EAGLE MATERIALS INC
Form 10-K
May 23, 2018

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

March 31, 2018

Commission File No. 1-12984

EAGLE MATERIALS INC.

(Exact name of registrant as specified in its charter)

Delaware (State of Incorporation)

75-2520779 (I.R.S. Employer Identification No.)

3811 Turtle Creek Blvd, Suite 1100, Dallas, Texas 75219 (Address of principal executive offices)

(214) 432-2000 (Registrant’s telephone number)

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

Title of each class	Name of each exchange on which registered
Common Stock (par value $.01 per share)	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 Section 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 and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). YES NO

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K.

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

Large accelerated filer Accelerated filer Smaller reporting company

Non-accelerated filer (Do not check if a 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

The aggregate market value of the voting stock held by nonaffiliates of the Company at September 30, 2017 (the last business day of the registrant's most recently completed second fiscal quarter) was approximately $5.1 billion.

As of May 21, 2018, the number of outstanding shares of common stock was:

Class	Outstanding Shares
Common Stock, $.01 Par Value	47,973,138

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the Proxy Statement for the Annual Meeting of Stockholders of Eagle Materials Inc. to be held on August 2, 2018 are incorporated by reference in Part III of this Report.

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PART I

ITEM 1. Business

Overview

Eagle Materials Inc., through its subsidiaries, (the Company, which may be referred to as we, our, or us) is a leading supplier of heavy construction materials, light building materials, and materials used for oil and natural gas extraction in the United States. Our products are commodities that are essential in commercial and residential construction; public construction projects; projects to build, expand, and repair roads and highways; and in oil and natural gas extraction. Demand for these products is generally cyclical and seasonal, depending on economic and geographic conditions. We distribute our products throughout most of the United States, which provides us with regional economic diversification.

The Company was founded in 1963 as a building materials subsidiary of Centex Corporation (Centex). It operated as a public company under the name Centex Construction Products, Inc. from April 1994 to January 30, 2004, at which time Centex completed a tax-free distribution of its shares to its shareholders, and the company was renamed Eagle Materials Inc. (NYSE: EXP).

Strategy

Our strategy focuses on four areas that differentiate us from competitors and contribute to our growth: being a low-cost producer in all our markets, maintaining a decentralized operating structure, operating in geographical markets with favorable demographic trends, and profitable growth through both strategic acquisitions and the organic development of our asset network.

Maintain low-cost producer position

Our goal and the bedrock of our strategy, is to be a low-cost producer in each of the markets in which we compete. We focus continually on reducing costs and making our operations more efficient. Maintaining our low-cost position provides meaningful competitive, financial, and environmental benefits.

The products we make are commodities, and competition is based primarily on price, with quality and customer service being secondary considerations. Thus, being a low-cost producer is a competitive advantage and can lead to higher margins, better returns and stronger free cash flow generation. We anticipate cash flow will increase even more in fiscal year 2019, as a result of tax reform.

Being a low-cost producer is not only key to our commercial success; it is also fully aligned with and advances our commitment to sustainable environmental practices. To maintain our low-cost producer position, we must constantly innovate our production processes so that we are using fewer resources to make the same commodities. We regularly invest in technologies at our facilities to control emissions and to modify the fuels that we burn.

Decentralize operations

The Company operates through a decentralized structure: all operations are managed at the local or regional level and products are branded and marketed by our individual companies. This local-market strategy provides several benefits, including increased familiarity with our customers, higher brand recognition, and lower transportation costs, which is a meaningful advantage in the construction materials industry.

Operate in demographically attractive markets

Demand for our products depends on construction activity which correlates positively with population growth. While the Company's markets include most of the United States, approximately 70% of our total revenue is generated in ten states: California, Colorado, Illinois, Missouri, Nebraska, Nevada, Oklahoma, Ohio, Texas, and Wyoming. Population growth, which is a major driver of construction products and building materials demand, is expected to grow approximately 30% between the 2010 census and 2040 for these ten states, compared to 24% population growth for the United States as a whole, according to the Weldon Cooper Center at the University of Virginia. In our Light Materials sector, we have located operations primarily in the southern part of the United States, known as the Sun Belt. According to the same study, population in the Sun Belt is expected to grow by approximately 35% between the 2010 census and 2040.

Profitable growth through acquisition and organic development

We seek to grow the Company through acquisitions and the organic development of our asset network. Since 2012, we have expanded the Heavy Materials sector principally through acquisitions, with total investments of approximately $1.2 billion. Most recently, in 2017, we acquired a cement plant from Cemex in Fairborn, Ohio (the Fairborn Acquisition). These investments have more than doubled our U.S. cement capacity, making us the largest U.S.-owned cement company.

The Fairborn Acquisition also expanded our geographic footprint so that we now have a contiguous cement system from California to Ohio and south to Texas. We have completed additional bolt-on acquisitions, which also contribute to our expanded geographic footprint. In 2017, we acquired Wildcat Minerals, which operates 11 frac sand distribution centers, to support our growing frac sand business and provide us with distribution points in all the major oil and gas basins in the U.S.

The Company will continue to proactively pursue acquisition opportunities that further our growth across the Heavy Materials sector, and we will remain opportunistic about growth in our other sectors. Our free cash flow enables us to invest in acquisitions and organic growth opportunities in line with our return on investment profitability objectives. When an otherwise attractive potential acquisition or investment in organic growth does not meet our return requirements, our practice is to return cash to shareholders primarily through a share repurchase program. Since becoming a public company in 1994, our share count is down 30%, and we have returned approximately $900 million to our shareholders.

EMPLOYEES

As of March 31, 2018, the Company had approximately 2,200 employees, of which approximately 800 were employed under collective bargaining agreements and various supplemental agreements with local unions.

Industry Segment Information

Our business is organized into three sectors: Heavy Materials, which includes the Cement and Concrete and Aggregates segments; Light Materials, which includes the Gypsum Wallboard and Recycled Paperboard segments; and Oil and Gas Proppants, which are used in oil and gas exploration and extraction.

Sector	Primary End Markets	Business Segments
Heavy Materials	Infrastructure Commercial and Residential construction	Cement Concrete and Aggregates
Light Materials	Residential construction	Gypsum Wallboard Recycled Paperboard
Oil and Gas Proppants	Oil and Gas Exploration	Frac Sand
Other	N/A	N/A

For information about the financial results of our business segments, including revenue, average net sales prices, sales volume and operating earnings, please see pages 45-57.

Heavy Materials

Heavy Materials provides cement and concrete and aggregates for use in infrastructure, commercial, and residential construction, and is our largest business sector. The sector is comprised of the Cement and Concrete and Aggregates segments. Demand has continued to increase for these construction products as underlying economic fundamentals in the U.S. continue to improve. Cement consumption in the United States, as estimated by the Portland Cement Association, increased approximately 3% to 103.8 million short tons in calendar 2017, compared to 101.0 million short tons in calendar 2016, with imported cement consumption remaining at approximately 14% of total sales in calendar 2017 similar to calendar 2016.

Cement

Cement is the basic binding agent for concrete, a primary construction material. Some concrete mixes also include other cementitious materials, including slag and fly ash, which act as cement extenders and improve the durability of concrete. The principal sources of demand for cementitious materials are infrastructure, commercial, and residential construction, with infrastructure accounting for approximately 50% of the demand for cement.

The manufacture of portland cement primarily involves extracting, crushing, grinding, and blending limestone and other raw materials into a chemically proportioned mixture which is then burned in a rotary kiln at extremely high temperatures to produce an intermediate product called clinker. The clinker is cooled, ground, and mixed with a small amount of gypsum to the consistency of face powder to produce finished cement. All of our cement plants use dry process technology, and approximately 80% of our clinker capacity is from preheater or preheater/pre-calciner kilns, which are generally more efficient kiln types.

We also sell slag cement and fly ash. Slag granules are obtained from a steel company and processed in our grinding facility. Slag is used in concrete mix designs to improve the durability of concrete and reduce future maintenance costs. Fly ash is a by-product of a coal-fired power plant and acts as an extender of cement in concrete.

