Environmental Services

Spotlight On:

Tapping Opportunities in the Growing Marcellus and Utica Shale

June 2014
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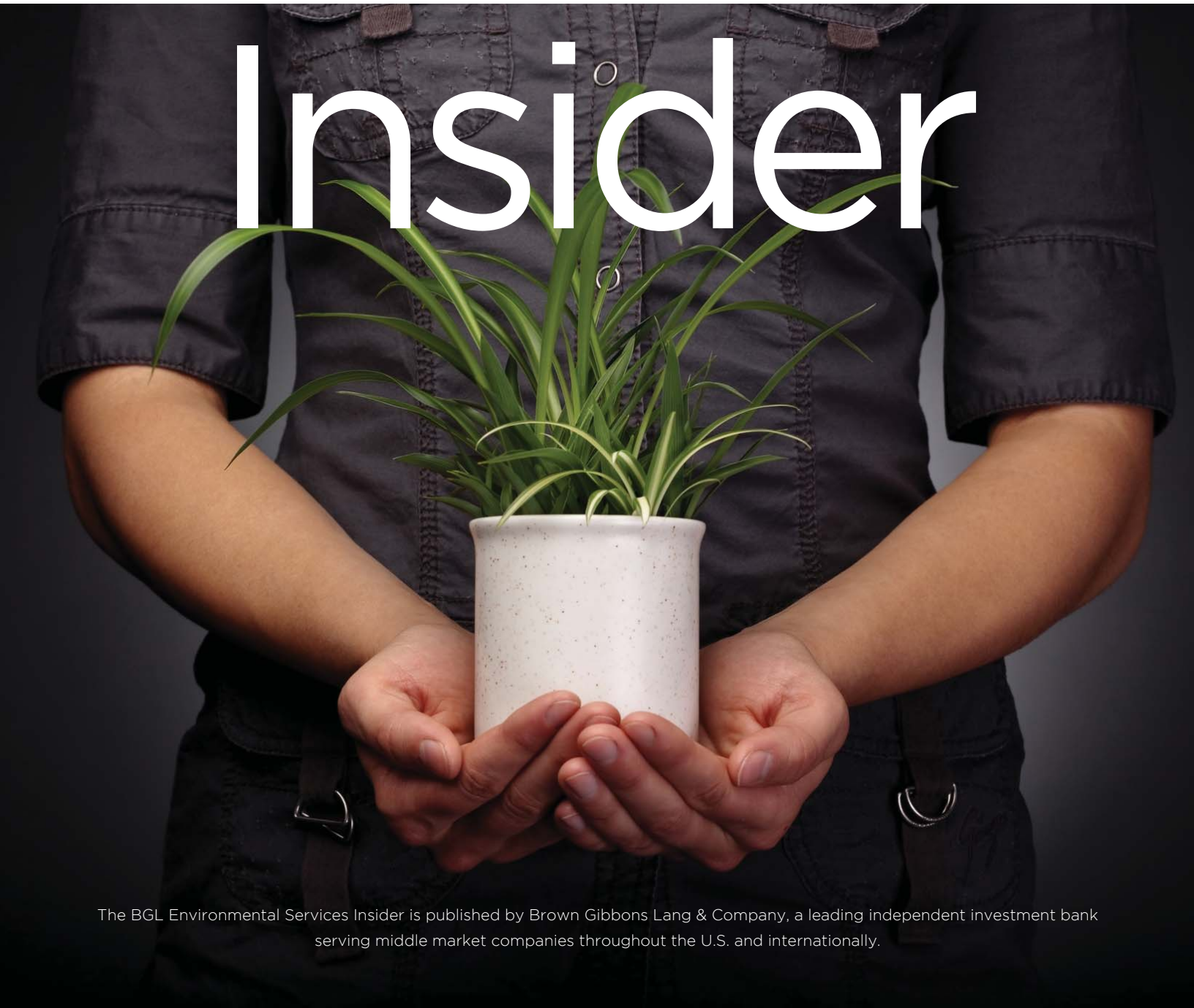

The BGL Environmental Services Insider is published by Brown Gibbons Lang & Company, a leading independent investment bank serving middle market companies throughout the U.S. and internationally.

The Environmental Services Insider discusses valuation metrics, recent mergers and acquisitions and capital markets activity, and select sector commentary for BGL's core focus areas within the environmental services industry:

- *Solid Waste (Non-Hazardous)*
- *Special Waste (Hazardous as well as other non-traditional waste streams)*
- *Environmental Engineering & Consulting (EE&C)*
- *E-Waste & Metals Recycling*
- *Reclamation & Remediation*
- *Waste-to-Energy (WtE)*
- *Energy Services*

Feature spotlights present our views and views of the market on certain sectors gathered through primary research and industry-focused transaction expertise.

M&A and Capital Markets Activity

- Middle market[1] M&A volume in the first quarter was up 12.4 percent (based on number of transactions) from the same period a year ago, with deal value up 11.1 percent (Page 4). Transaction activity was down from 4Q13 levels with the supply demand imbalance continuing, creating a fiercely competitive market for quality businesses. In May, *Standard & Poors Leveraged Commentary & Data* (S&P LCD) reported EBITDA multiples of 9.5x and 7.8x for strategic and financial buyers, respectively, for the broader middle market.
- The M&A market is exhibiting increasing momentum going into 2H14. April results from *Mergers & Acquisitions* Mid-Market Pulse index revealed the fastest expansion of middle market deal flow in six months. Middle market companies are reporting growth, according to the *1Q 2014 Middle Market Indicator* released by the National Center for the Middle Market, which cited middle market revenue growth in 1Q14 of 6.5 percent compared to .5 percent for the S&P 500. Middle market expansion will include an increased appetite for acquisitions.
- Liquidity remains robust with demand for financing growth organically and through M&A high, lenders say. S&P LCD reported senior leverage of 4.5x (senior debt to EBITDA) in May for middle market transactions.
- Private equity market research firm PitchBook, in its April release of the *1H 2014 U.S. PE Middle Market Report*, reported that the median EBITDA multiple for middle market buyouts (defined as values between $25 million and $1 billion) is at its highest level ever, reaching 10.5x in 2013—a sizable jump from 8.4x seen in 2012, pointing to increasing leverage as a primary driver. In 2013, total leverage (total debt to EBITDA) escalated to 6.4x for middle market deals in the broader market, the highest level PitchBook has recorded.
- The environmental services M&A market is active with the Special Waste sector seeing the announcement of several headline deals, most notably US Ecology's (NasdaqGS:ECOL) acquisition of EQ – The Environmental Quality Company; the merger of United States Environmental Services and K2 Industrial Services, a portfolio company of The Halifax Group; RLJ Equity Partners' acquisition of Enviro-Vac; Stericycle's (NasdaqGS:RCL) acquisition of PSC Environmental Services; Verolube's acquisition of Thermo Fluids; and Vertex Energy's (NasdaqCM:VTNR) acquisition of Omega Holdings. In Solid Waste, Waste Pro announced in May it is looking to recapitalize with a new investor. Current financial sponsor Roark Capital will be exiting its five-year investment in the transaction. In a separate deal, Roark acquired Central Jersey Waste and Recycling for its newly-formed Synergy Environmental platform. Alongside management, Ironwood Capital and Patriot Capital invested in Red River Waste Solutions, a southern-focused solid waste platform.

1 Middle market defined as enterprise values between $25 million and $500 million.

Public Equity Markets

Equity markets have rallied in recent weeks after a largely volatile May with the S&P 500 and DJIA closing the month at record highs. Year-over-year*, the S&P 500 and DJIA are up 23.4 percent and 14.3 percent, respectively. The BGL Diversified Special Waste index outperformed the market with a return of 57.4 percent over the same period.

*As of June 25, 2014.

Operating Highlights

- Solid waste operators are reporting improving industry fundamentals in a still nascent recovery, citing strengthening volumes across all waste streams—MSW, C&D, and special waste—despite difficult winter weather conditions in 1Q14.
- In the used oil market, feedstock cost remains in focus with participants continuing to seek reductions in pay for oil rates as excess supply in the base oil market puts downward pressure on finished product prices. Consolidation is accelerating with the sector seeing major collection and processing assets trade in 2Q14. Participants are seeking opportunities to vertically integrate to capture margin.
- EE&C firms reported severe weather and a slow federal contracting environment which negatively impacted revenue in the quarter. The energy sector continues to outperform supported by continued development in upstream, midstream, and downstream infrastructure. Companies are reinforcing backlogs in higher value oil and gas and industrial water projects.
- Metal recyclers reported a challenging pricing environment on softer export demand and severe weather in the U.S. which impacted domestic shipments. Positive economic indicators of strengthening auto and appliance sales and higher anticipated construction spending are expected to boost scrap supply.

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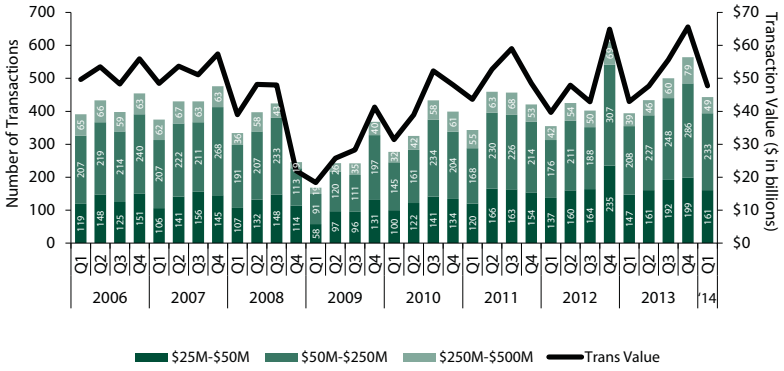
Overall M&A Activity

Mergers & Acquisitions Activity

Middle Market M&A Activity

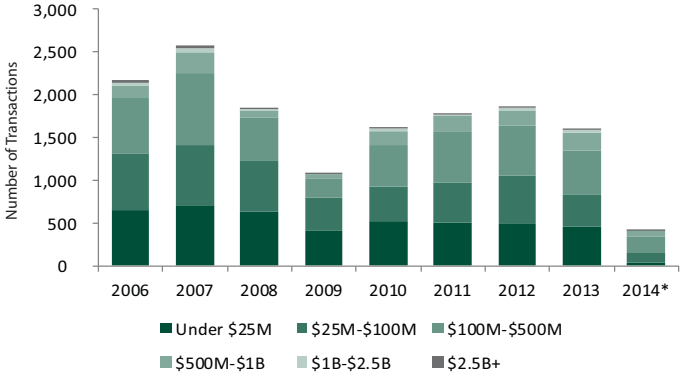


Based on announced deals, where the primary location of the target is in the United States.
Middle market enterprise values between $25 million and $500 million.

SOURCE: S&P Capital IQ.

Private Equity Transaction Activity

Transaction Count by Deal Size

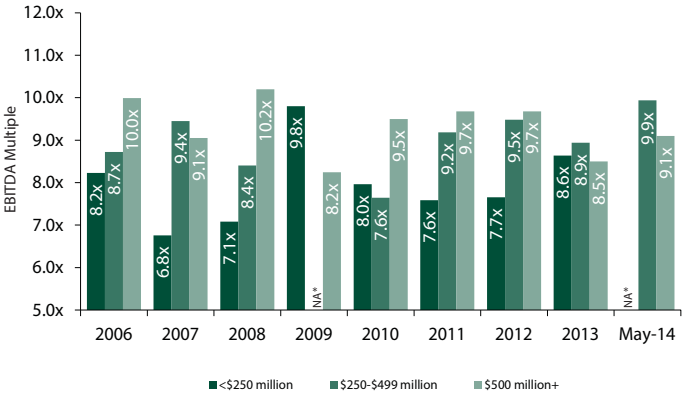


Buyout activity only
**1Q14 Transaction Activity*

SOURCE: PitchBook.

Trends in Valuation

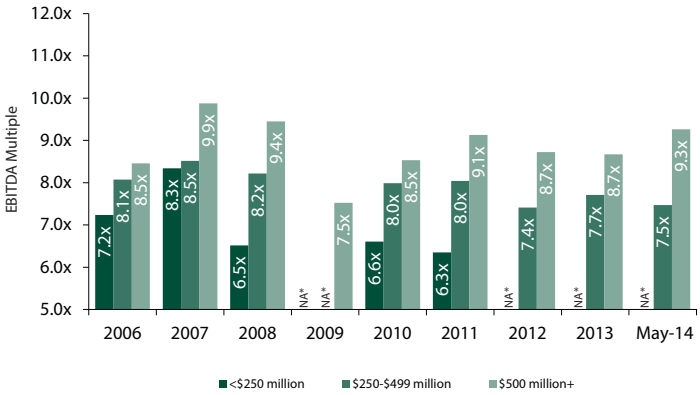
Transactions with Strategic Buyers



**NA: Data not reported due to limited number of observations for period.*

SOURCE: Standard & Poors LCD.

Transactions with Financial Buyers

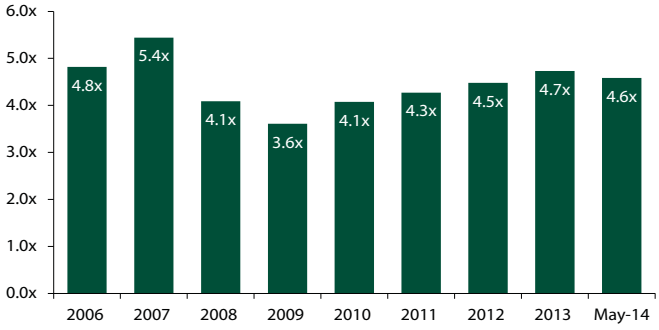


**NA: Data not reported due to limited number of observations for period.*

SOURCE: Standard & Poors LCD.

Acquisition Financing Trends

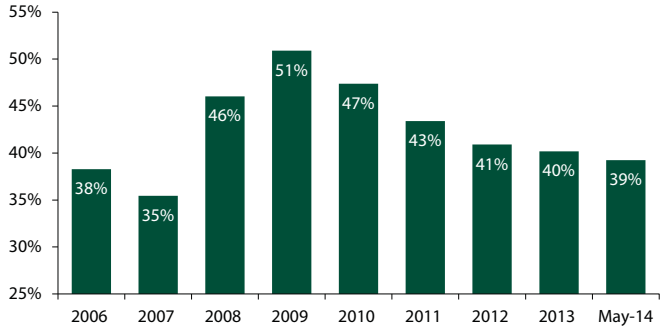
Total Leverage



Middle market enterprise values between $25 million and $500 million.

