares of our capital stock will be deemed to have notice of, and to have consented to, this forum selection provision.

Although we believe these provisions benefit us by providing increased consistency in the application of Delaware law for the specified types of actions and proceedings, the provisions may have the effect of discouraging lawsuits against our directors, officers, employees and agents. The enforceability of similar exclusive forum provisions in other companies' certificates of incorporation has been challenged in legal proceedings, and it is possible that, in connection with one or more actions or proceedings described above, a court could rule that this provision in our Amended and Restated Certificate of Incorporation is inapplicable or unenforceable.

Limitation of Liability and Indemnification Matters

Our Amended and Restated Certificate of Incorporation limits the liability of our directors for monetary damages for breach of their fiduciary duty as directors, except for liability that cannot be eliminated under the DGCL. Delaware law provides that directors of a company will not be personally liable for monetary damages for breach of their fiduciary duty as directors, except for liabilities:

- for any breach of their duty of loyalty to us or our stockholders;
- for acts or omissions not in good faith or which involve intentional misconduct or a knowing violation of law;
- for unlawful payment of dividend or unlawful stock repurchase or redemption, as provided under Section 174 of the DGCL; or
- for any transaction from which the director derived an improper personal benefit.

Any amendment, repeal or modification of these provisions will be prospective only and would not affect any limitation on liability of a director for acts or omissions that occurred prior to any such amendment, repeal or modification.

Our Amended and Restated Bylaws also provide that we will indemnify our directors and officers to the fullest extent permitted by Delaware law. Our Amended and Restated Bylaws also permit us to purchase insurance on behalf of any officer, director, employee or other agent for any liability arising out of that person's actions as our officer, director, employee or agent, regardless of whether Delaware law would permit indemnification. We have entered into indemnification agreements with each of our current directors and officers. These agreements require us to indemnify these individuals to the fullest extent permitted under Delaware law against liability that may arise by reason of their service to us, and to advance expenses incurred as a result of any proceeding against them as to which they could be indemnified. We believe that the limitation of liability provision that is in our Amended and Restated Certificate of Incorporation and the indemnification agreements will facilitate our ability to continue to attract and retain qualified individuals to serve as directors and officers.

Listing

Our Common Stock is listed on the NYSE under the symbol "CHRA." The Preferred Stock is not listed on any securities exchange.

Subsidiaries of Charah Solutions, Inc.

Entity	State or Other Jurisdiction of Incorporation or Organization
Charah Sole Member LLC	Delaware
Allied Power Sole Member, LLC	Delaware
Charah, LLC	Kentucky
Allied Power Management, LLC	Delaware
Ash Management Services, LLC	Kentucky
Green Meadow, LLC	North Carolina
Ash Venture LLC	North Carolina
CV Ash, LLC	Texas
Allied Power Services, LLC	Delaware
Charah Plant Services, LLC	Delaware
Allied Power Resources, LLC	Delaware
Charah Management LLC	Delaware
Allied Power Holdings, LLC	Delaware
SCB International Holdings, LLC	Delaware
Mercury Capture Intellectual Property, LLC	Delaware
SCB Trading, LLC	Connecticut
Mercury Capture Beneficiation, LLC	Delaware
Nutek Micro-Grinding, LLC	Connecticut
Oreco Trading, Inc.	Panama
SCB Europe S.a.R.L.	Italy
Charah Environmental Redevelopment Group, LLC	Kentucky
Muskegan Environmental Redevelopment Group, LLC	Michigan

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the incorporation by reference in Registration Statement No. 333-225717 on Form S-8 of our report dated March 27, 2020, relating to the financial statements of Charah Solutions, Inc. appearing in this Annual Report on Form 10-K for the year ended December 31, 2019.

/s/ Deloitte & Touche LLP

Louisville, Kentucky

March 27, 2020

CERTIFICATION

I, Scott A. Sewell, certify that:

1. I have reviewed this Annual Report on Form 10-K of Charah Solutions, Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) for the registrant and have:
 - a. Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - b. Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - c. Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - d. Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - a. All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - b. Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: March 27, 2020

/s/ Scott A. Sewell

Scott A. Sewell

President and Chief Executive Officer

(Principal Executive Officer)

CERTIFICATION

I, Roger D. Shannon, certify that:

1. I have reviewed this Annual Report on Form 10-K of Charah Solutions, Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) for the registrant and have:
 - a. Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - b. Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - c. Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - d. Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - a. All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - b. Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: March 27, 2020

/s/ Roger D. Shannon

Roger D. Shannon

Chief Financial Officer and Treasurer

(Principal Financial Officer)

**CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES OXLEY ACT OF 2002**

In connection with the Annual Report on Form 10-K of Charah Solutions, Inc. (the “Company”) for the fiscal year ended December 31, 2019, as filed with the Securities and Exchange Commission on the date hereof (the “Report”), I, Scott A. Sewell, President and Chief Executive Officer of the Company, certify, 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that, to my knowledge:

- (1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended; and
- (2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: March 27, 2020

/s/ Scott A. Sewell

Scott A. Sewell

President and Chief Executive Officer

(Principal Executive Officer)

**CERTIFICATION PURSUANT TO
18 U.S.C SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES OXLEY ACT OF 2002**

In connection with the Annual Report on Form 10-K of Charah Solutions, Inc. (the “Company”) for the fiscal year ended December 31, 2019, as filed with the Securities and Exchange Commission on the date hereof (the “Report”), I, Roger D. Shannon, Chief Financial Officer and Treasurer of the Company, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that, to my knowledge:

- (1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended; and
- (2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: March 27, 2020

/s/ Roger D. Shannon

Roger D. Shannon

Chief Financial Officer and Treasurer

(Principal Financial Officer)

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MISSION

Charah Solutions is a total solutions company providing unparalleled service and innovation.