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~~Cement Plants~~

We operate seven cement plants (one of which belongs to our joint venture company), one slag grinding facility, and eighteen cement distribution terminals. Our 5.2 million tons of clinker capacity is approximately 5% of total U.S. clinker capacity. Our cement companies focus on the American heartland in Texas, Oklahoma, Missouri, Nebraska, Kansas, Iowa, California, Colorado, Wyoming, Ohio, Nevada, and Illinois. Our joint venture includes a minority interest in an import terminal in Houston, Texas, from which we can purchase up to 495,000 short tons annually. Our slag facility is located near Chicago, Illinois, and our slag product is sold primarily in Illinois, Pennsylvania, Iowa, Ohio, Minnesota, Missouri, and Kansas. The following table sets forth information regarding our cement plants (tons are in thousands of short tons):

Plant Location	Owned or Leased Reserves	Rated Annual Clinker Capacity [1]	Annual Grinding Capacity	Manufacturing Process	Number of Kilns	Kiln Dedication Date	Estimated Minimum Limestone Reserves [2]	Estimated Minimum Limestone Reserves (Years) [3]	Estimated Fiscal 2018 Tons Mined
Buda, TX	Owned	1,300 [4]	1,435	Dry – 4 Stage Preheater/ Pre-calciner	1	1983	226,250	50+	1,850
LaSalle, IL	Owned	1,000	1,100	Dry – 5 Stage Preheater/Pre-calciner	1	2006	33,325	29	1,035
Sugar Creek, MO	Owned	1,000	1,100	Dry – 5 Stage Preheater/Pre-calciner	1	2002	127,100	50+	1,030
	Leased						11,000		
Laramie, WY	Owned	650	800	Dry – 2 Stage Preheater	1	1988	103,300	50+	850
	Leased						101,400		
				Dry – Long Dry Kiln	1	1996			
Tulsa, OK	Owned	650	900	Dry – Long Dry Kiln	1	1961	39,700	43	800
				Dry - Long Dry Kiln	1	1964			
Fernley, NV	Owned	500	550	Dry – Long Dry Kiln	1	1964	14,200	50+	530
	Leased			Dry – 1 Stage Preheater	1	1969	69,600		
Fairborn, OH	Owned	730	980	Dry – 4 Stage Preheater	1	1974	26,450	30	920
Total-Gross		5,830	6,865						
Total-Net [5]		5,180	6,150						

[1] One short ton equals 2,000 pounds.
[2] All limestone reserves are considered to be probable under the definition provided by Industry Guide 7.
[3] Years of limestone reserves calculated using annual rated capacity.
[4] The amount shown represents 100% of plant capacity and production. This plant is owned by a separate limited partnership in which the Company has a 50% interest.
[5] Net of partner's 50% interest in the Buda, Texas plant.

All of our cement subsidiaries are wholly owned except the Buda, Texas plant (the Joint Venture), which is owned by Texas Lehigh Cement Company LP, a limited partnership joint venture owned 50% by us and 50% by Lehigh Cement Company LLC, a subsidiary of Heidelberg Cement AG. In keeping with our strategy of decentralized operations, cement plants are managed locally and do business under separate names. Our LaSalle, Illinois plant operates under the name Illinois Cement Company; the Laramie, Wyoming plant operates under the name Mountain Cement Company; the Fernley, Nevada plant operates under the name Nevada Cement Company; our Fairborn, Ohio plant operates under the name Fairborn Cement Company; and our Sugar Creek, Missouri and Tulsa, Oklahoma plants operate under the name Central Plains Cement Company. Our slag grinding facility operates under the name Skyway Cement Company and has capacity to grind 600,000 tons of slag per year.

Our cement production, including our 50% share of the cement Joint Venture production, totaled 5.0 million short tons in fiscal 2018 and 4.5 million short tons in fiscal 2017. Total net cement sales, including our 50% share of cement sales from the Joint Venture, were 5.4 million and 4.9 million short tons in fiscal 2018 and fiscal 2017, respectively.

~~Raw Materials and Fuel Supplies~~

The principal raw material used in the production of portland cement is calcium carbonate in the form of limestone. Limestone is obtained primarily through mining and extraction operations conducted at quarries that we own or lease, and that are located in close proximity to our plants. We believe that the estimated recoverable limestone reserves we own or lease will permit each of our plants to operate at our present production capacity for at least 25 years. The Company is actively seeking additional limestone reserves close to our plants and believes it will be able to acquire more reserves in the future. Other raw materials used in substantially smaller quantities than limestone are sand, clay, iron ore, and gypsum. These materials are readily available and can either be obtained from Company-owned or -leased reserves or be purchased from outside suppliers.

Coal and petroleum coke are the primary fuels used in our cement plants, but the plants are equipped to burn natural gas, if necessary. The cost of fuel increased in fiscal 2018, compared with fiscal 2017. The increase was primarily due to an outage that was necessary to install certain pollution control equipment at our Nevada Cement plant, and the acquisition of the plant in Fairborn, Ohio in February 2017. Nevada Cement had one kiln down for approximately six months, and the second kiln down for approximately three months, which decreased the efficiency of the plant, leading to increased fuel costs. The Fairborn plant burns only coal, which is more costly than petroleum coke. The Tulsa plant currently burns fuel-quality wastes, as well as coal and petroleum coke. The Sugar Creek plant currently burns alternative fuels and petroleum coke. When we acquired Sugar Creek and Tulsa in late 2012, both plants had existing alternative fuels programs managed by a company that supplies alternative fuels and materials to the cement plants. In keeping with our commitment to sustainability and cost management, we continue to use these alternative fuels and materials programs at the Sugar Creek and Tulsa plants.

We have a long-term agreement with a steel manufacturer to supply granules necessary for grinding slag. This agreement requires us to purchase up to 550,000 tons of granules made available by the steel manufacturer each year.

Electric power is also a major cost component in the manufacturing process for both cement and slag, and we have sought to diminish overall power costs by adopting interruptible power supply agreements at certain locations. These agreements may expose us to some production interruptions during periods of power curtailment.

~~Demand, Sales, and Distribution~~

The principal sources of demand for cement and slag are infrastructure, commercial, and residential construction, with public works infrastructure comprising over 50% of total demand. Cement consumption in the U.S. increased approximately 3% during calendar 2017 from calendar 2016, and the Portland Cement Association forecasts cement consumption will increase another approximately 3% in calendar 2018. Demand for cement is seasonal, particularly in northern states where inclement winter weather often affects construction activity. Cement sales are generally greatest from Spring through the middle of Autumn. Demand for slag has increased as the availability of fly ash has decreased due to the conversion of power plants from coal to natural gas.

The cement industry is extremely competitive: there are multiple domestic suppliers and foreign producers who import cement through various terminal operations. Approximately 75% of the U.S. cement industry is owned by foreign international companies. Competition among producers and suppliers of cement is based primarily on price, and secondarily on consistency of quality and customer service. Price competition among individual producers and suppliers of cement within a geographic area is intense due to the fungible nature of the product.

Because of cement's low value-to-weight ratio, the relative cost of transporting cement on land is high and limits the geographic area in which each company can market its products profitably. The low value-to-weight ratio generally limits shipments by truck to a 150-mile radius of each plant and up to 300 miles by rail; therefore, the U.S. cement industry is fragmented into regional geographic areas rather than a single national selling area. No single cement company has a distribution of plants extensive enough to serve all geographic areas, so profitability is sensitive to shifts in the balance between regional supply and demand.

Cement imports into the U.S. occur primarily to supplement domestic cement production or to supply a particular region. Cement is typically imported into deep water ports, both along the coast or on the Great Lakes, or transported on the Mississippi River system near major population centers to take advantage of lower waterborne freight costs versus higher truck and rail transportation costs that U.S.-based manufacturers incur to deliver into the same areas.

The Portland Cement Association estimates that imports represented approximately 14% of cement used in the U.S. during both calendar years 2017 and 2016. Based on the normal distribution of cement into the market, we believe that no less than approximately 5% to 10% of the total consumption will consistently be served by imported cement.

The impact of regional construction cycles on our business is mitigated to some degree by our geographic diversification.

The following table sets forth information regarding the geographic areas served by each of our cement and slag plants and the location of our distribution terminals in each area. We have a total of 18 cement storage and distribution terminals that are strategically located to extend the sales areas of our plants.

Plant Location	Type of Plant	Principal Geographic Areas	Distribution Terminals
Buda, Texas	Cement	Texas and western Louisiana	Corpus Christi, Texas; Houston, Texas; Roanoke (Fort Worth), Texas; Waco, Texas; Houston Cement Company (Joint Venture), Houston, Texas
LaSalle, Illinois	Cement	Illinois, Michigan and southern Wisconsin	Hartland, Wisconsin
Sugar Creek, Missouri	Cement	Western Missouri, eastern Kansas, eastern Nebraska and Iowa	Sugar Creek, Missouri; Iola, Kansas; Wichita, Kansas; Omaha, Nebraska; Pleasant Hill, Iowa; Altoona, Iowa [4]
Laramie, Wyoming	Cement	Wyoming, Utah, Colorado and western Nebraska	Salt Lake City, Utah; Denver, Colorado; North Platte, Nebraska
Tulsa, Oklahoma	Cement	Oklahoma, western Arkansas and southern Missouri	Oklahoma City, Oklahoma; Springfield, Missouri
Fernley, Nevada	Cement	Northern Nevada and northern California	Sacramento, California
Fairborn, Ohio	Cement	Ohio, eastern Indiana and northern Kentucky	Columbus, Ohio
Chicago, Illinois	Slag	Illinois, Pennsylvania, Iowa, Ohio, Minnesota, Missouri and Kansas	Kansas City, Missouri; Cincinnati, Ohio [1]; Des Moines, Iowa [1]; St. Paul, Minnesota [1]; Tarentum, Pennsylvania [1]; Etna, Pennsylvania [2]; Fairfield, Ohio [3];

[1] These facilities are currently being leased, and these leases will expire in July 2018.
[2] This facility is currently being constructed and should be completed by July 2018.
[3] This facility is being leased beginning in June 2018.
[4]

This facility is currently being constructed and upon completion will replace the terminal in Pleasant Hill, Iowa. We also intend to sell slag from this terminal.