SOURCE: Standard & Poors LCD.

Equity Contribution



Middle market enterprise values between $25 million and $500 million.

SOURCE: Standard & Poors LCD.

Environmental Services M&A Activity

Notable M&A Activity in Solid Waste

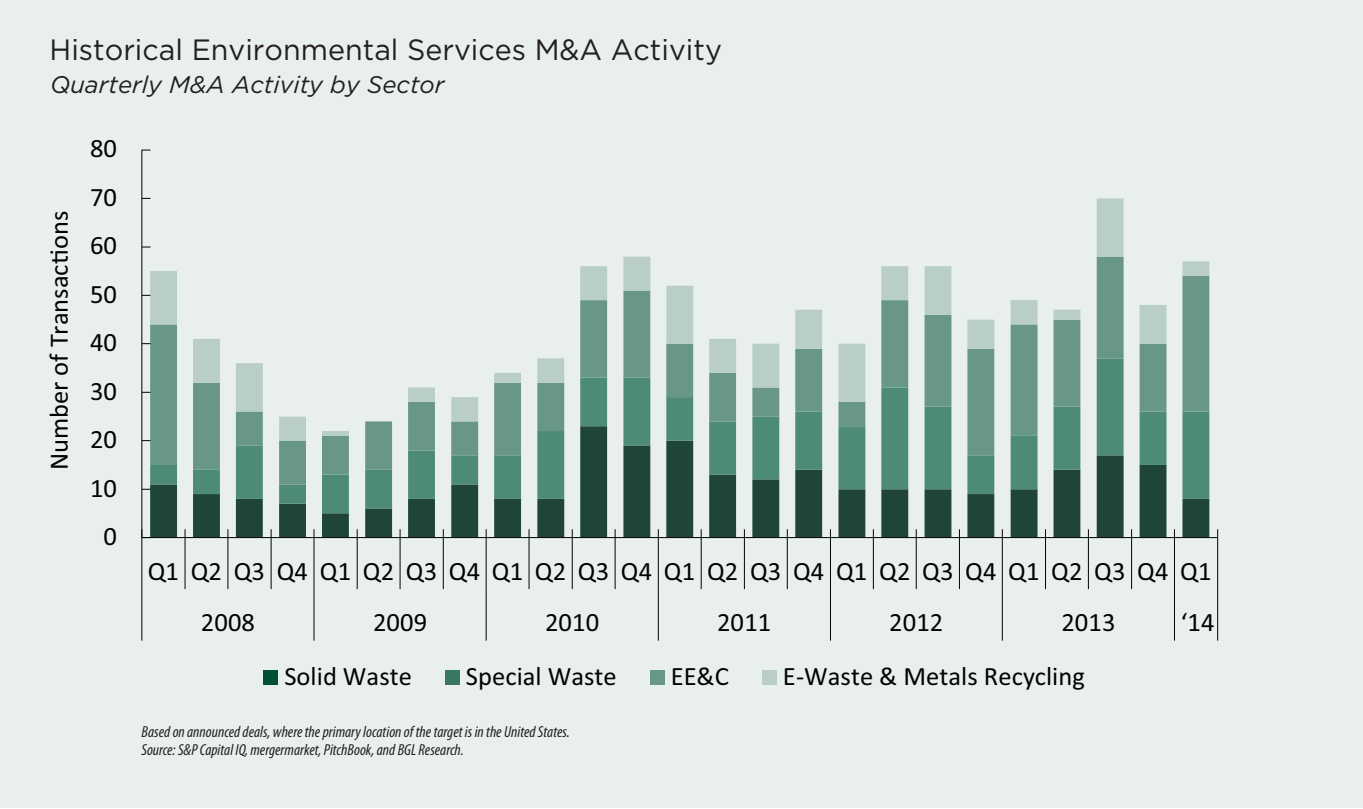
SOLID WASTE

In June 2014, **TransForce, Inc.** (TSX: TFI), through its wholly-owned subsidiary Matrec, acquired the majority of assets of Veolia E.S. Matières Résiduelles Inc. operating under the name **Veolia Solid Waste Canada**. The purchase price paid was CAD 25 million. Veolia Solid Waste offers collection, transportation, disposal, and recycling of trash and industrial waste to municipalities, as well as to commercial and industrial customers. "The transaction will allow Matrec to broaden its service offering and increase its density in the province of Quebec," said Alain Bédard, chairman, president and CEO of TransForce. "These assets will also provide additional capacity, which should improve the efficiency of our waste management operations." TransForce operates in the transportation and logistics industries in Canada and the United States. **Transaction Multiples: .8x Revenue and 5.0x EBITDA**

In May 2014, **GFL Environmental, Inc.** agreed to purchase **assets** in the Provinces of Nova Scotia, New Brunswick and Newfoundland, and Labrador from **Waste Management of Canada Corporation**. "The acquisition of Waste Management's assets in Atlantic Canada offers GFL a unique opportunity to acquire a strong base of customers and assets with 6 hauling yards and 3 landfills. We are very excited to expand GFL's brand into an attractive new market," said Patrick Dovigi, President and CEO of GFL.

Also in May, GFL acquired **Tri-Line Disposal Inc.** and **Deuce Disposal Ltd.** from **Contrans Group Inc.** (TSX:CSS). Tri-Line and Deuce are leading waste collection companies with operations in Edmonton and Slave Lake, Alberta respectively. "This acquisition aligns with our strategy to be a "one stop shop" to meet the liquid and solid waste needs of our customers," Dovigi said, speaking to the merits of the transaction. The transactions follow the January 2014 purchase of The Garbage Company.

Through a national platform that currently spans 5 provinces, GFL serves approximately 12,100 commercial and industrial customers and approximately 888,000 households under municipal solid waste contracts. GFL's waste removal services include solid, industrial, automotive, and collision.



SOURCE: S&P Capital IQ, PitchBook, Waste 360, Recycling Today, Equity Research, and Company Filings.

Environmental Services M&A Activity

Notable M&A Activity in Special Waste

SOLID WASTE (continued)

GFL is backed by financial sponsors **Hawthorn Equity Partners** and **Roark Capital Group**. Roark supplied CAD 60 million in development capital in November 2010.

In March 2014, **Roark Capital Group** acquired **Central Jersey Waste and Recycling** (CJW) for its newly-formed **Synergy Environmental** platform. CJW provides nonhazardous solid waste collection, hauling, and processing services to nearly 30 municipalities and approximately 1,000 commercial customers in New Jersey and Pennsylvania. It also collects and transports organic and food waste products for commercial and residential customers.

Industry veterans Ed Apuzzi, as CEO, and Joe LoVerde, as COO, will lead Synergy. Apuzzi and LoVerde previously ran Progressive Waste's operations in the northeastern United States. Commenting on the transaction and partnership with Roark, Apuzzi said, "Roark's dedicated environmental services team and operational experience will provide us with the additional resources needed to accelerate CJW's organic and acquisition growth while continuing to provide superior service and environmentally friendly solutions throughout the region." Jeffrey Keenan, President of Roark Capital Group and head of Roark's environmental services team also commented, "We are excited to partner with Ed, Joe, and the team at CJW to support their goal of continued growth and high standards of quality customer service. We believe New Jersey represents an ideal market to build a high quality, diversified environmental services provider."

Roark formed Synergy to serve as a growth platform with the goal of building a scalable and integrated solid waste focused environmental services operation, committing substantial additional equity capital to fund organic and acquisition-based growth. Roark has demonstrated a strategy of acquisition-based growth with other investments in solid waste platforms GFL Environmental and Waste Pro. Waste Pro announced in May 2014 that it was looking to recapitalize with a new investor. Roark will exit its five-year investment in the transaction. The sponsor supplied $100 million in development capital in 2009.

In February 2014, **Red River Waste Solutions** (RR Waste) was recapitalized in partnership with management. Financing was provided by Comerica Bank's Environmental Services Department, Ironwood Capital, and Patriot Capital. Founded in 1988, RR Waste specializes in residential and commercial solid waste collection, hauling, and landfill management. The company currently provides collection service to more than 150,000 residential and commercial locations in Iowa, Kentucky, Louisiana, Mississippi, South Dakota, Tennessee, and Texas.

Commenting on the transaction, Jim Smith, founder and CEO of RR Waste said, "We are extremely pleased with the outcome of the transaction and excited to execute our growth plan with our new partners." Dickson Suit, partner at Ironwood Capital who led the transaction, also commented, "We see a lot of exciting opportunities in the market and are really excited to partner with Jim to grow the business."

SPECIAL WASTE

In June 2014, **US Ecology** (NASDAQ: ECOL) completed the acquisition of **EQ - The Environmental Quality Company** (EQ) in a transaction valued at $465 million. Based in Wayne, Michigan, EQ is a comprehensive solutions provider offering a broad line of environmental services including treatment and disposal of hazardous wastes, recycling, field and industrial services, and total waste management. EQ's facilities include one hazardous waste permitted landfill located outside of Detroit, Michigan, 13 waste treatment and recycling facilities and 21 dedicated service centers. EQ employs over 1,250 employees and services more than 6,000 active customers.

US Ecology provides hazardous waste treatment and disposal, low-activity radioactive waste disposal, low-level radioactive waste disposal, hydrocarbon recycling services, and transportation. The acquisition will position the combined companies to offer customers an enhanced and more comprehensive set of environmental services. "The addition of EQ to US Ecology's family of permitted facilities will provide us with an expanded environmental services platform, broadening our geographic footprint and providing for a greater array of services to better meet the needs of our customers," commented CEO Jeff Feeler. "We expect that the combination of US Ecology and EQ will result in cross-selling opportunities, transportation synergies, and efficiencies of scale, delivering compelling value for our customers and stockholders, as well as further opportunities for long-term growth."

SOURCE: S&P Capital IQ, PitchBook, Waste 360, Recycling Today, Equity Research, and Company Filings.

Environmental Services M&A Activity

Notable M&A Activity in Special Waste

SPECIAL WASTE (continued)

The transaction represents an exit for **Kinderhook Industries, LLC** which acquired EQ in 2008. **Transaction Multiples: 1.2x Revenue and 8.6x EBITDA**

In June 2014, **RLJ Equity Partners** acquired **EnviroVac Holdings, LLC**. EnviroVac provides industrial vacuuming, hydroblasting, watercutting, and inspection services for customers in the pulp and paper, chemical, steel, oil and gas, power generation, and other industrial sectors. "Partnering with the RLJ brand enables EnviroVac to continue to provide the safest and most professional services to our customers as the company expands its services across the country, particularly throughout the Southeast and Gulf Coast regions," said EnviroVac CEO R. Kevin Jackson. **New Canaan Funding** and **Madison Capital Funding** participated in the transaction. **Pine Tree Equity Partners** had backed the company since 2009.

In June 2014, **The Halifax Group** (Halifax) announced the acquisition of **United States Environmental Services** and subsequent merger with portfolio company **K2 Industrial Services**. The combination creates a company with 41 branches nationwide and over 2,000 employees generating $500 million in annual revenues. Capabilities range from chemical cleaning to vacuum services to hazardous material emergency response. The new company is a one-stop shop for industrial customers, USES CEO Greg Johnson said in a statement. "The new USES has a larger, national footprint and an impressive range of services that neither company could offer on its own," Johnson said. **Florida Capital Partners** exits its investment in USES in the sale. Halifax acquired K2 from **Capital Resource Partners** in December 2011.

In May 2014, **Vertex Energy, Inc.** (NASDAQ:VTNR) announced an asset purchase agreement with **Omega Holdings Company, LLC** and certain of its wholly-owned subsidiaries. Omega Holdings Company offers refined products including motor oils, transmission fluids, hydraulic oils, and industrial lubricants. Vertex Energy recycles industrial waste streams and off-specification commercial chemical products. Vertex agreed to acquire certain of Omega's assets related to the re-refining and processing of used motor oil and the distribution of fuel oils and base lubricating oils. Vertex Energy will pay $30.75 million in cash, 2 million shares of Vertex's common stock (valued at approximately $7.5 million), and will assume approximately $9.7 million in capital leases and other liabilities. Vertex expects the acquisition to be accretive immediately. At the completion of this acquisition, the companies will have a combined re-refining capacity of approximately 110 million gallons of used motor oil.

In May 2014, **Buckhorn Energy Services** announced plans to expand in the oilfield waste market with the acquisition of five salt water disposal wells in the Permian Basin. Buckhorn already has seven wells in the Bakken in North Dakota. This acquisition continues its expansion of facilities that bring contracted water by pipeline and further demonstrates its commitment to grow Buckhorn into one of the critical oil services providers to oil and gas operators in the Permian Basin. On the same day, Buckhorn acquired Oaks Disposal Services LLC, a special waste landfill serving the Bakken. The company is actively looking at other acquisitions. Buckhorn received $15.5 million in development capital from **OFS Energy Fund** in 2012.

In April 2014, **Stericycle, Inc.** (Nasdaq:SRCL) acquired **PSC Environmental Services, LLC** (PSC) in a $275 million transaction. PSC is a provider of environmental and regulated waste management services including household hazardous waste, pharmaceutical waste disposal, on-site environmental management, and hydroblasting. Stericycle's waste disposal services include medical waste disposal, sharps disposal management, pharmaceutical returns and disposal, hazardous waste disposal, sustainability services, and containers. The acquisition will strengthen Stericycle's infrastructure and enhance the company's service offerings to its healthcare, retail, and other regulated waste customers. PSC Environmental's services will be integrated into Stericycle's portfolio of compliance offerings, combining market-leading solutions with expanded sales, operational, and regulatory expertise. "PSC Environmental is a recognized industry leader and this acquisition is an exciting milestone," said Charlie Alutto, CEO of Stericycle. "By combining PSC Environmental with our regulated waste management solutions, we are providing the marketplace with a broader portfolio of services supported by an enhanced operational infrastructure." PSC Environmental Services was a portfolio company of **Lindsay Goldberg, LLC**, which acquired the company in 2010. PSC Industrial Services was not part of the transaction and will continue to operate as part of PSC Holdings.

In March 2014, **VeroLube, Inc.** announced an agreement to acquire **Thermo Fluids, Inc.** through its wholly owned subsidiary VeroLube USA, Inc. Thermo Fluids collects and recycles waste products, including oily wastewater, antifreeze, and used oil filters. VeroLube is a provider of

SOURCE: S&P Capital IQ, PitchBook, Waste 360, Recycling Today, Equity Research, and Company Filings.