VISION

Charah Solutions is and will continue to be the leader in customer service, safety and innovation. We do this by hiring and developing great talent and working together to challenge and inspire each other to be the very best.

VALUES

We focus daily on the following core values:

Customer

Exceed Expectations

Safety

Never Compromise

Innovation

Rethink Routine, Identify New Solutions

Sustainability

Take Responsibility And Take Action

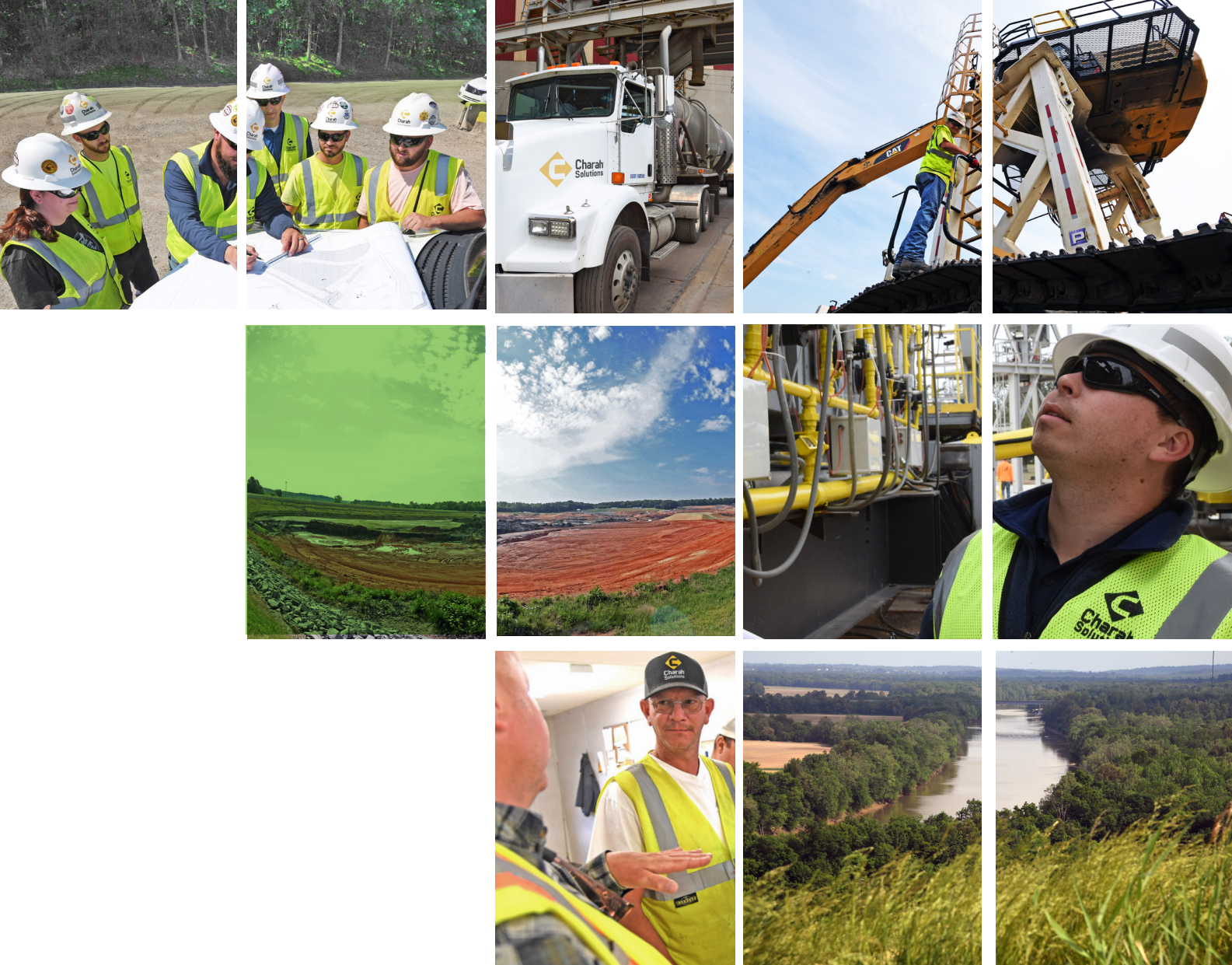
Teamwork

Accountable To Each Other

Integrity

Always Do The Right Thing





SERVICE ABOVE ALL.

TOLL-FREE: 877-314-7724
PHONE: 502-245-1353
WEBSITE: charah.com

Charah Solutions, Inc.
 12601 Plantside Drive
 Louisville, KY 40299