Four of our slag terminals are currently being leased from the former owner of the Skyway Plant. The initial term of the lease was one year from the date of purchase and included the option to extend the term for two one-year periods. We exercised both extensions for all locations. All of these leases expire in July 2018 and will not be renewed. The Tarentum, Pennsylvania terminal will be replaced by a terminal in Etna, Pennsylvania; the Des Moines, Iowa terminal will be replaced by a terminal in Altoona, Iowa; and the Cincinnati, Ohio terminal will be replaced by a terminal in Fairfield, Ohio. We are currently constructing the terminals in Etna and Altoona and expect them to be ready by July 2018. We are leasing the new terminal in Fairfield, Ohio under an initial term of two years, with two one-year options.

Cement and slag are distributed directly to our customers mostly through customer pickups, as well as by common carriers from our plants or distribution terminals. We transport cement and slag by barge and rail to our storage and distribution terminals.

No single customer accounted for more than 10% of our cement segment sales during fiscal 2018. As noted above, cement sales are made primarily on the basis of competitive prices in each market. We do not typically enter into long-term sales contracts or have a significant level of order backlog. Cement and slag are generally sold to companies in private industry that contract with state and local entities for infrastructure and other public works projects.

~~Environmental Matters~~

Our cement operations are subject to numerous federal, state, and local laws and regulations pertaining to health, safety, and the environment. Some of these laws, such as the federal Clean Air Act and the federal Clean Water Act (and analogous state laws) impose environmental-permitting requirements and govern the nature and amount of emissions that may be generated when conducting particular operations. Some laws, such as the federal Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) (and analogous state laws) impose obligations to clean up or remediate spills of hazardous materials into the environment. Other laws require us to reclaim certain land upon completion of extraction and mining operations in our quarries. We believe that we have obtained all the material environmental permits that are necessary to conduct our operations. We further believe that we are conducting our operations in substantial compliance with these permits. In addition, none of our manufacturing sites is listed as a CERCLA Superfund site.

Eight environmental issues involving the cement manufacturing industry deserve special mention.

The first environmental issue involves cement kiln dust or CKD. The U.S. Environmental Protection Agency (EPA) has been evaluating the regulatory status of CKD under the Resource Conservation and Recovery Act (RCRA) for several years. In 1999, the EPA proposed a rule that would allow states to regulate properly managed CKD as a non-hazardous waste under state laws and regulations governing solid waste. In contrast, CKD that was not properly managed would be treated as a hazardous waste under RCRA. In 2002, the EPA confirmed its intention to continue to exempt properly managed CKD from the hazardous waste requirements of RCRA. The agency announced that it would collect additional data over the next three to five years to determine if the states' regulation of CKD is effective. As of May 1, 2017, the EPA still has not completed its 1999 proposal to exempt properly managed CKD waste and establish protective CKD management standards. It is uncertain whether or when this proposal will be finalized. Nevertheless, in the interim, many state environmental agencies have been using the EPA's 1999 proposed CKD management standards as general industry guidelines.

Currently, substantially all CKD produced in connection with our ongoing operations is recycled, and therefore such CKD is not viewed as a waste under RCRA. However, CKD was historically collected and stored on-site at our Illinois, Nevada, Missouri, Oklahoma, and Wyoming cement plants and at a former plant site in Corpus Christi, Texas, which is no longer producing cement. If either the EPA or the states decide to reclassify or impose new management standards on this CKD at some point in the future, we could incur additional costs to comply with those requirements with respect to our historically collected CKD. CKD that comes in contact with water might produce a leachate with an alkalinity high enough to be classified as hazardous and might also leach certain hazardous trace metals therein.

The second environmental issue involves the historical disposal of refractory brick containing chromium. Such refractory brick was formerly used widely in the cement industry to line cement kilns. We currently use a small amount refractory brick containing chromium, all of which is properly disposed. Except for such chromium containing refractory, we crush substantially all of our refractory brick and use the crushed material as raw feed in the kiln.

The third environmental issue involves the potential regulation of our emission of greenhouse gasses (GHGs), including carbon dioxide, under the Clean Air Act (CAA). The consequences of GHG emission reduction regulations for our cement operations will likely be significant because (1) the cement manufacturing process requires the combustion of large amounts of fuel to generate very high kiln temperatures; and (2) the production of carbon dioxide is a byproduct of the calcination process, whereby carbon dioxide is removed from calcium carbonate to produce calcium oxide.

In response to the Supreme Court's ruling in Massachusetts v. EPA, 127 S. Ct. 1438 (2007), that GHGs are air pollutants and, thus, potentially subject to regulation under the CAA, the EPA has taken steps to regulate GHG emissions from mobile and certain stationary sources. On September 22, 2009, the EPA issued a Mandatory Reporting of Greenhouse Gases final rule, which took effect December 29, 2009. This rule established a comprehensive scheme requiring operators of stationary sources in the United States emitting more than established annual thresholds of GHGs to monitor and report their GHG emissions annually on a facility-by-facility basis. On December 15, 2009, the EPA published a final rule finding that current and projected concentrations of six key GHGs in the atmosphere threaten public health and welfare. Based on this finding, on May 7, 2010, the EPA promulgated a final rule establishing GHG emission standards for new motor vehicles under Title II of the CAA. According to the EPA, the motor vehicle rule triggered construction and operating permit requirements for large stationary sources of GHGs, including cement plants, under Title I of the CAA. On May 13, 2010, the EPA promulgated a final rule, known as the Tailoring Rule, addressing the thresholds at which stationary sources of GHGs trigger prevention of significant deterioration (PSD) and Title V permitting requirements. PSD review requires an analysis of possible GHG controls and, potentially, the installation of GHG controls or emissions limitations.

On June 23, 2014, the U.S. Supreme Court issued an opinion with respect to the Tailoring Rule holding that the EPA can require PSD controls for GHG emissions only for sources subject to PSD review based on another pollutant – Util. Air Regulatory Grp. v. E.P.A, 134 S. Ct. 2427 (2014). Following the Supreme Court decision, the EPA issued a memorandum clarifying that the EPA intends to continue to apply PSD requirements to GHG emissions if a source emits or has the potential to emit 75,000 tons per year (tpy) or more of GHGs until the EPA establishes a de minimis threshold for GHG emissions below which a source would not be subject to GHG PSD permitting requirements. The EPA announced its intention to propose a rule addressing the de minimis threshold for GHG PSD permitting in the summer of 2016. The EPA failed to propose such rule. Until the EPA issues a final rule addressing the de minimis threshold for GHG emissions, any major modification of our existing plants or construction of a new plant that triggers PSD review for non-GHG emissions also would trigger PSD review for GHG emissions if the proposed major modification or construction would result in a GHG emission increase of at least 75,000 tpy.

In October 2015, the EPA published a rule establishing guidelines for states to regulate carbon dioxide emissions from existing fossil fuel power plants (the Clean Power Plan). The Clean Power Plan established national performance rates for steam generating units and stationary combustion turbines as well as state emission reduction goals based on the application of the performance rates to a state's unique generation mix. Numerous states and industry petitioners are challenging the Clean Power Plan on multiple grounds. On February 9, 2016, the U.S. Supreme Court stayed implementation of the Clean Power Plan while the litigation is pending. The U.S. Court of Appeals for the District of Columbia Circuit (D.C. Circuit) held oral argument on the challenges to the Clean Power Plan on June 2, 2016. No opinion in that case has been forthcoming. On April 28, 2017, at the request of the U.S. EPA, the D.C. Circuit issued a per curiam order holding the case in abeyance for sixty days to allow the U.S. EPA to determine whether to reconsider the Clean Power Plan. The EPA must file status reports on its deliberations every 30 days. The EPA has indicated that it intends to significantly amend or repeal the Clean Power Plan.

On October 17, 2017, the EPA issued a proposal to repeal the Clean Power Plan and set for a broad outline of options for replacing the Clean Power Plan. The EPA indicated that it intends to propose a new rule but did not lay out a firm timeline for finalizing such a rule. In the interim, the Clean Power Plan will not be implemented.

In the future, it is possible that the EPA will propose performance standards for GHG emissions for other sectors, including cement manufacturing, so the ultimate outcome of the Clean Power Plan could affect the timing and form of standards for cement plants.