Environmental Services M&A Activity

Notable M&A Activity in Environmental Engineering & Consulting

SPECIAL WASTE (continued)

used oil refining services using its own patented and certified re-refining process ReGen. VeroLube plans to retain the Thermo Fluids head office in Scottsdale, Arizona and sees tremendous value in the management and staff of Thermo Fluids as a vital and integral part of VeroLube's expansion plan. "Thermo Fluids provides VeroLube with a significant platform and immediate scale to expand our business and execute on our consolidation strategy," said Terry Lyons, chairman of the Board of VeroLube. Thermo Fluids is a subsidiary of Nuverra Environmental Solutions, Inc. (NYSE:). VeroLube will pay Nuverra $165 million in cash and $10 million in VeroLube common stock.

ENVIRONMENTAL ENGINEERING & CONSULTING

In May 2014, **Stantec Inc.** (TSX:STN) agreed to acquire **USKH, Inc**. Headquartered in Anchorage, Alaska, USKH is a 130-person multidiscipline design firm founded in 1972, with offices in Alaska, Washington, and Montana. USKH provides fully-integrated architectural, landscape architecture, engineering, environmental, planning, and surveying services. With the acquisition, Stantec will grow its presence in the Alaskan and Pacific Northwest markets. "USKH provides us the opportunity to strengthen our ever growing presence in North America while serving new markets in a growing region," said Bob Gomes, CEO of Stantec. "USKH's strong presence in Alaska will complement our dominant presence in the Canadian North, and enable us to offer our U.S. and Canadian clients a comprehensive suite of services over the entire emerging resource-rich northern areas of North America."

The transaction follows the April purchase of **JBR Environmental Consultants, Inc.** (JBR). Founded in 1985 and based in Salt Lake City, Utah, JBR is a 140-person full-service environmental consulting firm operating in 12 western U.S. locations. The group provides baseline environmental studies, air monitoring and testing, permitting and National Environmental Policy Act (NEPA) assistance, site investigation and remediation services, and environmental compliance assistance. They service key business sectors, including manufacturing, oil and gas, mining, and power generation and transmission. "JBR shares our client-focused, relationship-driven culture and has considerable large-scale project experience," said Gomes. "Their talented team members will help us continue to grow our environmental service capabilities across the western United States."

Stantec's environmental services include site management and remediation, ecosystem restoration and land reclamation, and waste management. The company currently has nearly 6,000 employees working across 140 offices in the United States.

In May 2014, **RPS Group, Inc.** (LSE:RPS) completed the acquisition of **GaiaTech, Inc.** (GT) in a $34 million transaction. GT provides environmental risk consulting and engineering services such as environmental and facilities due diligence, site remediation, compliance management, and engineering. The company reported gross revenue of $31.9 million and net revenue of $15.4 million in 2013. Profit before tax in 2013 was $4.8 million. Alan Hearne, CEO of RPS, commented, "It is an important element of the Group's strategy to develop our presence in North America's environmental consultancy market. GaiaTech is a business we have followed for a number of years. It will make an important contribution to the development of our US activities."

In March 2014, private equity-backed **Apex Companies, LLC,** acquired **Southwest Geoscience Consultants, Inc.** Headquartered in Dallas, Texas, Southwest Geoscience is an environmental consulting services company specializing in due diligence, site investigation, corrective action, industrial hygiene, multi-media compliance and permitting, and natural resources management. The company has offices in Texas, Oklahoma, and New Mexico. "The acquisition of Southwest Geoscience will enhance Apex's capability and capacity to serve existing and new clients, and drive growth in specific end markets such as Oil & Gas and Real Estate," says Peter Ceribelli, CEO of Apex. Apex is a portfolio company of **Tailwind Capital**, which acquired the company in 2010. Southwest Geoscience is Apex's fifth add-on acquisition under Tailwind's ownership.

E-WASTE AND METALS RECYCLING

In June 2014, private equity firm **Trivest Partners** acquired **Columbus Recycling** in a transaction valued at $55.3 million. Founded in 1956 and headquartered in Columbus, Mississippi, Columbus Recycling provides sourcing, logistics management, materials sorting, cutting, baling and upgrading of both ferrous and non-ferrous materials. Commenting on the partnership with Trivest, Columbus CEO Gregg Rader, said, "After careful consideration, we determined that Trivest was the right partner to assist Columbus Recycling with its next phase of growth. We plan to work closely with Trivest to consider prudent add-on acquisitions that will allow Columbus to

SOURCE: S&P Capital IQ, PitchBook, Waste 360, Recycling Today, Equity Research, and Company Filings.

Notable M&A Activity in E-Waste & Metals Recycling

E-WASTE AND METALS RECYCLING (continued)

expand its service offerings and/or geographic footprint." Russ Wilson, Partner at Trivest, stated, "Gregg and the Columbus Recycling team have done a remarkable job of building a service-centric business that prioritizes the Company's key partners. The Company is an extremely efficient operator with deep market knowledge and advantageous yard locations. This model allows Columbus to pay fair prices for material while delivering a compelling value proposition to both customers and consumers."

In May 2014, **Commercial Metals Company** (NYSE:CMC) completed the purchase of substantially all of the assets of **Newell Recycling of San Antonio, LP** (Newell Recycling). With the acquisition, CMC continues its vertical integration by providing raw materials for its CMC Steel Texas location; establishes a larger recycling presence in San Antonio, Texas; and provides an opportunity for continued growth of its recycling operations in the Central Texas Area. Newell Limited will retain the Media Plant operation located at the site, as well as the shredder operations of Newell Recycling in Eagle Pass, Texas.

In May 2014, **Western Metals Recycling** (WMR) LLC acquired the **Utah recycling facilities** of **Sims Metal Management Ltd.** WMR buys common household ferrous and nonferrous scrap metal items such as appliances, gutters, sheet metal, automobiles, aluminum cans and other aluminum, copper, and brass products. The addition of the new locations is consistent with WMR's growth strategy and demonstrates its commitment to expanding its existing regional recycling platforms.

In April 2014, the former owners of **Midland Recycling** reacquired the company from Palmer Refuse. Midland Recycling provides paper, plastic, metal, and glass recycling and offers drop-off services. The new owners of the company will operate under the name Greenwaste LLC, but will retain the name Midland Recycling. "Midland Recycling is a fine, well-operated company that will add significant value to our customers and shareholders," said Mick Barry, president and co-owner of Greenwaste. "My business partner, Brian Meng, and I will utilize our experience, resources and intellectual capital to ensure that Midland Recycling will return to the forefront of the recycling industry in the Lincoln, Nebraska market."

SOURCE: S&P Capital IQ, PitchBook, Waste 360, Recycling Today, Equity Research, and Company Filings.

Spotlight On: Tapping Opportunities in the Growing Marcellus and Utica Shale

The shale gas boom is expected to play a substantial role in revitalizing the U.S. economy and advancing the nation's energy independence—a boon for environmental firms tapping the resource-rich Marcellus and Utica Shales.

Natural gas will lead the rise in future energy consumption, according to projections from the U.S. Energy Information Administration (EIA). The natural gas share of total U.S. energy supply is projected to grow from 27 percent in 2012 to 42 percent by 2040. Shale gas production will be the largest contributor, growing by more than 10 trillion cubic feet (Tcf), from 9.7 Tcf in 2012 to 19.8 Tcf in 2040. In percentage terms, shale gas will increase from 40 percent to 53 percent of total U.S. gas production over the same period.[1] Two of the most promising of the shale plays expected to be significant contributors to the increase are the Marcellus and Utica Shales. Both plays have experienced a significant amount of growth with developments in drilling technology and environmental protection products and services.

Marcellus Shale

The Marcellus Shale is the largest and a growing source for natural gas in the United States and considered one of the richest natural gas reserves in the world. With an estimated total area of 95,000 square miles, the play encompasses a six-state region of Pennsylvania, West Virginia, Kentucky, Tennessee, New York, and Ohio.

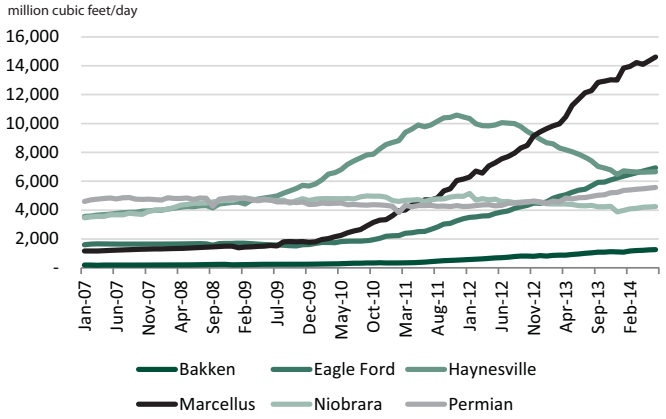
Between 2007 and 2013, natural gas production from the Marcellus Shale grew from 2 percent to about 20 percent of domestic supply, reported Morningstar, which predicts it will account for close to one fourth of domestic volumes by 2015.[2] In April 2014, the EIA reported that proved natural gas reserves in the Marcellus Shale (nearly 43 Tcf) surpassed those in the Barnett Shale to become the largest shale gas play in the United States.[3] The EIA estimates the reserve potential of the Marcellus Shale at 141 Tcf.

In 2013, 4,217 permits were issued in Pennsylvania alone, with 2,182 wells drilled.[4] Drilling activity in dry gas regions in Pennsylvania has slowed in recent years due to the historically low price of natural gas. As the price stabilizes over $4.50/Mmbtu, the region is expected to experience a significant increase in capital investment for drilling activity.

U.S. Natural Gas Production

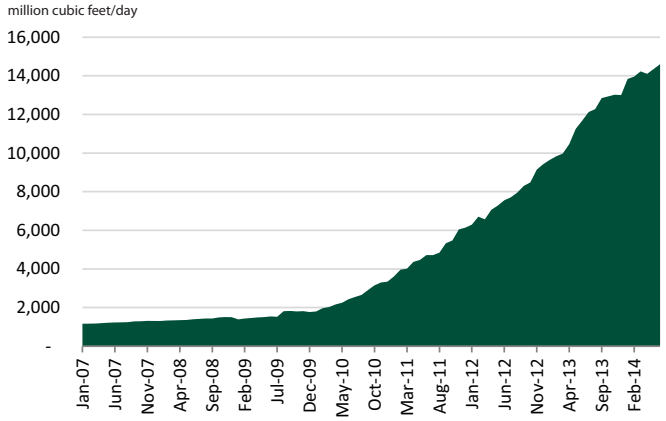
Regional Shale Plays

The six regions identified by the U.S. Energy Information Administration account for nearly 90 percent of domestic oil production growth and virtually all domestic natural gas production growth during 2011-12.



Marcellus Shale

The U.S. natural gas market is evolving rapidly. The Marcellus region produced less than 2 Bcf/d as recently as 2010, increasing to 18 percent of U.S. natural gas production by December 2013.



Source: U.S. Energy Information Administration.

According to Morningstar, the Marcellus Shale is not likely to peak soon, citing the following facts:[2]

- There exist somewhere between 30 and 75 years of Marcellus resource potential at current production rates.
- Drilling figures reported by prominent Marcellus players identify between 10 and 30 years of drilling locations across the Marcellus, which should fuel several more years of production growth at relatively low cost.

The low-cost, highly productive wells of the Marcellus Shale will continue to be economic, reported Moody's Investor Services, indicating that E&P companies in the region will benefit more than natural gas producers elsewhere in North America, even if gas prices weaken. "Technological advancements since the early 2000's have allowed U.S. natural gas producers to reshape the industry largely through the development of the Marcellus," commented associate analyst Michael Sabella. "The Marcellus has emerged as one of the most profitable regions in the U.S. for producing natural gas," he said, noting that "even if prices return to the weak levels of 2012, producers there will be rewarded."[5]

Utica Shale

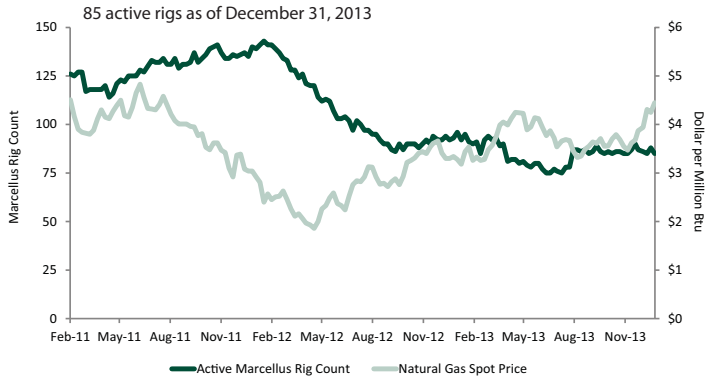
The Utica Shale spans an estimated 170,000 square miles—much of it undeveloped—and covers a six-state region of Maryland, New York, Ohio, Pennsylvania, Virginia, and West Virginia. In 2012, the U.S. Geological Survey released its first estimate of the reserve potential of the Utica Shale, calculating the formation to hold about 38 Tcf of undiscovered, recoverable natural gas, 940 million barrels of unconventional oil resources, and 208 million barrels of natural gas liquids.[6] Due to the play being rich in wet gas and oil, the region continues to experience increased drilling activity as operators are less tied to the currently low price of natural gas.

Ohio Department of Natural Resources (ODNR) Director Jim Zehringer described Utica production as "staggering", "skyrocketing", and showing "enormous potential" during a press conference discussing results of the ODNR 2012 Utica Shale Production Report. In 2012, a total of 87 producing oil and gas wells were online in the Utica Shale, up from only two the previous year. "The Utica shale play in Ohio is the real deal. It has already brought unprecedented growth in oil and gas production, and it's going to produce staggering amounts of oil and gas in the future," Zehringer commented. "We believe Ohio is now at the beginning of a historical era of oil and gas production."[7]

Historical Rig Count & Natural Gas Spot Prices

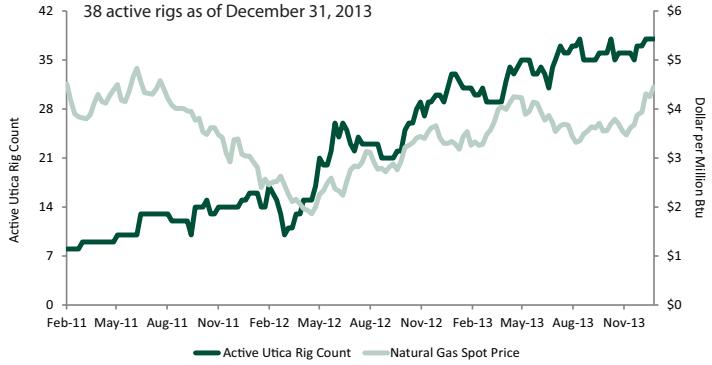
Marcellus Shale

Drilling activity in dry gas regions in Pennsylvania has slowed in recent years due to the historically low price of natural gas. As the price stabilizes over $4.50/Mmbtu, the region is expected to experience a significant increase in capital investment for drilling activity.