Several states have individually implemented measures to reduce emissions of GHGs, primarily through the planned development of GHG inventories or registries, or regional GHG cap and trade programs. California's AB 32 program is the most advanced of such state initiatives, with regulations affecting all major sources of GHGs. The state of Washington also issued regulations imposing emission limitations on a broad set of industry sectors, although that rule, the Clean Air Rule, was recently invalidated by a state court judge. That ruling has not yet been appealed. States also have joined together to form regional initiatives to reduce GHG emissions, including 12 states in the northeast under the Regional Greenhouse Gas Initiative.

It is not possible at this time to predict how any future legislation that may be enacted or final EPA regulations that may be adopted to address GHG emissions would impact our business. However, any imposition of raw materials or production limitations, fuel-use or carbon taxes, or emission limitations or reductions could have a significant impact on the cement manufacturing industry and a material adverse effect on us and our results of operations.

The fourth environmental issue is the EPA's promulgation on September 9, 2010 of final regulations establishing national emissions standards for hazardous air pollutants for portland cement plants (PC NESHAP) pursuant to Section 112 of the CAA. For specific hazardous air pollutants (HAPs), the final rule requires cement plants to meet certain emission and operating standards. The rule sets limits on mercury emissions from existing portland cement kilns and increases the stringency of emission limits for new kilns. The rule sets emission limits for total hydrocarbons, and also sets emission limits for particulate matter as a surrogate for non-volatile metal HAPS, from cement kilns of all sizes, and reduces hydrochloric acid emissions from kilns that are large emitters. As a result of industry challenges to the regulations, the EPA issued a revised rule on February 12, 2013. The revised rule made two notable changes to the 2010 HAP regulations. First, the rule established less stringent emission standards for total hydrocarbons and particulate matter. Second, the rule extended the deadline for existing sources to comply with the HAP regulations to September 9, 2015. We do not believe we are placed at a competitive disadvantage by the revised rule.

A fifth environmental issue involves excess emissions that may occur during periods of startup, shutdown, or malfunction. In June 2015, the EPA issued a rule requiring revisions to 36 state implementation plans (SIPs) that allowed exemptions or contained affirmative defenses to excess emissions during periods of startup, shutdown, or malfunction (SSM rule). The SIP revisions were submitted to the EPA in November 2016. The states required to revise their SIPs include states where the company has operations, such as Illinois, Oklahoma, Missouri, and Texas. Under the revised SIPs, companies would be required to comply with their emissions limits at all times, including during startup, shutdown, and malfunctions. States and members of industry have challenged the SSM rule in the U.S. Court of Appeals for the D.C. Circuit.

On April 24, 2017, at the request of the EPA, the U.S. Court of Appeals for the District of Columbia Circuit (D.C. Circuit) issued an order holding in abeyance the consolidated challenges to the EPA's final rule concerning how provisions in the EPA-approved SIPs treat excess emissions during periods of startup, shutdown, or malfunction. The order also cancels oral argument, which was scheduled for May 8, 2017. In its motion, the EPA argued that oral argument should be delayed in light of the recent change in Administration. According to the motion, the EPA "intends to closely review the SSM rule, and the prior positions taken by the Agency with respect to the SSM rule may not necessarily reflect its ultimate conclusions after that review is complete." The EPA's motion was opposed by environmental groups, who argued that the EPA failed to establish the extraordinary cause required for postponement. The D.C.

Circuit's order requires the EPA to file status reports on the Agency's review of the SSM Rule at 90-day intervals. It further mandates that the parties file motions to govern future proceedings within 30 days of the EPA notifying the court and the parties what action it has or will be taking with respect to the SSM rule. As a result, we cannot predict how or whether the SSM rule will be changed.

The sixth environmental issue is the EPA's promulgation pursuant to Section 129 of the CAA of revised regulations for Commercial and Industrial Solid Waste Incineration (CISWI) units. Clean Air Act Section 129 requires the EPA to set standards for solid-waste incineration units. Affected sources must comply with the revised CISWI regulations the earlier of three years after State CISWI plan approval, or five years from the date of the final rule on reconsideration. On June 23, 2016, the EPA published a final rule reconsidering four provisions of the February 2013 final CISWI rule, including relaxing the particulate matter standard for solid waste–burning kilns and eliminating the affirmative defense to penalties for non-compliance during well-documented malfunction events. On January 11, 2017, the EPA published a proposed plan that would implement the previously promulgated limits for existing CISWI in states that have not submitted and received approval for a state implementation plan. The federal plan required owners or operators of impacted CISWI units to achieve compliance by February 7, 2018. Currently, the EPA has not approved any state implementation plans. Compared to the PC NESHAP, the CISWI regulations contain requirements for more pollutants, and the requirement for dioxin/furans for existing and new sources is somewhat more stringent.

Whether a facility is a CISWI unit regulated under Section 129 of the Clean Air Act or a cement plant regulated under Section 112 of the Clean Air Act hinges on whether it combusts solid waste as that term is defined under Subtitle D of the Resource Conservation and Recovery Act. On March 21, 2011 (and also revised on February 7, 2013), the EPA finalized the Identification of Non-Hazardous Secondary Materials that Are Solid Waste (NHSM) rule. The NHSM rule's primary purpose is to provide the definition of solid waste that is used to determine if a cement kiln is regulated under CISWI regulations or the PC NESHAP regulations. The rule lays out processing and legitimacy criteria that are used to determine if a non-traditional fuel is a solid waste. Combustion of a solid waste triggers applicability of the CISWI requirements. On July 29, 2016, the U.S. Court of Appeals for the D.C. Circuit issued an opinion in U.S. Sugar v. EPA, No. 11-1108, largely upholding the 2011 and 2013 CISWI rules.

At some of our operations, kilns are or will be using non-hazardous secondary materials as a replacement for traditional fuels used in the manufacturing process. These kiln systems are capable of beneficially utilizing a wide array of NHSM and may be subject to the CISWI requirements, depending on whether these materials are identified as solid wastes under the NHSM rule. The EPA issued a rule clarifying the definition of solid waste and establishing a uniform recycling standard for all hazardous secondary materials recycling on January 13, 2015, which became effective on July 13, 2015. Solid waste–burning kilns must meet the CISWI emission and operating standards. Nonwaste-burning kilns must prove any alternative fuels used are not solid wastes. We do not believe we would be placed at a competitive disadvantage by either the NHSM or the CISWI rule.

The seventh environmental issue is a revision to the Hazardous Waste Combustor National Emission Standards for Hazardous Waste Standards (HWC NESHAP). The Tulsa, Oklahoma cement facility utilizes hazardous waste as fuel and is required to meet the emission and operating standards of the HWC NESHAP. This facility has demonstrated and remains in compliance with all of the requirements of the current HWC NESHAP regulation. On October 12, 2005, as a result of ongoing litigation, the EPA promulgated final HWC regulations, with compliance required for all facilities by 2008. On October 28, 2008, the EPA promulgated a final rule addressing eight issues for which the EPA granted reconsideration. The final rule on reconsideration did not change the compliance date for existing sources established by the 2005 rule. Environmental and industry organizations filed lawsuits in the U.S. Court of

Appeals for the D.C. Circuit challenging the 2005 and 2008 regulations. The EPA subsequently agreed to revise the HWC NESHAP standards in accordance with an agreement with litigants, and the court remanded, without vacatur, the 2005 and 2008 regulations to the EPA for further consideration. The EPA has not indicated when it will issue a proposed rule amending the regulations. It is not possible to predict at this time the stringency or impact of revised HWC NESHAP regulations or timing required for compliance.

We believe that our current procedures and practices in our operations, including those for handling and managing hazardous materials, are consistent with industry standards and are in substantial compliance with applicable environmental laws and regulations. Nevertheless, because of the complexity of our operations and the environmental laws to which we are subject, there can be no assurance that past or future operations will not result in violations, remediation costs, or other liabilities or claims. Moreover, we cannot predict what environmental laws will be enacted or adopted in the future or how such future environmental laws or regulations will be administered or interpreted. Compliance with more stringent environmental laws, or stricter interpretation of existing environmental laws, could necessitate significant capital outlays.

The eighth environmental issue is the EPA's ongoing review and implementation of the national ambient air quality standards (NAAQS) for ozone. In October 2015, the EPA strengthened the ozone NAAQS by lowering the primary and secondary standards from 75 parts per billion (ppb) to 70 ppb. As a result of this change, the EPA was required to make attainment/nonattainment designations for the revised standards by October 2017. In November 2017, the EPA released a partial list of 2,646 counties that meet the 2015 standards for ground level ozone or are not classifiable. Affected states containing the areas not in attainment were notified by the EPA in December 2017 on their intended recommendations and were given 120 days to provide additional information for the EPA to consider before making final designation decisions. The agency released the final list of counties in nonattainment on April 30, 2018 except for 7 counties around San Antonio, Texas. We are currently reviewing this final rule and designated nonattainment areas and cannot at this time predict the impact it may have on our operations. Nonattainment designations in or surrounding our areas of operations could have a material impact on our consolidated financial results.