Utica Shale

The Utica Shale is rich in wet gas and oil and continues to experience increased drilling activity as operators are less tied to the currently low price of natural gas.



Source: Baker Hughes.

The "real hot spot" is more toward the south of the play, said former ODNR chief geologist Larry Wickstrom, speaking to attendees at the Ohio Oil and Gas Association's (OOGA) annual winter conference this March, where wet gas and oil rich regions of the Utica Shale are commanding increasing levels of investment. OOGA vice president of operations Peter MacKenzie estimated that Ohio gas wells produced more than 203 billion cubic feet (Bcf) of gas in 2013—more than double the 89.4 Bcf produced in 2012. Wickstrom indicated that initial production data showed at least one well producing 1.25 Bcf of gas in less than 90 days. "The potential has

Spotlight On: Tapping Opportunities in the Growing Marcellus and Utica Shale

hardly been tapped," he said, adding "I think there will be quite a heyday once we can see these structures clearly."[8]

Between January 2013 and March 2014, 1,835 permits were issued in Ohio for Utica Shale drilling while only 573 wells have been drilled,[4] reflecting latent demand. In his remarks at the 2014 Shale Summit, OOGA executive vice president Tom Stewart said there will be more than 1,000 shale wells drilled in Ohio in 2014, and there is already $8 billion in infrastructure investments underway.[9]

The ODNR expects Utica Shale production to overtake the existing production of the state's 51,000 conventional oil and gas wells by the year 2015. According to ODNR production averages for 2012, one Utica well produced the same amount of oil as 312 conventional wells and one Utica natural gas well produced as much gas as 448 conventional wells.[7]

Morningstar reported that the Utica Shale in Ohio could reach 3–4 Bcf/d of incremental production by the end of this decade.[2]

Increasing demand for infrastructure development

Increased oil and gas drilling activity is translating into significant pent up demand for infrastructure development, requiring continued investments in well pad construction, along with additional pipeline construction needed to more effectively transport the oil and gas being produced.

The Interstate Natural Gas Association of America (INGAA) Foundation forecasts $641 billion will be spent on midstream infrastructure in North America between 2011 to 2035—up substantially from previous estimates of $251 billion for the period 2011 to 2035. An estimated 49 percent will be focused on gas infrastructure.[10]

Other market estimates forecast greater than $80 billion will be invested annually in U.S. midstream and downstream petroleum infrastructure between 2014 and 2020, with focus on the Marcellus Shale in Pennsylvania and New York and the Utica Shale in Ohio.

"Staggering" gas production from these plays is turning the nation's Northeast region from an importer to an exporter of natural gas. The region is expected to export 10 Bcf/d, observes George Francisco, executive vice president and CFO of the Momentum Energy Group—a stark reversal of the 10 Bcf/d it once imported.[8]

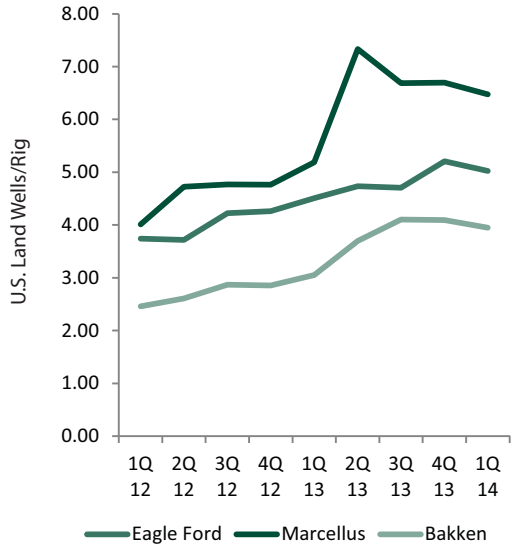
The Marcellus and Utica Shale plays lie next to some of the largest gas markets in the country, including New York City, Boston, and Philadelphia. Projections from the EIA estimate Marcellus Shale gas production could provide up to 39 percent of the natural gas needed to meet demand in markets east of the Mississippi River by 2025—up from 16 percent in 2012.[1]

Investment ramping up

E&P companies are betting on shale gas potential, as evidenced by a significant allocation of capital to infrastructure development in the Marcellus and Utica Shale plays:[11]

Efficiency Gains in Larger Basins

Operators are becoming more efficient with their drilling techniques, including the use of zipper well drilling, and are transporting drill rigs from pad to pad versus full decommissioning. Greater efficiency is allowing for more wells per rig and more stages per well. Such trends are creating more opportunities for service providers, and the demand for such services has delinked from rig counts.



Source: Baker Hughes.

Chesapeake Energy Corporation (NYSE:CHK) - Chesapeake Energy holds the largest position in the Utica with about one million acres. The company has obtained 610 permits, drilled 249 wells, and has committed to drill and complete 50 net wells per year through 2016—up to a minimum cumulative total of 250. Roughly 30 percent of its $5.2 to $5.6 billion capex budget will be allocated to the Marcellus and Utica plays in 2014.

Hess Corporation (NYSE:HES) – Hess Corporation is developing a leading position in the emerging Utica wet gas window. The company plans to invest $550 million to drill 30 to 35 wells in the Utica in 2014, after spending $455 million last year.

Gulfport Energy Corp. (NasdaqGS:GPOR) – Gulfport Energy expects "record production growth" in the Utica region. The company plans to spend $634 – $676 million on development in the Utica in 2014 and hopes to triple daily production this year. Plans include drilling approximately 85 to 95 gross (68 to 76 net) wells. Gulfport holds approximately 179,000 net acres under lease.

"We are still early in the development of this play," said Gulfport COO J. Ross Kirtley in the company's 1Q14 earnings call. In just over two years, Gulfport has brought online 50 wells to date. The company has over 1,015 wells in the Utica left to drill, complete, and tie into sales, according to company estimates.

Antero Resources Corporation (NYSE:AR) – Antero Resources markets itself as the most active driller in the Marcellus Shale with 15 rigs running and the third most active driller in the Utica Shale with 5 rigs. The company completed an IPO in October 2013 raising more than $1.5 billion in capital. Antero holds 345,000 net acres in the Marcellus, 105,000 net acres in the Utica, and is adding approximately 1,000 acres a week.

American Energy Partners - In early June, American Energy Partners (AEP) announced plans to acquire shale acreage in the Marcellus and Utica shale plays for $1.75 billion.

Utica acreage includes 27,000 net acres expected to have net production of about 40 million cubic feet of natural gas equivalent per day. Sellers are East Resources Inc. and an unnamed private company.

This latest Utica acquisition marks AEP's seventh major purchase in the southern Utica shale play, bringing its position to 280,000 net acres, of which 90 percent is located in the core of the play where it plans to drill approximately 2,600 gross wells and 1,600 net wells over the next decade. In 2011, Aubrey McClendon, then CEO of Chesapeake Energy, called the Utica Shale play "the biggest thing economically to hit Ohio, since maybe the plow." McClendon is now CEO of AEP. AEP has invested more than $3.5 billion in the Utica to date.

Marcellus acreage includes 48,000 net acres expected to have net production of approximately 135 million cubic feet per day. Sellers are East Resources and an unnamed private company. The Marcellus acquisition marks the company's entry into the southern Marcellus shale play "and establishes a strong foundation from which it plans to build a more significant leasehold position in the area over time," the company said. AEP plans to drill about 410 gross wells and 355 net wells on its acreage.

Two rigs are currently being used to develop the acreage being acquired. AEP plans to increase operated drilling activity to four to six rigs by the end of 2015.

During the past nine months, the AEP platform has raised committed equity and debt capital of about $10 billion to fund shale development in designated plays, inclusive of $1.2 billion in private equity capital from lead investor The Energy & Minerals Group and additional sponsors that include First Reserve Corporation.

Magnum Hunter Resources Corp. (NYSE:MHR) – Magnum Hunter Resources has characterized the Utica as "potentially the best shale play in the U.S." In May, the company announced a $150 million private placement of common stock. Proceeds will be used to fund expansion, including the addition of a drilling rig to accelerate its drilling operations in the Marcellus Shale and Utica Shale on the company's existing 200,000 leasehold acres and acquire new oil and gas leases covering acreage in those plays. Relational Investors will become Magnum Hunter's largest shareholder with a 15 percent equity stake. Commenting on its investment, Ralph V. Whitworth, co-founder and principal of Relational Investors said, "The company...has assembled a premier acreage position in North America's most prolific shale plays. Our cash infusion will allow the company to accelerate development and expansion in the highly attractive Appalachian Region."

Spotlight On: Tapping Opportunities in the Growing Marcellus and Utica Shale

Opportunities Abound for Environmental Firms

Opportunities abound for environmental firms serving the rapidly expanding energy market in the Marcellus and Utica Shale plays, including engineering and consulting firms, technical service providers, waste and water management firms, and suppliers of technology and equipment that treat oilfield waste:

- Environmental engineering and construction – Well site preparation, including construction of drilling pads, mud ponds, gas treatment and storage facilities, and transmission infrastructure, as well as onsite and offsite improvements and wellhead installation[12]
- Environmental consulting - surveying, site design, permitting, regulatory compliance, water management
- Emergency spill response and remediation
- Environmental control solutions, including erosion and sediment control in well pad and pipeline construction
- Transportation and logistics of materials and supplies, including the procurement and delivery of water to drilling sites
- Waste management support, including the collection, treatment, and disposal of liquid and solid waste from drilling and ongoing production activities and recycling of flowback and produced water
- Wastewater technology and water treatment equipment

Energy Waste

The energy waste business is growing dramatically with ongoing shale development throughout the country. In an interview with *Waste360* conducted at the 2014 Waste Expo conference, Mark Johnsrud, CEO of Nuverra Environmental Solutions (NYSE:NES), spoke of the growth opportunities, saying, "Our business started out with all fluids, and as the business is changing basin by basin, we are starting to expand our footprint to also include solids." He continued, "We are in every major shale play today. We believe that between the U.S. and Canada, that this is probably a $10 billion business, maybe more, and as regulations change, we are talking about how different companies are impacted and the growth of this industry on a long-term basis."

Environmental regulations are becoming increasingly complex and stringent—a positive growth driver for environmental services providers. "We want to stay in front of our customers with new ideas and help them stay ahead of the regulatory curve," said Johnsrud in the interview. "That is where we really see some of our opportunity."

The industry is moving toward outsourcing with discussion around total waste management solutions, according to industry analysts. Given growing volumes and regulatory complexity, E&P companies are looking for service providers delivering end-to-end logistics management due to the increasing need to handle and recycle solids and liquids.

In the broader industry, investment in the energy waste space is increasing. A bellwether transaction involved oilfield waste management provider R360 Environmental Solutions, the former platform investment of a consortium led by Paine & Partners and Tinicum Capital Partners. The investor group oversaw the integration of three add-on acquisitions prior to exiting the two-year investment in 2012 when the company was sold to Waste Connections (NYSE:WCN) for $1.4 billion. Waste Connections views E&P waste as a primary growth driver, particularly in an increasingly stringent regulatory climate. The company reported a 20 percent year-over-year increase in E&P waste activity and margin expansion of 600 basis points in 1Q14.

Water Management

Water withdrawals and water quality remain issues of public concern as drilling activities increase, which has led an increasing number of energy companies and service providers to explore innovative water treatment technologies to encourage recycling and reuse. "We are looking at processes that will allow us to recycle any water and any of the hydrocarbons that are in the drill cuttings and find other beneficial uses for the byproducts today. Some of the new hydraulic fracturing techniques allow us to recycle a lot more of the water than we had before," Johnsrud added.

"There is huge growth potential in the Utica Shale for water recycling, but it is still very young," said Bill Rish, a principal and vice president with Hull & Associates, speaking on a panel at Crain's Shale Summit 2014 in February. "Our surface water is an abundant resource, and the economics

of it will make the Utica a better investment option for that reason," said panel participant Jeffrey Dick, a director at the Natural Gas and Water Resources Institute. "And the use of that renewable resource in shale gas development will stimulate all sorts of research on water usage and we'll see the benefits of that very soon."[13]

Companies that treat wastewater for the oil and gas industry are attracting investor interest. Examples include High Sierra Energy, acquired by NGL Energy Partners in 2012; 212 Resources, which received development capital from Element Partners in 2011; and Rockwater Energy Solutions, which received acquisition financing from SCF Partners, also in 2011.

Environmental Control Solutions

Under the auspices of The Clean Water Act, the EPA and state regulatory bodies have enacted stringent regulation on the control of erosion and sediment on construction sites, requiring participants to erect erosion control systems at the onset of construction. E&P companies are being held to higher standards of compliance and imposed harsher punishments for non-compliance. These trends are mandating an increased level of ground water protection for E&P companies in their day-to-day operating environment. As a result, they are seeking sophisticated environmental service providers to provide best-in-class sediment control compliance accountability.

Case Study

HIGH COST OF NON-COMPLIANCE

In December 2013, Chesapeake Energy, the nation's second largest natural gas producer, was ordered to pay a civil penalty of $3.2 million to settle Clean Water Act violations in West Virginia where it drills in the Marcellus Shale. The $3.2 million penalty is reported to be one of the largest of its kind ever levied by the federal government.

The company will also spend an estimated $6.5 million to restore streams and wetlands connected to 27 sites damaged by unauthorized discharges of fill material and to implement a comprehensive plan to comply with federal and state water protection laws at the company's natural gas extraction sites in West Virginia, many of which involve hydraulic fracturing operations.[14]

JWI Capital, in partnership with management, acquired Weaver Express in a recapitalization in November 2011. Weaver is the preeminent erosion control specialist in the Ohio Valley and Northeastern U.S., serving as the exclusive and preferred provider of erosion control solutions to the largest operators and construction companies in the Marcellus and Utica Shale. On Page 16 of the *Environmental Services Insider*, we feature an interview with executive management at Weaver and discuss drivers underlying the company's rapid growth.

Resources

[1] *Annual Energy Outlook 2014*, U.S. Energy Information Administration

[2] *Energy Observer*, February 2014, Morningstar

[3] *U.S. Crude Oil and Natural Gas Proved Reserves*, April 10, 2014, U.S. Energy Information Administration

[4] RigData and Baker Hughes.