In fiscal 2018, we had $12.0 million of capital expenditures related to compliance with environmental regulations applicable to our cement operations. We anticipate spending an additional $2.4 million during fiscal 2019.

Concrete and Aggregates

Readymix concrete is a versatile, low-cost building material used in almost all construction. The production of readymix concrete involves mixing cement, sand, gravel, or crushed stone and water to form concrete, which is then sold and distributed to numerous construction contractors. Concrete is produced in batch plants and transported to customers' job sites in mixer trucks.

The aggregates business consists of mining, extracting, producing, and selling crushed stone, sand, gravel, and lightweight aggregates such as expanded clays and shales. Construction aggregates of suitable characteristics are employed in virtually all types of construction, including the production of readymix concrete and asphaltic mixes used in highway construction and maintenance.

~~Concrete and Aggregates Plants~~

We have 17 concrete batching plants and four aggregates facilities. We produce and distribute readymix concrete from company-owned sites north of Sacramento, California; Austin, Texas; and the greater Kansas City area. The following table sets forth information regarding these operations.

Location	Number of Plants	Number of Trucks
Northern California	3	26
Austin, Texas	6	85
Kansas City Area	8	116
Total	17	227

We conduct aggregate operations near our concrete facilities in northern California; Austin, Texas; and the greater Kansas City area. Aggregates are obtained principally by mining and extracting from quarries owned or leased by the Company. The following table sets forth certain information regarding these aggregate facilities.

Location	Owned or Leased	Types of Aggregates	Estimated Annual Production Capacity (Thousand tons)	Estimated Minimum Reserves (Thousand Tons) (1)	Estimated Minimum Reserves (Years)	Fiscal 2018 Tons Mined (Thousand Tons)
Northern California	Owned	Sand and Gravel	4,000	912,400	100+	1,600
Austin, Texas	Owned	Limestone	3,000	4,300	24	2,000
	Leased			67,300		
Kansas City Area	Owned	Limestone	700	57,000	(2) 50+	585

(1) All reserves are considered to be probable under the definition of Industry Guide 7.
(2) Includes reserves located in our underground mine that we believe can be economically used for aggregate supply.

Our total net aggregate sales were 3.5 million tons in fiscal 2018 and 3.6 million tons in fiscal 2017. Total aggregates production was 3.9 million tons in fiscal 2018 and 3.7 million tons in fiscal 2017. A portion of our total aggregates production is used internally by our readymix concrete operations in Texas, the greater Kansas City area, and California.

~~Raw Materials and Fuel Supplies~~

From our cement plants, including our Joint Venture, we supply approximately 100%, 100%, and 40%, respectively, of the cement requirements for our greater Kansas City; northern California; and Austin, Texas concrete operations. We internally supply approximately 10%, 10%, and 45%, respectively, of our aggregates requirements for greater Kansas City; northern California; and Austin, Texas concrete operations. We obtain the balance of our cement and aggregates requirements from multiple outside sources in each of these areas.

We mine and extract limestone, sand, and gravel, the principal raw materials used in the production of aggregates, from quarries owned or leased by us and located near our plants. The quarry serving our northern California business is estimated to contain over nine hundred million tons of sand and gravel reserves. The quarry serving our Austin, Texas market is covered by a lease that expires in 2060. Based on its current production capacity, we estimate our northern California and Austin, Texas quarries contain more than 100 years and approximately 24 years of reserves, respectively. Our quarries in the Kansas City market currently have approximately 50 years of reserves, and we are actively seeking additional more economical reserves to extend the life of the quarry.

~~Demand, Sales, and Distribution~~

Demand for readymix concrete and aggregates largely depends on local levels of construction activity. Construction activity is also subject to weather conditions, the availability of financing at reasonable rates, and overall fluctuations in local economies, and therefore tends to be cyclical. We sell readymix concrete to numerous contractors and other customers in each plant's marketing area. Our batch plants in Austin, the greater Kansas City area, and northern California are strategically located to serve each marketing area. Concrete is delivered from the batch plants primarily by company-owned trucks.

We sell aggregates to building contractors and other customers engaged in a wide variety of construction activities. Aggregates are delivered from our aggregate plants by common carriers and customer pick-up. We are continuing our efforts to secure a rail link from our principal aggregates deposit north of Sacramento, California to supply extended markets in northern California. No customer accounted for more than 10% of fiscal 2018 segment revenue.

The concrete and aggregates industry is highly fragmented, with numerous participants operating in each local area. Because the cost of transporting concrete and aggregates is very high relative to product values, producers of concrete and aggregates typically can profitably sell their products only in areas within 50 miles of their production facilities. Barriers to entry in each industry are low, except with respect to environmental permitting requirements for new aggregates production facilities and zoning of land to permit mining and extraction of aggregates.

~~Environmental Matters~~

The concrete and aggregates industry is subject to environmental regulations similar to those governing our cement operations. (See pages 8-12.)

In fiscal 2018 we had $0.1 million of capital expenditures related to compliance with environmental regulations applicable to our Concrete and Aggregates operations. We do not anticipate any capital expenditures related to compliance with environmental regulations in fiscal 2019.

Light Materials

Our Light Materials sector produces materials used in residential and commercial buildings. The sector is comprised of the Gypsum Wallboard and Recycled Paperboard segments. Operations in this sector are concentrated in the Sun Belt of the United States, where the population is projected to grow 35% between 2010 and 2040, according to the Weldon Cooper Center at the University of Virginia. Population growth is a key long-term driver of demand for gypsum wallboard and recycled paperboard.

Gypsum Wallboard

Gypsum wallboard is used to finish the interior walls and ceilings in residential, commercial, and industrial structures. Our gypsum wallboard products are marketed under the name American Gypsum.

The gypsum wallboard manufacturing process involves four main steps, as shown in the graphic below.

~~Gypsum Wallboard Plants~~

We own and operate five gypsum wallboard plants, shown in the table below. Our plant in Bernalillo, New Mexico was restarted in September 2017, after having been idled since 2009. We anticipate running this plant as necessary to meet customer demand. Our gypsum wallboard is distributed in the geographic markets nearest to our production facilities.

The following table sets forth certain information regarding our gypsum wallboard plants.

Location	Owned or Leased Reserves [7]	Approximate Annual Gypsum Wallboard Capacity (MMSF) [1]	Estimated Minimum Gypsum Reserves (Thousand Tons) [3]	Estimated Minimum Gypsum Reserves (Years) [2]	Fiscal 2018 Tons Mined (Thousand Tons)
Albuquerque, New Mexico	Owned	425	10,490 [4]	50+ [4]	350
	Leased		55,150 [4]		
Bernalillo, New Mexico [6]		550		50+ [4]	55
Gypsum, Colorado	Owned	700	21,700	31	450
Duke, Oklahoma	Owned	1,300	22,550	20	925
	Leased		4,150		
Georgetown, South Carolina [5]		900		50 [5]	—
Total		3,875			

[1] Million Square Feet (“MMSF”), based on anticipated product mix.
[2] At 100% capacity utilization.
[3] All gypsum tons are deemed probable under the definition provided by Industry Guide 7.
[4] The same reserves serve both New Mexico plants.
[5] We have a 60-year supply agreement with Santee Cooper for synthetic gypsum that expires in 2068.
[6] This plant restarted in September 2017.
[7] Owned reserves include mining claims.

Our gypsum wallboard production totaled 2,614 MMSF in fiscal 2018 and 2,539 MMSF in fiscal 2017. Total gypsum wallboard sales were 2,555 MMSF in fiscal 2018 and 2,483 MMSF in fiscal 2017.

~~Raw Materials and Fuel Supplies~~

We mine and extract natural gypsum rock, the principal raw material used in the manufacture of gypsum wallboard, from mines and quarries owned, leased, or subject to mining claims owned by the Company and located near our plants. Certain of our New Mexico reserves are under lease with the Pueblo of Zia. Gypsum ore reserves at the Gypsum, Colorado plant are contained within a total of 115 placer claims encompassing 2,300 acres. Included in this are 94 unpatented mining claims where mineral rights can be developed upon completion of permitting requirements. We currently own land containing gypsum in the area of Duke, Oklahoma, with additional reserves controlled through a lease agreement. Other gypsum deposits are located near the plant in Duke, which we believe may be obtained at a reasonable cost when needed. We are currently in the tenth year of a 60-year supply agreement (original 20-year term with two 20-year extension options) with a public utility in South Carolina for synthetic gypsum, which we use at our Georgetown, South Carolina plant. If the utility is unable to generate the agreed-upon amount of gypsum, it is responsible for providing gypsum from a third party to fulfill its obligations.