[5] *Marcellus Shale players to reap benefits even if gas prices drop*, April 2014, Moody's Investor Services

[6] *USGS Releases First Assessment of Shale Gas Resources in the Utica Shale*, October 4, 2012, U.S. Geological Survey

[7] Brian Hickman, *ODNR Releases 2012 Utica Shale Production Report*, May/June 2013, Ohio Oil and Gas Association Bulletin

[8] John Funk, *Utica shale play smaller than thought but production is staggering*, March 7, 2014, The Plain Dealer

[9] Dan Shingler, *Leftovers from the Shale Summit -- tasty tidbits of curiosity we don't want to waste*, February 21, 2014, Crain's Cleveland Business

[10] ICF International, *North American Midstream Infrastructure through 2035: Capitalizing on Our Energy Abundance*, March 18, 2014, The INGAA Foundation, Inc.

[11] Company filings, company websites, and public data.

[12] *Business opportunities abound in the Utica Shale supply chain*, Oil and Gas Alert, August 16, 2012, McDonald Hopkins

[13] Dan McGraw, *Oil, Gas and Water, How Ohio can manage the thirst of its new industry*, Spring 2014, Shale Magazine

[14] Steve Sisney, *Chesapeake fined $3.2 million for West Virginia water violations*, December 19, 2013, Reuters, and Nick Snow, *Chesapeake Appalachia settles federal water pollution charges*, December 19, 2013, Oil & Gas Journal

Insider Perspective

Weaver Express is a leading provider of erosion and sediment control solutions throughout Ohio, Pennsylvania, and West Virginia. Founded in 2001 and based in Canton, Ohio, the company pioneered the adoption of compost filter sock as a standard application for environmental controls on construction and oil & gas sites in the tri-state area and is the world's largest manufacturer and installer of Filtrexx® compost-based products.

Weaver Express partnered with JWI Capital in November 2011 to help manage the company's rapid growth. Following is an interview that BGL conducted with Weaver President Ray Swartzwelder and Marc Walinsky, a partner at JWI Capital who oversees the portfolio investment. Ray and Marc share their insights on the industry and the company's growth plans.

What advantages do the products you use have over competitive alternatives?

Ray Swartzwelder: Any construction activity involving the disturbance of more than an acre of soil requires the use of an erosion and sediment control (E&S) barrier. Historically, silt fence was the dominant device used until compost filter sock (patented by Filtrexx) was introduced in the early 2000's. Because of the heightened environmental awareness in the oil and gas market, it has been a good place for the product to really gain traction.

Filter sock is a superior alternative, allowing 50 percent more flow through than silt fence. The aged compost material absorbs sediment and pollutants, preventing the runoff of sediment and hydrocarbons from well sites. The product also comes in multiple diameters to address different slope conditions and runoff at construction sites. Filter sock requires one-eighth the maintenance of silt fence, no trenching, no soil disturbance, and is easy to remove.

What have been the major drivers of your historical growth?

Swartzwelder: Weaver was one of the pioneers in the use and installation of filter sock for all end market applications which gave us a significant advantage from a know-how and networking perspective. We were the first to develop a filter sock track machine which is now an "industry standard" in E&S equipment. The track machine is a blower truck mounted on tracks that allows us to perform custom installations on any terrain. We were also the first to sell palletized filter sock product.

Marc Walinsky: Adoption of the product was a major driver. Weaver was entering an existing market category with a new product that required regulatory approval.

At the time (c. 2008-2009), Weaver was the only E&S company in the marketplace with experience using filter sock, so they had a significant first mover advantage.

Filter sock was Weaver's core business. They understood the product, how it works, and how to install it. Their custom-built track machine enabled them to install filter sock three times faster than the competition.

Founders Keith and Kevin Weaver were instrumental in working with the Pennsylvania Department of Environmental Protection (DEP) to get filter sock approved for use in place of silt fence or other existing products (mid 2000's). The education process took several years, but now the product is specified in the DEP's Best Management Practices (BMP) manual as the required device for erosion and sediment control in exceptional value and high-quality watersheds. Pennsylvania was one of the first states to approve filter sock for use. Now it is an approved product in all 50 U.S. states.

What are some of the differentiating characteristics of the business? How has the company maintained its leadership status in such a rapidly growing market niche?

Swartzwelder: Filter sock is the cornerstone of our business. We believe in its effectiveness, and we feel good about the level of service that we provide. We value our workforce, and relationship management is critical to our business.

We are professionally managed. JWI acquired Weaver in November 2011. Under their ownership, the company has experienced more than a five-fold increase in revenue, during which time they invested in people, equipment, and facilities to form a platform for sustainable growth. We formalized the sales organization, expanded capacity considerably with the addition of four more track machines, and expanded our footprint to four states.

Walinsky: Weaver acquired M&J Erosion in December 2012, broadening its existing capabilities in filter sock with a full suite of erosion and sediment control services, including silt fence, seeding and erosion control blankets. M&J was already one of Weaver's largest customers and used Weaver for all of their filter sock installations. M&J also had existing relationships with several of the largest oil and gas and coal companies in southwest Pennsylvania, so it was a logical partnership.

WEAVER EXPRESS
EROSION CONTROL SOLUTIONS

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What are some of the differentiating characteristics of the business? How has the company maintained its leadership status in such a rapidly growing market niche? (cont.)

Walinsky (cont.): We built an entire infrastructure around servicing the customers in the business. We have multiple crews so we can get to multiple jobs. We have multiple pieces of equipment. We have project managers that visit every job site so when our installers arrive at a project they are prepared and can start right away.

Today, Weaver's operations span six locations in four states, including four manufacturing facilities, which are supported by an employee base that has grown from 18 people in 2012 to over 100 in 2014. We are the dominant or leading E&S provider in each of our markets, with an estimated 60 percent share of well pad construction in Ohio. At our current size, there is rarely a job that we cannot service within our geographic footprint.

We've got the market down. Now it is time to take it to other geographies and build on it.

How has the business capitalized on the growth taking place in the oil and gas market?

Swartzwelder: Regulatory enforcement has been a positive driver, particularly in the case of Pennsylvania. The business has grown in line with increased drilling activity, beginning in Pennsylvania and moving to West Virginia and Ohio with expansion in those markets.

As the market has evolved and larger E&P players have entered the landscape, we've developed the technical and administrative support required to interact with companies of that size. Most of our competitors are small, owner-operator businesses that lack the same scale or level of sophistication.

We have executed Master Service Agreements (MSAs) with the largest drillers and pipeline companies in our markets. Our customers appreciate the quality advantage that we bring and made the decision to forge direct partnerships with us. For a number of customer relationships, we are the sole supplier of filter sock to their sites.

Walinsky: Weaver's growth in the oil & gas market coincided with the fracking boom which got its start in the Marcellus shale in Northern Pennsylvania (c. 2008) and moved south within the state and west to West Virginia, followed by the Utica shale in Ohio (c. 2012).

The use of filter sock quickly proliferated in Pennsylvania, which was an ideal market for the product. In addition to being an environmentally conscious state, the topography (i.e., undulation, water) and proximity of drilling to populated areas required a superior E&S device. You also have a regulatory environment that cares. Pennsylvania encouraged the use of filter sock in erosion and sediment control.

User preference also had a significant impact. In the past, E&P companies were levied significant fines from sediment leaving well sites, which in certain situations had required the rebuilding of acres of wetlands. The desire to minimize environmental liability and any negative press made filter sock the logical product of choice as it has superior performance compared to competing products. E&P companies operate on a very tight timeframe; they have a month to build a well pad. There is a heightened sense of urgency in getting projects done right and in a timely manner.

In addition, the same site engineers and contractors servicing the E&P companies in Pennsylvania moved to West Virginia and Ohio when drilling and related infrastructure activities commenced in those areas. They preferred filter sock not only for its environmental effectiveness but also its functional advantages, i.e., ease of use and ease of disposal, specifying it as the recommended device for erosion and sediment control.

Please comment on existing and new areas of growth

Growth in rig installs and mid-stream support services

Swartzwelder: Any project that is near water or undulation is going to need filter sock.

In Ohio, there are between 400 and 500 producing wells. To fully exploit the Utica, approximately 10,000 wells will be drilled over the next 20 years. When all the well

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Growth in rig installs and mid-stream support services (cont.)

Swartzwelder (cont.): pads have been harvested, all of those sites have to be reclaimed which is a second bite at the apple for the construction and erosion and sediment control services providers.

From a footage standpoint, pipelines are an even bigger opportunity than the well pads. The mileage of the pipelines that must be built is staggering. In the Utica alone, the required pipeline infrastructure investment is estimated at between $100 billion and $200 billion. Erosion and sediment control typically accounts for 1 to 2 percent of the cost of a construction site, which puts the range at between $1 billion and $4 billion for E&S on pipelines alone. This infrastructure will be constructed over the next 20 to 30 years.

Installing filter sock on pipelines is a relatively new market for us. Historically, we only supplied palletized filter sock product to pipeline companies, without offering installation services. Late in 2012, we started seeing more of an opportunity to provide custom installation services to pipelines, so we have really only been performing pipeline installs for about a year and a half. Right now, we are working on an 80 mile pipeline project that spans from Toledo to Canton, Ohio. Our market share for pipeline E&S has expanded rapidly to roughly 15 percent across all of our geographies in less than two years. In 2014, pipelines will account for over one-third of our revenue.

Walinsky: The Utica and the southwest Marcellus are probably two of the top four shale opportunities in the country. They are profitable with a zero dollar natural gas price because of the liquids in there, in addition to all of the infrastructure build that will be required.

Swartzwelder: Because northern Pennsylvania is almost exclusively dry gas, it has suffered from the recent drop in natural gas prices. As a result, drilling activity is down considerably from levels observed two years ago. Weaver still has a presence in Northern Pennsylvania, however, market dynamics have dictated that resources be deployed primarily in Utica and southwest Marcellus. However, if natural gas prices were able to stay above $4.50 or $5.00 as more of a permanent floor, I think drilling activity is likely to pick up again in Northern Pennsylvania and keep us very busy in that market as well over the next few years.

Which shale plays present the best opportunities for growth?

Swartzwelder: The characteristics of the Marcellus and Utica shale regions (undulation, water, population, large projects) make them ideal markets for us. People there are concerned about the environmental impact of fracking activity, so having a superior E&S solution like filter sock provides us with a good audience. Not every shale play is going to provide that.

Markets with these same features would be the most receptive to the substitution of filter sock for silt fence. On the West Coast, if the Monterrey shale in California is developed, it could be a substantial market. If there is going to be any extraction of the shale reserves in Michigan, Indiana, or Illinois, or similarly in the southeastern U.S., they would also be attractive markets for us.

Walinsky: There is a market in the Bakken and Eagle Ford shale regions. You have to get the attention of the environmental agencies. Because these markets lack several of the characteristics that favor filter sock (undulation, water, population), I expect that it would take a fair amount of education for our product to get the same attraction so the hurdle would be higher.

The Monterrey shale has the characteristics—favorable regulatory climate, water, population—and is three times the size of the Bakken. If the technology exists to recover what is underground, it would be a gold mine.

Other end markets

Swartzwelder: Construction activity outside of energy is still depressed nationwide. If you look at estimates for the silt fence market (~$1 - $2 billion market), they were much higher in 2007 than they are today. When the general construction market recovers, it will substantially outsize the amount of business we are doing in oil & gas.

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Other end markets (cont.)

Swartzwelder (cont.): Perimeter control for any construction activity where filter sock is a superior alternative to silt fence represents a potential market: homebuilding, commercial construction, highways, utility projects, wind farms, solar farms. Other applications include municipal stormwater management and sewer construction, where you are reducing the amount of sediment going into sewage systems; stream bank restorations to reduce flooding from streams; steep slope stabilization; and compost-based seeding are all potential growth engines. Really anywhere dirt is being moved is a potential market for us.

Our sales personnel have environmental certifications and are trained to work with site engineers. If we expand our territory to include other states where general construction is more robust, that is the lowest hanging fruit. It is about getting to the right person and getting our product adopted for use on a project. We have the know-how to do that given the experience we already have.

The easiest markets to target are those contiguous to our current footprint. Outside of our regional footprint, the Western U.S. (CA, CO, OR, WA), the Upper Midwest (MI, MN, WI), and anything east of the Mississippi would also be attractive geographies.

Acquisitions can potentially play a role in the future growth, as evidenced by our successful integration of M&J Erosion.

Walinsky: Erosion causes about $50 billion worth of damage annually in this country. From a regulatory standpoint, there is a lot more attention being paid to it because of the cost of water quality. With flooding from streams there is a huge market in rebuilding stream banks. Slope stabilization can address erosion and run-off into sewer systems. There are a number of industrial applications for filter sock and the additives that remove hydrocarbons, heavy metals, bacteria, and nutrients. Every landfill should have one of these around it. Every scrap metal yard should have perimeter control to protect any runoff from getting into the sewer systems. Every parking lot should have some sort of bio swale system to keep motor oil and other contaminants out of the sewer systems.

We believe erosion and sediment control to be roughly 1 to 2 percent of a construction project. Our addressable market is probably about $5 billion annually: silt fence ($1.3 billion); erosion control mats (~$1.5 billion); seeding (~$2 billion). That would include any construction project—highway, rail, residential and commercial construction, energy (oil & gas, transmission lines, wind farms, solar farms).

The easiest way to grow the business is to expand in tangential markets. Go to the Chesapeake Bay watershed. We are in West Virginia; go down to Virginia and the Carolinas. Markets that are close where you can make sure you can service them well.

Markets that require a larger investment but offer bigger upside are in the Western U.S. (CA, OR, WA).

What do you perceive to be key challenges facing the industry?

Swartzwelder: What concerns me is the improper manufacture and install of filter sock, particularly with it being a nascent product. Filter sock that does not meet specification is very ineffective. If we have competitors using filter sock that doesn't meet specs and doesn't work, then you have discharge into rivers. Ultimately, that can reflect poorly on the product as a whole.

Excluding some exogenous event that shuts drilling activity down, the growth in demand for E&S in our markets is there. Increased regulatory enforcement is a positive driver and typically favors us because we are a high quality service provider.

Walinsky: Product acceptance. Pennsylvania has come a long way. The Department of Environmental Protection (DEP) has stated in its latest best practices manual (BMP) for erosion and sediment control that in high-quality and exceptional value watersheds, compost filter sock is the only allowable product to be used. Getting other states to make such strong statements is what we need to help grow this business. It is an educational effort.