Through our modern low-cost paperboard mill, we manufacture sufficient quantities of paper necessary for our gypsum wallboard production. Paper is a significant cost component in the manufacture of gypsum wallboard, currently representing approximately one-third of our cost of production.

Our gypsum wallboard manufacturing operations use natural gas and electrical power. A significant portion of the Company’s natural gas requirements for our gypsum wallboard plants are currently provided by three gas producers under gas-supply agreements expiring in May 2019 for New Mexico and October 2019 for South Carolina and Oklahoma. If the agreements are not renewed, we anticipate being able to obtain our gas supplies from other suppliers at competitive prices. Electrical power is supplied to our New Mexico plants at standard industrial rates by a local utility. For our Albuquerque plant we have an interruptible power supply agreement, which may expose it to some production interruptions during periods of power curtailment. Power for our Gypsum, Colorado facility is generated at the facility by a cogeneration power plant that we own and operate. Currently, the cogeneration power facility supplies power and waste hot gases for drying to the gypsum wallboard plant. We do not sell any power to third parties. Gas costs represented approximately 7% of our production costs in fiscal 2018.

~~Demand, Sales, and Distribution~~

The principal sources of demand for gypsum wallboard are (i) residential construction, (ii) repair and remodeling, (iii) non-residential construction, and (iv) other markets such as exports and manufactured housing. Industry shipments of gypsum wallboard increased to 25.3 billion square feet in calendar 2017, compared to 24.7 billion square feet in calendar 2016, primarily due to increases in single family and multi-family housing starts. We estimate that residential and repair and remodel construction accounted for more than 85% of calendar 2017 industry sales.

Demand for gypsum wallboard remains highly cyclical; and closely follows construction industry cycles, particularly housing construction. Demand for wallboard can be seasonal and is generally highest from Spring through the middle of Autumn.

We sell gypsum wallboard to numerous building-materials dealers, gypsum wallboard specialty distributors, lumber yards, home-center chains, and other customers located throughout the United States, with the exception of the Northeast. Gypsum wallboard is sold on a delivered basis, mostly by truck. We generally use third-party common carriers for deliveries. Two customers accounted for approximately 25% of our gypsum wallboard segment sales during fiscal 2018.

Although gypsum wallboard is distributed principally in local areas, certain industry producers (including the Company) have the ability to ship gypsum wallboard by rail outside their usual regional distribution areas to regions where demand is strong. We own approximately 100 railcars for transporting gypsum wallboard. Our rail distribution capabilities permit us to service customers in markets on both the east and west coasts, except for the northeast. Approximately 10% of our wallboard volume sold was delivered via rail.

There are seven manufacturers of gypsum wallboard in the U.S. operating a total of approximately 60 plants. We estimate that the three largest producers USG Corporation, National Gypsum Company, and Koch Industries account for approximately 60% of gypsum wallboard sales in the U.S. Due to the commodity nature of the product, competition is based principally on price, which is highly sensitive to changes in supply and demand. Product quality and customer service are also important to the customer.

Total wallboard rated production capacity in the United States is currently estimated at approximately 33.9 billion square feet per year; however, certain lines have been curtailed and plants closed or idled. It is possible that previously closed plants or lines could be brought back into service.

~~Environmental Matters~~

The gypsum wallboard industry is subject to numerous federal, state, and local laws and regulations pertaining to health, safety, and the environment. Some of these laws, such as the federal Clean Air Act and the federal Clean Water Act (and analogous state laws), impose environmental permitting requirements and govern the nature and amount of emissions that may be generated when conducting particular operations. Some laws, such as CERCLA (and analogous state laws), impose obligations to clean up or remediate spills of hazardous materials into the environment. Other laws require us to reclaim certain land upon completion of extraction and mining operations in our quarries. None of our gypsum wallboard operations is the subject of any local, state, or federal environmental proceedings or inquiries. We do not, and have not, used asbestos in any of our gypsum wallboard products.

On April 17, 2015, the EPA published its final rule addressing the storage, reuse, and disposal of coal combustion products, which include fly ash and flue gas desulfurization gypsum (synthetic gypsum). We use synthetic gypsum in wallboard manufactured at our Georgetown, South Carolina plant. The rule, which applies only to electric utilities and independent power producers, establishes standards for the management of coal combustion residuals (CCRs) under Subtitle D of the Resource Conservation and Recovery Act, or RCRA, which is the Subtitle that regulates non-hazardous wastes. The rule imposes requirements addressing CCR surface impoundments and landfills, including location restrictions, design, and operating specifications; groundwater monitoring requirements; corrective action requirements; recordkeeping and reporting obligations; and closure requirements. Beneficial encapsulated uses of CCRs, including synthetic gypsum, are exempt from regulation. The rule became effective on October 14, 2015. Given the EPA’s decision to continue to allow CCR to be used in synthetic gypsum and to regulate CCR under the non-hazardous waste sections of RCRA, we do not expect the rule to materially affect our business, financial condition, and results of operations. Similarly, material effects on our business, financial condition, and results of operations are unlikely to result from the pending judicial appeals and/or administrative reconsideration by the EPA of certain aspects of the final CCR rule, because none of these pending actions currently seek to overturn the management of CCR as non-hazardous waste or the regulatory exemption for beneficial encapsulated use of CCR.

In October 2015, the EPA strengthened the NAAQS for ozone by lowering the primary and secondary standards from 75 parts per billion (ppb) to 70 ppb. As a result of this change, the EPA is required to make attainment/nonattainment designations for the revised standards by October 2017. In November 2017, the EPA released a partial list of 2,646 counties that meet the 2015 standards for ground level ozone or are not classifiable. Affected states containing the areas not in attainment were notified by the EPA in December 2017 on their intended recommendations and were given 120 days to provide additional information for the EPA to consider before making final designation decisions. The agency released the final list of counties in nonattainment on April 30, 2018 except for 7 counties around San Antonio, Texas. We are currently reviewing this final rule and designated nonattainment areas and cannot at this time predict the impact it may have on our operations. Nonattainment designations in or surrounding our areas of operations could have a material impact on our consolidated financial results.

Our gypsum wallboard manufacturing process combusts natural gas. It is possible that GHG emissions from our manufacturing could become subject to regulation under the CAA. For a more detailed discussion of this issue, see the "Environmental Matters" section of our cement business description on pages 8-12.

Although our gypsum wallboard operations could be adversely affected by federal, regional, or state climate change initiatives, at this time, it is not possible to accurately estimate how future laws or regulations addressing GHG emissions would impact our business. However, any imposition of raw materials or production limitations, fuel-use or carbon taxes, or emission limitations or reductions could have a significant impact on the gypsum wallboard manufacturing industry and a material adverse effect on the financial results of our operations.

There were $2.8 million of capital expenditures related to compliance with environmental regulations applicable to our gypsum wallboard operations during fiscal 2018. We anticipate capital expenditures of approximately $1.0 million related to our gypsum wallboard operations during fiscal 2019.

Recycled Paperboard

Our recycled paperboard manufacturing operation, which we refer to as Republic Paperboard Company, is located in Lawton, Oklahoma, and has a technologically advanced paper machine designed primarily for gypsum liner production. The paper's uniform cross-directional strength and finish characteristics facilitate the efficiencies of new high-speed wallboard manufacturing lines and improve the efficiencies of the slower wallboard manufacturing lines. Although the machine was designed primarily to manufacture gypsum liner products, we are also able to manufacture several alternative products, including containerboard grades and lightweight packaging grades. To maximize manufacturing efficiencies, primarily recycled industrial paperboard grades are produced.

Our paper machine allows the paperboard operation to manufacture high-strength gypsum liner that is approximately 10-15% lighter in basis weight than generally available in the U.S. The low-basis weight product utilizes less recycled fiber to produce paper that, in turn, requires less energy (natural gas) to evaporate moisture from the board during the gypsum wallboard manufacturing process. The low-basis weight paper also reduces the overall finished board weight, providing wallboard operations with more competitive transportation costs for both the inbound and outbound segments.

~~Raw Materials and Fuel Supplies~~

The principal raw materials in recycled paperboard are recycled paper fiber (recovered waste paper), water, and specialty paper chemicals. The largest waste paper source used by the operation is old cardboard containers (known as OCC). A blend of high grades (white papers consisting of ink-free papers

such as news blank and unprinted papers) is used in the gypsum liner facing paper, white top linerboard, and white bag liner grades.

We believe that an adequate supply of OCC recycled fiber will continue to be available from sources located within a reasonable proximity of the paper mill. Although we have the capability to receive rail shipments, the vast majority of the recycled fiber purchased is delivered via truck. Prices are subject to market fluctuations based on generation of material (supply), demand and the presence of the export market. Fiber prices during fiscal 2018 were much higher than fiber prices had been in the previous years. The current outlook for fiscal 2019 is for waste paper prices, namely OCC, to decrease compared to fiscal 2018, but remain higher than average historical prices. Current gypsum liner customer contracts include price escalators that partially offset/compensate for changes in raw material fiber prices. The chemicals used in the paper making operation, including size, retention aids, biocides, and bacteria controls, are readily available from several manufacturers at competitive prices.

The manufacture of recycled paperboard involves the use of a large volume of water in the production process. We have an agreement with the City of Lawton municipal services for supply of water to our manufacturing facility. Electricity, natural gas, and other utilities are available to us at either contracted rates or standard industrial rates in adequate supplies. These utilities are subject to standard industrial curtailment provisions.

Paperboard operations are generally large consumers of energy, primarily natural gas and electricity. During fiscal 2018, electricity costs were higher relative to fiscal 2017 costs. The increased electricity costs were the result of increased electricity rates. We expect electricity pricing to increase slightly in fiscal 2019, as a rate increase was recently approved. Electricity is supplied to the paper mill by Public Service of Oklahoma (PSO). This power company is working to switch its fuel source dependency to natural gas, which could impact our electricity rates in future years. Oklahoma is a regulated state for electricity services, and all rate change requests must be presented to the Oklahoma Corporation Commission for review and approval before implementation. Natural gas costs in fiscal 2018 were relatively consistent with fiscal 2017 and are expected to remain relatively consistent throughout fiscal 2019. A significant portion of our natural gas requirements for our paper mill are provided under a gas supply agreement which expires in October 2018.

~~Demand, Sales, and Distribution~~

Our manufactured recycled paperboard products are sold to gypsum wallboard manufacturers and other industrial users. During fiscal 2018, approximately 40% of the recycled paperboard sold by our paper mill was consumed by the Company’s gypsum wallboard manufacturing operations. We also have contracts with two other gypsum wallboard manufacturers that represent approximately 55% of our total segment revenue with the remaining volume shipped to other gypsum liner manufacturers and bag producers. The current contracts with other gypsum wallboard manufacturers expire in five and seven years. The loss of either of these contracts or a termination or reduction of their current production of gypsum wallboard, unless replaced by a commercially similar arrangement, could have a material adverse effect on the Company.

~~Environmental Matters~~

There were no capital expenditures related to compliance with environmental regulations applicable to our recycled paperboard operations during fiscal 2018, and none are expected in 2019.

Oil and Gas Proppants

The Oil and Gas Proppants sector produces frac sand used in oil and natural gas exploration.

Facilities

We currently own two frac sand mines, three frac sand wet processing plants, and three frac sand drying facilities. Our frac sand mines and wet plants are in New Auburn, Wisconsin and Utica, Illinois. Our frac sand drying facilities are currently in New Auburn, Wisconsin and Corpus Christi, Texas, as outlined in the table below. Sand is processed into various mesh sizes and marketed primarily to oil service companies.

We are currently building out our Utica, Illinois facility. This build-out includes the addition of a dry plant and distribution system and is expected to cost approximately $70.0 million. We have spent approximately $45.0 million on this project as of March 31, 2018 and expect to complete the project in the summer of 2018.

The following table provides information regarding our frac sand production facilities at March 31, 2018.

Wet Plant Location	Owned or Leased	Reserves	Estimated Annual Wet Production Capacity (Thousand Tons) [3]	Estimated Minimum Reserves (Thousand Tons) [1]	Estimated Minimum Reserves (Years)		Fiscal 2018 Tons Mined (Thousand Tons) [2]
New Auburn, Wisconsin	Owned		2,800	30,000	13	[2]	2,000
	Leased			7,660			
Utica, Illinois	Owned		2,200	139,900	50+		—

Dry Plant Location	Dry Plant Capacity (Thousand Tons)
New Auburn, Wisconsin (two lines)	1,900
Corpus Christi, Texas	1,500
Utica, Illinois [4]	1,600
Total	5,000

[1] All sand tons are deemed to be probable under the definition provided by Industry Guide 7.
[2] We have an option to purchase property that, if purchased, will increase our estimated minimum reserves to approximately 20 years.
[3] Represents throughput capacity.
[4] This plant is currently being constructed and is expected to be completed in the summer of 2018.

During fiscal 2018, we recommissioned our Corpus Christi plant which we idled in the fourth quarter of fiscal 2016. The plant is being run on a part-time basis to satisfy increased demand in the Eagle Ford basin. We also began using the transload facility at Kenedy, Texas during fiscal 2018, although our facilities in Fowlerton, Texas and Cotulla, Texas remain idled at March 31, 2018. Our facilities are relatively new and are in very good physical condition. We plan on resuming business at these transload facilities in the future when demand for proppants increases and additional capacity is needed. The cost of maintaining these idled facilities is not significant. In the past, due to the idling of the operating facilities we performed a test for impairment on the long-lived assets of the frac sand segment. Based on the results of this test, no impairment was recorded. See Critical Accounting Policies, Impairment of Long-Lived Assets on pages 57-58 for more information about the test for impairment.

Raw Materials and Fuel Supplies

We mine our frac sand from open pit mines and process the sand in our wet plants. The excavation process includes stripping the overburden overlaying the planned mining area and removing the sand through blasting or mechanically with the use of mobile equipment. Processing includes washing the sand with water and screening to remove non salable material, after which the sand is dried and further

screened to its final mesh sizes, which range from 20 mesh to 140 mesh. During the winter months, the cold weather adversely impacts our ability to operate our wet processing plants, resulting in these plants being shut down for much of the winter. Generally, our New Auburn, Wisconsin facility is affected more by the weather than our Utica, Illinois facility.

Natural gas is the major fuel used in our dry plants. The cost of natural gas declined throughout fiscal 2018 and is not expected to fluctuate materially in fiscal 2019. Electricity and water are also a major cost component in our manufacturing process. We do not anticipate significant changes in the cost of these utilities in fiscal 2019.

Demand, Sales, and Distribution

Frac sand is currently sold into shale deposit zones across the United States. Demand for oil and gas proppants is driven primarily by rig counts and well completion activity.

Drilling and completion activity for oil and gas is very cyclical in nature. During calendar 2017, drilling activity began to increase after declining from its most recent peak in 2014. Increased drilling activity is based on many factors, but the primary factor is oil and gas pricing. These prices, particularly oil, have been increasing which has fueled an increase in drilling activity during fiscal 2018. This increased drilling activity has not affected each shale zone equally; it has primarily affected the Permian Basin, although there has been increased activity in most shale zones.

A portion of the frac sand we produce is sold under long-term contracts that require our customers to pay a specified price per mesh size for a specified volume of sand each month or quarter, depending on the contract. The terms of our customer contracts, including pricing, delivery, and mesh distribution, vary by customer. Certain of our long-term customer contracts contain liquidated damages for non-performance by our customers. The decline in U.S. rig count and completion activity during fiscal 2016 adversely affected oil and gas activity leading to reduced demand and pricing for proppants. As a result, we renegotiated certain provisions of our long-term contracts with certain customers. The renegotiated contracts reflect the reduced demand for frac sand in the current environment by restructuring the contracts to provide reduced contracted sales volume and prices in the near term, with the contracted minimums being increased in the later years. In addition to the long-term sales contracts, we sell frac sand through our distribution network under short-term pricing and other agreements. The terms of our short-term pricing agreements vary by customer.

We currently have contracts to provide frac sand to five customers, which comprised approximately 80% of our segment revenue for fiscal 2018. These contracts have a remaining life of approximately four years.

We distribute sand through the following trans-load facilities: El Reno, Oklahoma; Cotulla, Texas; Odessa, Texas; Pecos, Texas; Kenedy, Texas; and Fowlerton, Texas. The Cotulla, Texas; Pecos, Texas; and Odessa, Texas trans-load locations are supplied by rail, and operated by third-party contractors. The El Reno, Oklahoma trans-load location is also supplied by rail, and is operated by company personnel. Frac sand is delivered to the sites in rail cars specifically designed for loading and unloading sand. At March 31, 2018, we had approximately 2,000 rail cars under lease, with an average term of approximately four years. Our Corpus Christi location is served by barge, and the Kenedy, Texas and Fowlerton, Texas trans-load sites are served by truck from Corpus Christi.

Environmental Matters

We and the commercial silica industry are subject to extensive governmental regulation pertaining to matters such as permitting and licensing requirements, plant and wildlife protection, hazardous materials, air and water emissions, and environmental contamination and reclamation. A variety of federal, state, and local agencies implement and enforce these regulations.