Market Update: Oil Collections & Re-Refining

M&A in the Spotlight

M&A is grabbing headlines in the used oil marketplace, with participants characterizing the recent flurry of activity a repositioning by the major players to capture more share of the value chain:

- Major transaction announcements this March include Verolube/Thermo Fluids and Vertex/Omega which represent significant processing and collection assets aimed at transforming or shaping business models. The deals come about 18 months after Clean Harbors completed the acquisition of Safety-Kleen.
- Other smaller deals with regional significance include Clean Harbor's (NYSE:CLH) acquisition of Evergreen Oil last September and Heritage-Crystal Clean's (NasdaqGS:HCCI) purchase of certain assets of RS Used Oil Services from Universal Lubricants in November.
- Recent public statements by Newalta and FCC revealed that the companies were exploring strategic alternatives which include the potential spin-off or divestiture of used oil assets. Activist investors are soliciting portfolio reviews of public operators, first Newalta which prompted the announcement, which was later followed by Clean Harbors, after an investor increased its equity stake to 9.1 percent.
- Insiders also named a number of other known but not yet announced assets in the market to be sold.

Verolube Acquisition of Thermo Fluids

VeroLube

THERMO FLUIDS™ The Responsible Solution

Transaction Overview

In March 2014, Verolube announced that it agreed to acquire Thermo Fluids Inc. for $175 million, consisting of $165 million in cash and $10 million in VeroLube common stock. TFI is the largest collector of used oil in the western U.S. and the third-largest nationally. The company collects 50 million gallons of used oil annually from a diverse base of more than 20,000 locations. The acquisition is expected to close in the second quarter of this year. Verolube is purchasing TFI from Nuverra Environmental Services (NYSE:NES) (formerly Heckmann Corp.) which acquired the company in March 2012 and paid $245 million for the business.

Market Observations

Recognizing that TFI is an attractive asset, critics question the premium value paid for the business (~11.5x TTM EBITDA according to equity analysts), particularly without re-refineries in place, where the acquisition would be replacing third party purchases with captive collections. Insiders also said Verolube's proprietary re-refining technology ReGen is commercially unproven which carries with it greater technology risk. "It is a very risky play, but this is how industries get built," was the opinion of an advanced used oil processor. "This is how innovation takes place. Hopefully there is enough reward at the end of the day, and technically they have the expertise to make the journey."

Vertex Acquisition of Omega Holdings

Transaction Overview

In March, Vertex Energy agreed to acquire Omega Holdings, a move that will create a vertically integrated used oil collection, processing, and blending business. The $48 million acquisition consists of $30.75 million in cash, 2 million shares of Vertex common stock (valued at approximately $7.5 million), and $9.7 million in assumed debt. With the acquisition, Vertex will add over 80 million gallons of processing capacity (~60 million gallons in vacuum gas oil (VGO) and 25 million gallons in re-refined base oil) and will extend the company's footprint to include Louisiana and Nevada, as well as Texas. Vertex completed the first closing on facilities in Marrero and Belle Chaise, Louisiana (VGO) and California (blending) and is targeting the second quarter of 2014 to complete the closing of the Bango, Nevada facility (base oil).

Industry analysts estimate the combination could more than double EBITDA in 2014 and support 40 percent growth in 2015. Omega generated trailing twelve month (TTM) revenues of approximately $185 million. Estimated forward EBITDA is $7 million to $10 million, which equates to a forward purchase multiple of 4.8x to 6.9x. Expected synergies are $4 million to $5 million, which would bring the purchase multiple down to around 4x.

Market Observations

Vertex is regarded as experienced operator and a disciplined buyer of used oil. Critics point out that the additional processing capacity gained with the acquisition puts the company shorter on used oil feed; however, if successful in reducing pay for oil rates, the potential effect on the market could be significant. Critical to Vertex's success, insiders say, will be retaining top talent, improving performance at the acquired facilities, and integrating existing collections/logistics programs to maximize its ability to feed those facilities.

"It is a great acquisition for them. They found some very well priced assets," offered a private investor. "It is a further extension of their business and a way to capture more margin. Everybody in the industry will be looking to move up and down the value chain in order to capture more margin."

CEO Perspective

"It is a very transformative transaction for our company. We've got our hands on every key market for used oil," commented Vertex CEO Ben Cowart. Combined TTM revenue will exceed $350 million on roughly 120 million gallons of used oil processing capacity in three strategic markets. "We will be able to focus on each of these regions and build a very strong position in those markets. I think it will create a whole new dynamic in the marketplace."

"For the next two or three years, our focus is going to be on building out our collection footprint around the assets that we have in the key markets where we have the refining capacity," Cowart continued. Vertex collects about 12.5 million gallons of used oil with its own trucks and routes and is growing volume at about 20 percent annually organically, Cowart told us. "We have an opportunity to build relationships with the collection companies, and in those situations when they want to exit the market, we can be there to acquire the business. We have the access to capital to do that. I think companies will see an opportunity in our model to create a lot of value for them as well."

Cowart indicated that it is diversification, a strategy initiated back in 2004, which has helped Vertex prosper. The company recorded its best year in 2013 when most of the industry struggled. "We were not tied to only one outlet—re-refining to base oil," Cowart said. Last October, Vertex acquired a majority interest in E Source, a move that puts the company further on a path of diversification. "We are seeing a lot of metal recovery opportunities. We have also developed an oil filter process technology to fully monetize all of the oil filter material. The business will complement each of our regions," offered Cowart. "We can take those opportunities into the West Coast and into the Eastern Gulf just like we have done in Houston. Metals is a very interesting growth platform for us long-term." Cowart continued, "We are a hydrocarbon recovery business, not strictly a used oil business. We believe that with our broader focus, we can synergize the utilization of our assets and capture additional margin out of our footprint."

Market Update: Oil Collections & Re-Refining

"You've got a lot of turmoil in the marketplace. There has been a run-up in the pay for oil rate over the last several years. The burner market has greatly disappeared. A lot of this volume is going to value added processors, and their economics are under pressure," remarked an integrated re-refiner. "Market dynamics are leading a lot of participants to reevaluate how they position themselves in the marketplace."

"There has been more activity than we've seen in a long time in the sector. You are seeing some of the larger players reassessing what their strategic position is going to be. The net result has been a significant number of acquisitions affecting our marketplace over the last 18 months," echoed Scott Parker, executive director at NORA. "Larger players are coming to the forefront and offering some competition for the existing incumbents," added a private equity investor. "Despite significant consolidation," Parker added, "the market is still dominated by mid-sized companies."

"There will continue to be pressure to consolidate," offered Greg Ray, COO at Heritage-Crystal Clean. "It affects not only re-refiners but anybody who is picking up used oil. As a result, there is probably more activity than there would have been a year or two ago just because of the margin compression in the business."

"We always look at tuck-in acquisition opportunities," added Ray. In the last five years Heritage-Crystal Clean has acquired Crystal Flash, Warrior, and collection assets from Universal Lubricants (UL). The UL assets acquired in November 2013 include service routes covering Indiana, Ohio, Wisconsin, and portions of Illinois which add approximately 3,800 new customers and 8 million gallons of annual used oil collection volume, furthering the company's "long term goal of collecting enough used oil to supply 100 percent of the feedstock required by our re- refinery," commented CEO Joseph Chalhoub in a press release announcing the transaction. The transaction marks Heritage-Crystal Clean's largest acquisition to date, said CFO Mark DeVita. "Those are all rational choices because they get us more feedstock while we are expanding our plant. It makes good economic sense to increase our market share and density right around our re-refinery, and those acquisitions accomplish that," Ray said.

Significant changes are taking place in the industry, indicated Ben Cowart at Vertex Energy. "Consolidating refining capacity is the first step. We've been able to do that with the Omega transaction. The second is watching the collection vertical. The companies that are strictly collecting oil, are they going to be able to discipline their margin back into the generator?"

> *"There will continue to be pressure to consolidate. It affects not only re-refiners but anybody who is picking up used oil."*
>
> *—Greg Ray*
> *Heritage-Crystal Clean*

"There is going to continue to be a shake out of the industry. I think we are about halfway through right now," remarked an integrated re-refiner. "At the end of the day, you are going to have some very strong players that remain active in the market. We fully expect to be one of those."

Collections

The collection vertical remains challenged as natural gas continues to erode the market for recycled fuel. While the "natural gas effect" plateaued well over a year ago, there continue to be lingering effects as companies make the investment in infrastructure needed for the transition, insiders say. The impact over the last five years on the industry has been significant. "This will continue to remain a local market. Some markets have very good access to natural gas and some others do not. It depends on where you are in the country and where you are within a certain region," said Parker. "We've reached a new normal on what the demand for recycled fuel oil is in those type of markets. You are seeing more people that are exploring export markets."

"The collections market will continue to be challenged over the next two years, and the reason is there is not a lot of back end margin for the oil that is being collected," said Cowart. "Collectors are not performing like they did in the past when they had their own

markets locally for the oil so now that oil has to move to regional outlets." Ben Cowart at Vertex Energy continued, "We've developed other markets and outlets that will create a demand for used oil, and it will continue to create an appetite for us to partner with collectors, to acquire collectors, and to build more collection routes of our own."

"We expect global demand for fuel will remain strong, particularly diesel," Cowart added. Refineries will be exporting more product." He continued, "Most of the activity is going to be in the Gulf region. We are fortunate to own key refinery assets in the Gulf, which will position us long-term to be in one of the best markets for used oil."

"Unless something happens from a regulatory standpoint, you are still going to see a great deal of fragmentation on the used oil collections side," was the opinion of an integrated re-refiner we interviewed. "There are major players that have been in the market for a long period of time that are simply changing hands. You are going to see some of these smaller regional players take advantage of the disruption in the marketplace to grow their market share and clearly have a strong influence on three or four states."

"Ultimately, collectors need to find a stable outlet for their supply, and that outlet is a re-refiner. I don't think there are a lot of other options," observed a private equity investor. "There appears to be real interest from collectors in partnering either through long-term supply agreements or sales." Scott Parker at NORA added, "If I were a company looking to maximize its ability to profit long-term from this marketplace, I would say that you need to have a re-refining strategy—that may mean setting up a facility or providing some feedstock for facilities."

Feedstock costs

Reducing pay for oil (PFO) prices was a central focus of participants in our last market update. Insiders say street prices for used oil are coming down slowly, evidenced by recent announcements from publicly traded operators. In their 1Q14 earnings calls, Clean Harbors and Heritage-Crystal Clean announced they had achieved a $.03 per gallon reduction in PFO prices in the quarter. Clean Harbors CEO Alan McKim remarked, "Our number one priority for Safety-Kleen branches is to continue to lower our PFO costs." "This company wants to take a leadership in the industry to reduce the pricing," said Joseph Chalhoub, CEO of Heritage-Crystal Clean. Speaking of the company's base of 65,000 customers, Chalhoub added, "We have some customers that want high prices, but many customers want service, and so we're focusing on the ones that want service and price is not essential. We're driving this through our network, and we expect to do more."

Generators are gradually accepting lower prices, but with the used oil spread out over thousands of accounts, the process is slow going. "The value of the oil goes up very fast when the demand increases. When the demand decreases, we take a long time because people are holding on to those prices," commented Parker. "It takes a long time as a market to right size what the valuation on that oil is."

> *"The collections market will continue to be challenged over the next two years, and the reason is there is not a lot of back end margin for the oil that is being collected."*
>
> *—Ben Cowart*
> *Vertex Energy*

"Generators are very stubborn about reducing price—the quick lubes in particular. The value they receive for their used oil has become a very important part of their economic model, so to accept a reduction in price is extremely painful for them," offered an integrated re-refiner. "They are always trying to find a way to increase the value that they receive for their used oil. They are constantly shopping and have no loyalty. Because of this activity, you have this natural pressure to push price up in the marketplace."

"We're at a point now that the market is taking a step back and saying at this price level for used oil the economics don't work," said the re-refiner. "You have a number of players trying to bring those used oil values down. You have others that haven't been successful in doing that and are now for sale or going out of business."

"I think the industry is feeling enough pain that they are willing to go and adjust pricing at a generator level and not be afraid of losing accounts," remarked Cowart. "The pressure at a street level to gain market share is not near what it was six or eight months ago so it is allowing the collectors to start resetting price expectations with their customers."

Market Update: Oil Collections & Re-Refining

"We fully expect to lose volume and have, as has some of our competition," said an integrated re-refiner. "The challenge is that the market is highly fragmented with very low barriers to entry. There is always somebody out there in some capacity willing to pay more for that used oil."

"There is still a significant amount of inertia with respect to used oil prices," remarked Greg Ray at Heritage-Crystal Clean, reminding us that when there was less competition for the waste oil, generators were paying to have it picked up. "There is not a price point at which generators are going to find something else meaningful to do with their used oil. It is just a matter of how much other people are willing to pay and sacrifice their margins to get the material," he said.

"Safety-Kleen has taken some steps—steps a lot of the smaller companies should be taking—to lower PFO prices and taking the position, if we lose business, we lose business," commented Ben Cowart at Vertex Energy. "They are showing signs of leadership which is really what the industry needs. I think it is still early in the game."

"We have been more disciplined in how we price the used oil. There is still plenty of room to improve," offered Juan Fritschy, CEO at Universal Environmental Services. "We think we can bring down the used oil price considerably from the current level, which is already down from six to nine months ago."

"We've been fairly aggressive about bringing our price points down in the marketplace," offered an integrated re-refiner, calling the reduction material. Other participants speak to a $.20 per gallon reduction in PFO prices and see opportunity for another $.15 to $.20 reduction over the next 9 months.

With base lube prices down more than $1.50 over the last two years, re-refiners are incentivized to reduce feedstock costs. "We are going to push hard," Ray said.

"You are going to see some of these smaller regional players take advantage of the disruption in the marketplace to grow their market share and clearly have a strong influence on three or four states."

— Integrated Re-Refiner

Base oil

Oversupply continues to depress base oil prices keeping re-refining spreads under pressure. Oil majors dropped prices by $0.25 in mid-January, reported Clean Harbors in its 1Q14 earnings call, with March bringing a modest recovery of about $0.08 a gallon. Chevron led the market with a price increase in March. May and June also brought price increases—a competitive tactic in advance of supply coming online with the Chevron plant.