~~Federal Regulation~~

At the federal level, we may be required to obtain permits under Section 404 of the Clean Water Act from the U.S. Army Corps of Engineers for the discharge of dredged or fill material into waters of the United States, including wetlands and streams, in connection with our operations. We also may be required to obtain permits under Section 402 of the Clean Water Act from the EPA or the state environmental agencies, to which the EPA has delegated local implementation of the permit program, for discharges of pollutants into waters of the United States, including discharges of wastewater or storm-water runoff associated with construction activities. Failure to obtain these required permits, or to comply with their terms, could subject us to administrative, civil, and criminal penalties as well as injunctive relief.

The U.S. Clean Air Act and comparable state laws regulate emissions of various air pollutants through air emissions permitting programs and the imposition of other requirements. These regulatory programs may require us to install expensive emissions abatement equipment, modify operational practices, and obtain permits for existing or new operations. Before commencing construction on a new or modified source of air emissions, such laws may require us to reduce emissions at existing facilities. As a result, we may be required to incur increased capital and operating costs to comply with these regulations. We could be subject to administrative, civil, and criminal penalties as well as injunctive relief for noncompliance with air permits or other requirements of the U.S. Clean Air Act and comparable state laws and regulations.

As part of our operations, we use or store petroleum products and other substances such as diesel fuel, lubricating oils, and hydraulic fluid. We are subject to regulatory programs pertaining to the storage, use, transportation, and disposal of these substances. Spills or releases may occur in the course of our operations, and we could incur substantial costs and liabilities as a result of such spills or releases, including claims for damage or injury to property and persons. CERCLA and comparable state laws may impose joint and several liability, without regard to fault or legality of conduct, on classes of persons who are considered to be responsible for the release of hazardous substances into the environment. These persons include the owner or operator of the site where the release occurred, and anyone who disposed of, or arranged for disposal, including offsite disposal, of a hazardous substance generated or released at the site. Under CERCLA, such persons may be subject to liability for the costs of cleaning up the hazardous substances, for damages to natural resources, and for the costs of certain health studies. In addition, it is not uncommon for neighboring landowners and other third parties to file claims for personal injury and property damage allegedly caused by the hazardous substances released into the environment.

In addition, RCRA and comparable state statutes regulate the generation, transportation, treatment, storage, disposal, and cleanup of hazardous and non-hazardous wastes. The EPA and state environmental agencies, to which the EPA has delegated portions of the RCRA program for local implementation, administer the RCRA program.

Our operations may also be subject to broad environmental review under the National Environmental Policy Act (NEPA). NEPA requires federal agencies to evaluate the environmental impact of all “major federal actions” significantly affecting the quality of the human environment. The granting of a federal permit for a major development project, such as a mining operation, may be considered a “major federal action” that requires review under NEPA. Therefore, our projects may require review and evaluation

under NEPA. As part of this evaluation, the federal agency considers a broad array of environmental impacts, including, among other things, impacts on air quality, water quality, wildlife (including threatened and endangered species), historic and archaeological resources, geology, socioeconomics, and aesthetics. NEPA also requires the consideration of alternatives to the project. The NEPA review process, especially the preparation of a full environmental impact statement, can be time consuming and expensive. The purpose of the NEPA review process is to inform federal agencies' decision-making on whether federal approval should be granted for a project and to provide the public with an opportunity to comment on the environmental impacts of a proposed project. Though NEPA requires only that an environmental evaluation be conducted and does not mandate a particular result, a federal agency could decide to deny a permit or impose certain conditions on its approval, based on its environmental review under NEPA, or a third party could challenge the adequacy of a NEPA review and thereby delay the issuance of a federal permit or approval.

Federal agencies granting permits for our operations also must consider impacts to endangered and threatened species and their habitat under the Endangered Species Act. We also must comply with, and are subject to liability under, the Endangered Species Act, which prohibits and imposes stringent penalties for the harming of endangered or threatened species and their habitat. Federal agencies also must consider a project's impacts on historic or archaeological resources under the National Historic Preservation Act, and we may be required to conduct archaeological surveys of project sites and to avoid or preserve historical areas or artifacts.

~~State and Local Regulation~~

We are also subject to a variety of state and local environmental review and permitting requirements. Some states, including Wisconsin where one of our operations is located, have state laws similar to NEPA; thus, our development of a new site or the expansion of an existing site may be subject to comprehensive state environmental reviews even if it is not subject to NEPA. In some cases, the state environmental review may be more stringent than the federal review. Our operations may require state-law based permits in addition to federal permits, requiring state agencies to consider a range of issues, many the same as federal agencies, including, among other things, a project's impact on wildlife and their habitats, historic and archaeological sites, aesthetics, agricultural operations, and scenic areas. Wisconsin and some other states also have specific permitting and review processes for commercial silica mining operations, and state agencies may impose different or additional monitoring or mitigation requirements than federal agencies. The development of new sites and our existing operations also are subject to a variety of local environmental and regulatory requirements, including land use, zoning, building, and transportation requirements.

Some local communities have expressed concern regarding silica sand mining operations. These concerns have generally included exposure to ambient silica sand dust, truck traffic, water usage, and blasting. In response, certain state and local communities have developed, or are in the process of developing, regulations or zoning restrictions intended to minimize the potential for dust to become airborne, control the flow of truck traffic, significantly curtail the area available for mining activities, require compensation to local residents for potential impacts of mining activities and, in some cases, ban issuance of new permits for mining activities. We are not aware of any proposals for significant increased scrutiny on the part of state or local regulators in the jurisdictions in which we operate, or community concerns with respect to our operations that would reasonably be expected to have a material adverse effect on our business, financial condition, or results of operations going forward.

Planned expansion of our mining and production capacity in new communities could be more significantly affected by increased regulatory activity. Difficulty or delays in obtaining or inability to obtain new mining permits or increased costs of compliance with future state and local regulatory requirements could have a material negative impact on our ability to grow our business. In an effort to minimize these risks, we continue to be engaged with local communities in order to grow and maintain strong relationships with residents and regulators.

There were no capital expenditures related to compliance with environmental regulations applicable to our oil and gas proppants operations during fiscal 2018, and we do not anticipate any such expenditures during fiscal 2019.

Where You Can Find More Information

We publish our annual reports on Form 10-K and Form DEF 14a, Annual Proxy Statement; our quarterly reports on Form 10-Q; current reports on Form 8-K. These reports along with all amendments to them, are available free of charge through the Investor Relations page of our website, located at www.eaglematerials.com as soon as reasonably practicable after they are filed with or furnished to the SEC. This reference to our website is intended solely to inform investors where they may obtain additional information; the materials and other information presented on our website are not incorporated in and should not otherwise be considered part of this Report. Additionally, investors may obtain information by contacting our Investor Relations department directly at (214) 432-2000 or by writing to Eagle Materials Inc., Investor Relations, 3811 Turtle Creek Blvd., Suite 1100, Dallas, Texas 75219.

ITEM 1A. Risk Factors

The foregoing discussion of our business and operations should be read together with the risk factors set forth below. They describe various risks and uncertainties to which we are or may become subject, many of which are outside of our control. These risks and uncertainties, together with other factors described elsewhere in this Report, have affected, or may in the future affect, our business, operations, financial condition and results of operations in a material and adverse manner.

We are affected by the level of demand in the construction industry.

Demand for our construction products and building materials is directly related to the level of activity in the construction industry, which includes residential, commercial and infrastructure construction. While the most recent downturn in residential and commercial construction, which began in calendar 2007, materially affected our business, certain economic fundamentals began improving in calendar 2012, and have continued to improve through calendar 2017; however, the rate and sustainability of such improvement remains uncertain. Infrastructure spending continues to be adversely affected by several factors, including the budget constraints currently being experienced by federal, state and local governments. Any decrease in the amount of government funds available for such projects or any decrease in construction activity in general (including any weakness in residential construction or commercial construction) could have a material adverse effect on our business, financial condition, and results of operations.

Our business is seasonal in nature, and this causes our quarterly results to vary significantly.

A majority of our business is seasonal with peak revenue and profits occurring primarily in the months of April through November when the weather in our markets is more suitable for construction activity. Quarterly results have varied significantly in the past and are likely to vary significantly in the future. Such variations could have a negative impact on the price of our common stock.

We are subject to the risk of unfavorable weather conditions, particularly during peak construction periods, as well as other unexpected operational difficulties.

Unfavorable weather conditions, such as snow, cold weather, hurricanes, tropical storms, and heavy or sustained rainfall, can reduce construction activity and adversely affect demand for construction products. Such weather conditions can also increase our costs, reduce our production, or impede our ability to transport our products in an efficient and cost-effective manner. Similarly, operational difficulties, such as business interruption due to required maintenance, capital improvement projects, or loss of power, can increase our costs and reduce our production. In particular, the occurrence of unfavorable weather conditions and other unexpected operational difficulties during peak construction periods could adversely affect operating earnings and cash flow and could have a disproportionate impact on our results of operations for the full year.

We and our customers participate in cyclical industries and regional markets, which are subject to industry downturns.