According to Houston strategy consultants IHS Purvin & Gertz, U.S. virgin base oil supply is forecasted to grow by 15 percent, from 3.5 million gallons a year in 2012 to 4 million gallons of capacity by 2017. Chevron's 25,000 barrel per day base oil plant remains a concern, which will leave the U.S. with surplus Group II production keeping prices low. The facility had a delayed start which insiders are now anticipating to come online in July or August. Public statements by Chevron indicate that the Pascagoula plant will supply international markets, said insiders.

Participants are keeping a close watch on global demand, with industry experts predicting Group I plant closures throughout Europe that will be balanced by either new Group II production in those markets or Group I exports from the U.S. which has surplus capacity. "If Chevron exports a lot of that production to Europe now that there are plants closing, that will rationalize the supply, and we will get back into a more balanced environment in the United States," Ray observed. "Chevron led the last round of price increases, showing the market that they are going to try and be disciplined."

"I think the base oil market has taken most of its hit around oversupply. I really don't believe the Chevron supply is going to push prices that much lower," commented Cowart. "Refiners will only produce lube oil to the degree that they can sell it at an acceptable price, as they generally have the alternative of shifting their production towards more readily marketable fuels. Chevron is going to have to look at it the same way." "Chevron to some

extent will affect the price of base oil. I think the general sentiment is that they will do their best to keep prices reasonable and not try to disrupt the market," added Juan Fritschy at Universal Environmental Services.

"The biggest concern for the market has been the disconnect between base oil prices and the traditional alternative energy indices," commented an integrated re-refiner. Base oil price is depressed relative to crude, No. 6 fuel, and No. 2 fuel and has not benefited from the recent run up in energy values, said insiders. "You have crude over $100 a barrel and base oil at the same price point when crude was down around $80-$85 a barrel."

With the dramatic decline in base oil prices over the last two years, participants say the industry is looking at a new price point. "We had taken a wait and see approach to see if base oil price would rebound. It hasn't," commented an integrated re-refiner. "At some point you've got to accept the market that you're in and say this is the new normal."

Re-refiners are reporting tightening supply according to *Lube Report*, with Safety-Kleen and Heritage-Crystal Clean heard to be unable to offer extra volumes. "This year, I've seen a shorter, more compact spring selling season," a source at Avista/Universal Environmental Services (UES) told *Lube Report*, citing very tight supply against heavy demand.

New capacity

While much of the interest and "buzz" around re-refining capacity expansions has waned, particularly as the viability of such high profile projects at FCC and Nexlube remains in question, others are reported to be forging ahead.

The most notable, **Verolube**, announced in November 2013 an expansion strategy that would include up to four facilities in North America by early- to mid-2015, including at least three re-refineries, according to *Lube Report*. Verolube revealed last November the locations for two re-refineries, identifying Alberta, Canada (15 million gallons annual processing capacity), and Houston (60 million gallons), that would begin construction as early as late 2014. Sites in the U.S. Southwest such as Arizona or Nevada, close to Thermo Fluids' Scottsdale, Arizona headquarters, are also under consideration, business development officer Ted Rea and CFO Bruce Hall told *Lube Report*. Verolube also has "ambitious plans for additional acquisitions of used oil collection companies," Rea told *Lube Report*. Patented ReGen re-refining process technology, if successful, will make Verolube the first re-refiner to meet a Group III spec. Approximately 50 percent of finished product will be Group III base oil, without the need for hydrotreating, according to company estimates.

Heritage-Crystal Clean completed the first phase of a 25 million gallon expansion in 4Q13, increasing nameplate capacity from 50 million to 60 million gallons. The company is targeting 3Q14 to complete the expansion to bring nameplate capacity up to 75 million gallons.

> *"There is still a significant amount of inertia with respect to used oil prices."*
>
> *—Greg Ray*
> *Heritage-Crystal Clean*

Alabama Green Lubricants secured financing in January to build a 32-million gallon re-refinery in Childersburg, Alabama, reported *Lubes'N'Greases*, which is targeted to be operational mid-2014. The company is licensing re-refining technology from Chemical Engineering Partners.

Investors are backing re-refinery startup **Lubricycle**, with the proposed location in Bucks County, Pennsylvania, reported *Lubes'N'Greases*. Capital Solutions is one of the private equity investors backing the project. The facility will include a hydrotreater to produce Group I and Group II base oil.

Avista Oil AG continues to pursue expansion of its U.S. footprint, expecting to leverage the success of its market entry with Universal Environmental Services (UES) which began operation in August 2013, the first of several planned re-refineries according to company statements. The facility can produce 1,300 b/d of Group I and II re-refined base oil and has been running at full rates for the last six months, reported *Lube Report*.

Avista is currently in advanced discussions with a potential partner that would expand its collection footprint and serve as the platform for a second re-refinery,

Market Update: Oil Collections & Re-Refining

bringing with it feedstock and the right location. "We have developed proprietary systems to efficiently scale collections so that if we expand our footprint in a new geography, we can use these tools to support and help that company grow faster," offered Juan Fritschy, CEO of Universal Environmental Services (UES). "It would be in a different footprint, far from Peachtree City," he added.

UES is investing in people, systems, and customer relationships to preserve and grow the bottom line, achieving its best month on record this April. "This is a time to get efficient so when you see the right opportunity, you can make an expansion," Fritschy said. "Our volume has been increasing year over year. We collected 13 percent more volume in 2013, and that is organic growth."

"Any time you have a highly fragmented market that is going through change and there is a perceived economic imbalance, then you're going to generate a lot of interest. I think that is what you've seen these last couple of years with everyone announcing re-refineries," commented an integrated re-refiner. "Clearly there is a strong perception that there is an economic imbalance that can be taken advantage of to make money."

"We look at it and say, this is a marathon," offered a private equity investor, commenting on its investment in a regional re-refinery project. "Oil prices go up and down, and spreads go up and down. Ultimately, we are believers that a re-refinery makes sense. There is enough margin and spread to justify going to a base lube."

"We know that our country is going to continue to generate used oil," remarked Scott Parker at NORA. "Used oil derived product, whether it be RFO, VGO, MDO, or re-refined base lubricant, will have beneficial use, and there is going to continue to be demand for it. Our sector needs to be very flexible and entrepreneurial to be able to respond to changes in demand." Parker continued, "At the end of the day, anybody with some money can build a re-refinery or processing plant. To be successful, you need the experience to know how to feed those facilities and remain diversified under difficult market conditions."

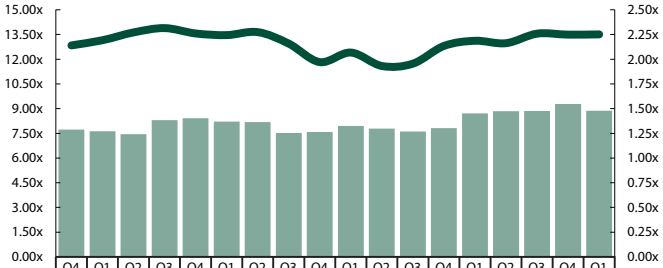
"The market is getting back to a reality," observed Ben Cowart at Vertex Energy. "There is not some big short in the market that is creating a lot of value in a short period of time. This is a block and tackle business again."

"Used oil derived product...will have beneficial use, and there is going to continue to be demand for it. Our sector needs to be very flexible and entrepreneurial to be able to respond to changes in demand."

—Scott Parker
NORA

Relative Valuation Trends

Solid Waste - Vertically Integrated



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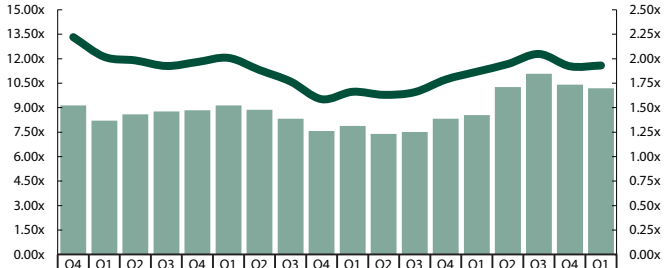
EV/EBITDA	7.7x	7.6x	7.4x	8.3x	8.4x	8.2x	8.2x	7.5x	7.6x	7.9x	7.8x	7.6x	7.8x	8.7x	8.8x	8.9x	9.3x	8.9x
EV/Revenue	2.1x	2.2x	2.3x	2.3x	2.3x	2.2x	2.3x	2.2x	2.0x	2.1x	1.9x	2.0x	2.1x	2.2x	2.2x	2.3x	2.2x	2.3x

Solid Waste - Waste-to-Energy



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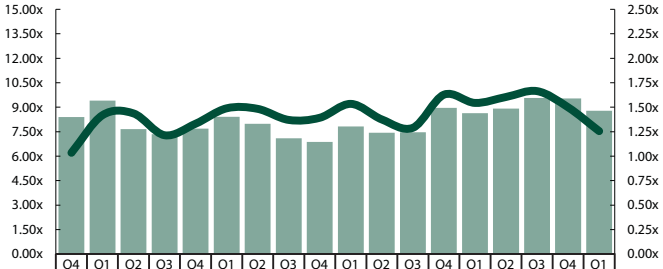
EV/EBITDA	9.1x	8.2x	8.6x	8.8x	8.8x	9.1x	8.9x	8.3x	7.6x	7.9x	7.4x	7.5x	8.3x	8.5x	10.3x	11.1x	10.4x	10.2x
EV/Revenue	2.2x	2.0x	2.0x	1.9x	2.0x	2.0x	1.9x	1.8x	1.6x	1.7x	1.6x	1.7x	1.8x	1.9x	1.9x	2.0x	1.9x	1.9x

Special Waste - Broadly Diversified



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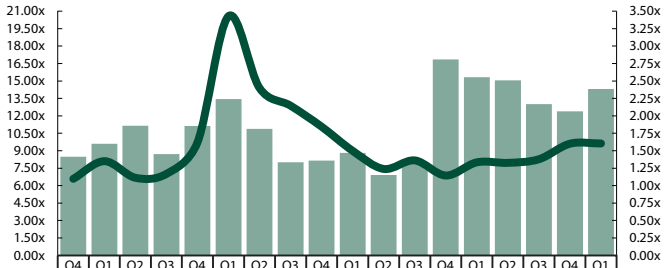
EV/Revenue	1.0x	1.4x	1.4x	1.2x	1.3x	1.5x	1.5x	1.4x	1.4x	1.5x	1.4x	1.3x	1.6x	1.5x	1.6x	1.7x	1.5x	1.3x

Special Waste - Niche



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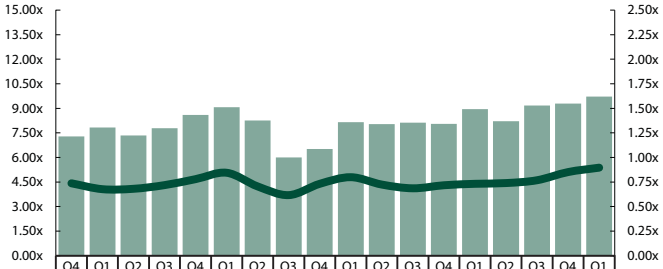
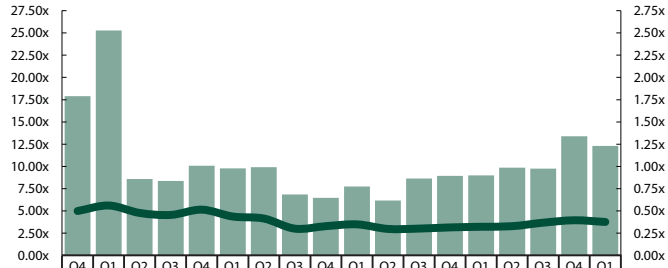
EV/Revenue	1.1x	1.4x	1.1x	1.2x	1.6x	3.4x	2.4x	2.1x	1.8x	1.5x	1.2x	1.4x	1.1x	1.3x	1.3x	1.4x	1.6x	1.6x

Environmental Engineering & Consulting



	Q4 09	Q1 10	Q2 10	Q3 10	Q4 10	Q1 11	Q2 11	Q3 11	Q4 11	Q1 12	Q2 12	Q3 12	Q4 12	Q1 13	Q2 13	Q3 13	Q4 13	Q1 14
EV/EBITDA	7.3x	7.8x	7.3x	7.8x	8.6x	9.1x	8.3x	6.0x	6.5x	8.1x	8.0x	8.1x	8.0x	8.9x	8.2x	9.2x	9.3x	9.7x
EV/Revenue	0.7x	0.7x	0.7x	0.7x	0.8x	0.8x	0.7x	0.6x	0.7x	0.8x	0.7x	0.7x	0.7x	0.7x	0.7x	0.8x	0.9x	0.9x

E-Waste & Metals Recycling



	Q4 09	Q1 10	Q2 10	Q3 10	Q4 10	Q1 11	Q2 11	Q3 11	Q4 11	Q1 12	Q2 12	Q3 12	Q4 12	Q1 13	Q2 13	Q3 13	Q4 13	Q1 14
EV/EBITDA	17.9x	25.3x	8.6x	8.4x	10.1x	9.8x	9.9x	6.8x	6.5x	7.7x	6.2x	8.6x	8.9x	9.0x	9.9x	9.7x	13.4x	12.3x
EV/Revenue	0.5x	0.6x	0.5x	0.5x	0.5x	0.4x	0.4x	0.3x	0.3x	0.3x	0.3x	0.3x	0.3x	0.3x	0.3x	0.4x	0.4x	0.4x

BGL Environmental Services indices defined on Page 28.
SOURCE: S&P Capital IQ.

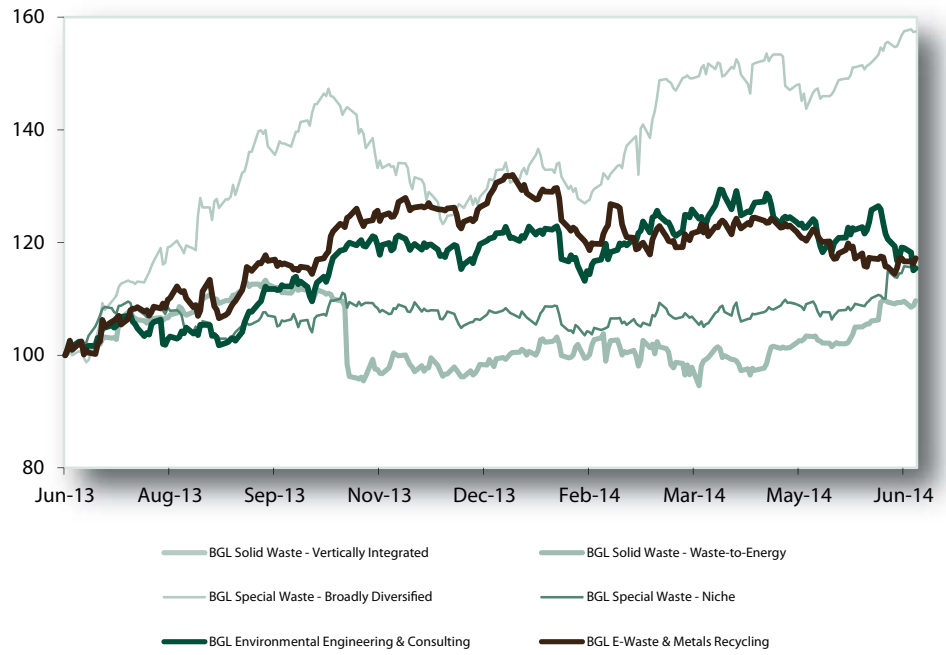
Relative Valuation Trends

($ in millions, except per share data) Company Name	Country	Ticker	Current Stock Price (1)	% of 52W High	Market Capitalization (2)	Enterprise Value (3)	Enterprise Value / TTM Revenue	Enterprise Value / TTM EBITDA	Total Debt/ EBITDA	TTM Revenue	TTM Margins Gross	TTM Margins EBITDA
SOLID WASTE (VERTICALLY-INTEGRATED)												
Waste Management, Inc.	United States	NYSE:WM	$44.46	95.9%	$20,682.4	$30,839.4	2.2x	8.9x	3.0x	$14,043.0	34.9%	24.6%
Republic Services, Inc.	United States	NYSE:RSG	37.65	99.9%	13,416.8	20,257.0	2.4x	8.7x	3.0x	8,492.3	37.3%	27.4%
Waste Connections Inc.	United States	NYSE:WCN	47.72	99.9%	5,914.9	7,929.9	4.0x	11.8x	3.0x	1,960.6	45.1%	34.3%
Progressive Waste Solutions Ltd.	Canada	TSX:BIN	25.51	95.2%	2,938.6	4,505.2	2.2x	8.9x	3.1x	2,009.2	38.0%	25.2%
Casella Waste Systems Inc.	United States	NasdaqGS:CWST	5.30	85.5%	212.2	724.9	1.5x	9.1x	***6.4x***	497.6	28.7%	16.0%
Median			**$37.65**	**95.9%**	**$5,914.9**	**$7,929.9**	**2.2x**	**8.9x**	**3.0x**	**$2,009.2**	**37.3%**	**25.2%**
Mean			**$32.13**	**95.3%**	**$8,633.0**	**$12,851.3**	**2.5x**	**9.5x**	**3.0x**	**$5,400.6**	**36.8%**	**25.5%**
SOLID WASTE (WASTE-TO-ENERGY)												
Covanta Holding Corporation	United States	NYSE:CVA	$20.26	92.6%	$2,656.1	$4,784.1	2.9x	10.2x	5.4x	$1,659.0	40.0%	28.1%
Shanks Group plc	United Kingdom	LSE:SKS	1.77	86.2%	704.0	1,251.8	1.2x	8.5x	4.8x	1,060.8	16.8%	13.9%
Median			**$11.02**	**89.4%**	**$1,680.1**	**$3,017.9**	**2.0x**	**9.4x**	**5.1x**	**$1,359.9**	**28.4%**	**21.0%**
Mean			**$11.02**	**89.4%**	**$1,680.1**	**$3,017.9**	**2.0x**	**9.4x**	**5.1x**	**$1,359.9**	**28.4%**	**21.0%**
SPECIAL WASTE (BROADLY DIVERSIFIED)												
Veolia Environnement S.A.	France	ENXTPA:VIE	$19.99	98.8%	$10,958.3	$24,219.9	0.8x	9.0x	***6.5x***	30,730.3	16.0%	8.7%
Clean Harbors, Inc.	United States	NYSE:CLH	62.32	97.2%	3,786.9	4,939.7	1.4x	9.9x	2.8x	3,494.2	27.5%	14.2%
Newalta Corporation	Canada	TSX:NAL	19.91	98.2%	1,110.9	1,502.4	2.0x	11.2x	2.8x	725.0	24.3%	18.4%
Median			**$19.99**	**98.2%**	**$3,786.9**	**$4,939.7**	**1.4x**	**9.9x**	**2.8x**	**$3,494.2**	**24.3%**	**14.2%**
Mean			**$34.07**	**98.0%**	**$5,285.4**	**$10,220.7**	**1.4x**	**10.1x**	**2.8x**	**$11,649.8**	**22.6%**	**13.8%**
SPECIAL WASTE (NICHE)												
Stericycle, Inc.	United States	NasdaqGS:SRCL	$118.66	97.6%	$10,049.4	$11,393.6	5.2x	17.4x	2.1x	$2,199.0	47.2%	29.8%
Darling Ingredients Inc.	United States	NYSE:DAR	20.60	86.0%	3,390.3	5,743.1	2.6x	17.0x	***7.1x***	2,209.6	25.4%	15.3%
Secure Energy Services Inc.	Canada	TSX:SES	21.59	92.1%	2,555.4	2,766.4	1.7x	20.5x	1.6x	1,537.0	8.7%	8.8%
US Ecology, Inc.	United States	NasdaqGS:ECOL	48.15	94.8%	1,036.7	958.8	4.5x	12.5x	0.0x	211.6	40.5%	36.2%
Nuverra Environmental Solutions, Inc.	United States	NYSE:NES	18.63	49.7%	490.1	1,046.5	2.0x	12.0x	***6.5x***	523.2	12.5%	16.7%
Renewable Energy Group, Inc.	United States	NasdaqGS:REGI	11.45	69.4%	444.1	339.4	0.2x	2.7x	0.3x	1,452.8	11.3%	8.7%
Heritage-Crystal Clean, Inc	United States	NasdaqGS:HCCI	17.88	86.5%	332.3	333.7	1.2x	20.0x	1.2x	289.1	17.1%	5.8%
Vertex Energy, Inc.	United States	NasdaqCM:VTNR	9.58	85.2%	216.3	220.5	1.3x	28.7x	1.2x	176.1	10.2%	4.4%
Perma-Fix Environmental Services Inc.	United States	NasdaqCM:PESI	4.40	75.1%	50.3	67.2	1.0x	NM	NM	65.1	14.4%	-3.7%
Median			**$18.63**	**86.0%**	**$490.1**	**$958.8**	**1.7x**	**17.2x**	**1.2x**	**$523.2**	**14.4%**	**8.8%**
Mean			**$30.10**	**81.8%**	**$2,062.8**	**$2,541.0**	**2.2x**	**16.4x**	**1.3x**	**$962.6**	**20.8%**	**13.5%**
ENVIRONMENTAL ENGINEERING & CONSULTING												
Chicago Bridge & Iron Company N.V.	Netherlands	NYSE:CBI	$67.24	75.4%	$7,269.3	$9,057.7	0.8x	9.3x	2.1x	$11,771.2	10.7%	8.3%
AMEC plc	United Kingdom	LSE:AMEC	20.31	94.1%	6,056.7	5,854.6	0.9x	11.1x	0.4x	6,583.3	13.7%	8.0%
AECOM Technology Corporation	United States	NYSE:ACM	32.16	91.3%	3,191.9	3,874.8	0.5x	8.8x	2.5x	7,972.7	5.7%	5.5%
URS Corporation	United States	NYSE:URS	45.07	80.8%	3,108.3	5,140.3	0.5x	7.4x	3.1x	10,724.7	7.0%	6.5%
ARCADIS NV	Netherlands	ENXTAM:ARCAD	34.51	89.0%	2,525.9	2,814.2	0.8x	10.6x	1.9x	3,464.7	19.1%	7.7%
Tetra Tech Inc.	United States	NasdaqGS:TTEK	27.20	88.0%	1,766.8	1,807.8	0.9x	14.8x	1.7x	1,945.7	13.2%	6.3%
Cardno Limited	Australia	ASX:CDD	5.92	85.8%	945.7	1,105.2	1.0x	9.2x	2.0x	1,098.6	14.4%	11.0%
Great Lakes Dredge & Dock Corporation	United States	NasdaqGS:GLDD	7.81	82.7%	467.2	695.5	1.0x	10.4x	4.3x	725.6	12.5%	9.2%
TRC Companies Inc.	United States	NYSE:TRR	4.86	51.7%	144.4	135.2	0.4x	5.1x	0.1x	365.8	16.7%	7.3%
Median			**$27.20**	**85.8%**	**$2,525.9**	**$2,814.2**	**0.8x**	**9.3x**	**2.0x**	**$3,464.7**	**13.2%**	**7.7%**
Mean			**$27.23**	**82.1%**	**$2,830.7**	**$3,387.2**	**0.7x**	**9.6x**	**2.0x**	**$4,961.4**	**12.5%**	**7.7%**
E-WASTE & METALS RECYCLING												
Commercial Metals Company	United States	NYSE:CMC	$17.95	84.7%	$2,113.5	$3,091.1	0.5x	9.0x	4.1x	$6,783.4	9.8%	5.1%
Sims Metal Management Limited	Australia	ASX:SGM	9.15	87.2%	1,871.1	1,955.1	0.3x	33.7x	2.8x	$6,591.9	8.4%	0.9%
ALBA SE	Germany	DB:ABA	79.08	86.6%	778.1	842.6	0.4x	NM	NM	$2,361.9	7.8%	-2.0%
Schnitzer Steel Industries, Inc.	United States	NasdaqGS:SCHN	25.10	75.3%	656.8	1,020.6	0.4x	13.4x	5.0x	$2,580.8	7.5%	3.0%
Metalico Inc.	United States	AMEX:MEA	1.13	42.2%	54.5	166.8	0.3x	10.8x	***7.5x***	$527.5	7.5%	2.9%
Industrial Services of America, Inc.	United States	NasdaqCM:IDSA	5.15	83.2%	36.4	51.2	0.4x	NM	***NM***	$127.7	-0.5%	-3.1%
Median			**$13.55**	**83.9%**	**$717.4**	**$931.6**	**0.4x**	**10.8x**	**4.1x**	**$2,471.3**	**7.7%**	**1.9%**
Mean			**$22.93**	**76.5%**	**$918.4**	**$1,187.9**	**0.4x**	**11.0x**	**4.0x**	**$3,162.2**	**6.7%**	**1.1%**

NOTE: Figures in bold and italic type were excluded from median and mean calculation.
(1) As of 6/25/2014.
(2) Market Capitalization is the aggregate value of a firm's outstanding common stock.
(3) Enterprise Value is the total value of a firm (including all debt and equity).
SOURCE: S&P Capital IQ.

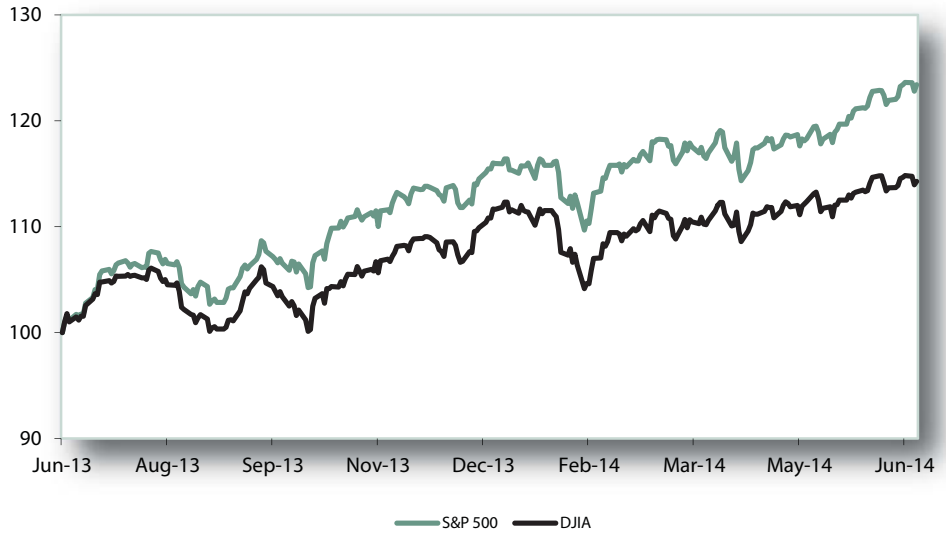
Sector Performance

By Sector



	1 Year
Solid Waste - Vertically Integrated	14.4%
Solid Waste - Waste-to-Energy	9.7%
Special Waste - Broadly Diversified	57.4%
Special Waste - Niche	15.3%
Environmental Engineering & Consulting	15.4%
E-Waste & Metals Recycling	17.2%

Overall Market



	1 Year
S&P 500	23.4%
DJIA	14.3%

Index: June 25, 2013= 100.

SOURCE: S&P Capital IQ.

Global Energy and Environmental Services Practice

Solid Waste
- Collection and Hauling
- Transfer Stations
- Material Recovery Facilities
- Landfills
- MSW, Commercial, and C&D

Special Waste
- General ES and IS and Emergency Response
- Vacuum Truck Services / Hydro-Excavation
- Liquids (e.g., Water/Wastewater, Oil, Grease)
- ODS and Other Hazardous Streams

EE&C
- Environmental Engineering and Consulting
- Auditing, Compliance, and Testing
- Reclamation and Remediation
- Health and Safety

E-Waste & Metals
- End-of-Life / Data Destruction
- Remanufacturing
- Asset Management
- Scrap Metal (Ferrous/Non-ferrous)

Energy/Resources
- Waste-to-Energy
- Renewables
- Oilfield Services
- Oil Collection/Re-Refining
- Water Management

Representative Transactions

RR Waste Solutions
— obtained financing — provided by
Comerica Bank
and
Ironwood Capital
Patriot Capital, L.P.
Brown Gibbons Lang & Company

Sale

Environmental and Infrastructure Support Services

Brown Gibbons Lang & Company

Allstate power-vac
— acquired by —
The Environmental Quality Company
— a portfolio company of —
Kinderhook Industries
Brown Gibbons Lang & Company

Sale

Environmental, Health, and Safety Consultancy

Brown Gibbons Lang & Company

RemTec International
— acquired by —
A-GAS
— a portfolio company of —
LDC
Brown Gibbons Lang & Company

Capital Raise

Series of U.S.-based Waste to Energy Facilities

Brown Gibbons Lang & Company

ECS Refining
— recapitalized by —
ZS Fund L.P.
Brown Gibbons Lang & Company

Sale

Wastewater Transportation and Disposal Services

Brown Gibbons Lang & Company

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