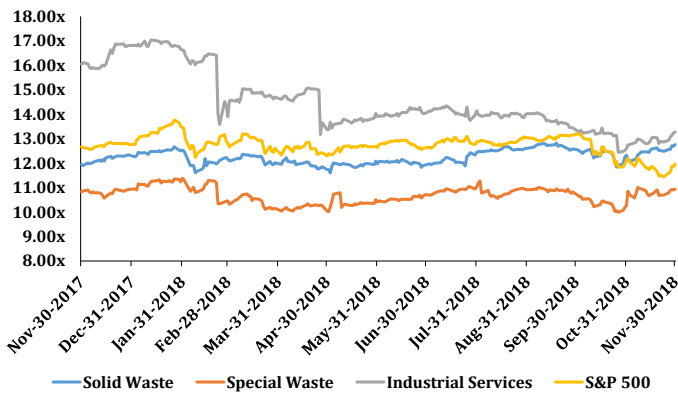


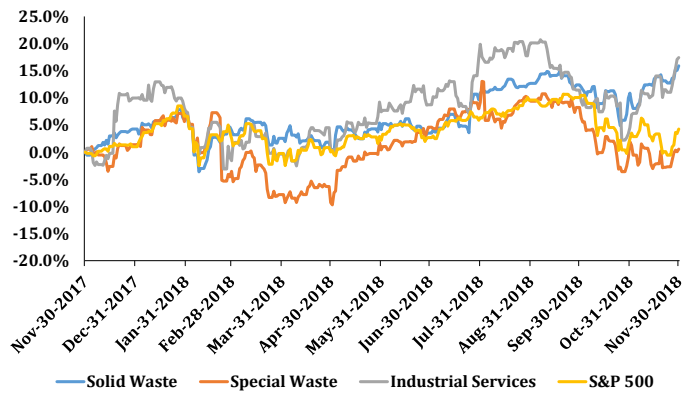
# Trash Talk

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Environmental Services LTM TEV/EBITDA



Environmental Services LTM Share Price (Shown as % change)



Indices Performance (% change)

	November 2018	LTM		November 2018	LTM
S&P 500	0.7%	4.3%	Solid Waste	4.5%	15.9%
Dow Jones	0.6%	5.2%	Special Waste	(1.4%)	0.6%
NASDAQ	(1.4%)	6.6%	Industrial Services	12.4%	17.4%

(Source: CapitalIQ)

Largest Environmental Services Movers and Losers (largest % changes in the month of November)

Heritage-Crystal Clean, Inc	21.8%	Quest Resource Holding Corporation	(38.6%)
Covanta Holding Corporation	12.7%	Industrial Services of America, Inc.	(23.2%)
CECO Environmental Corp.	11.7%	Perma-Fix Environmental Services, Inc.	(20.4%)
Republic Services, Inc.	6.4%	Ecology & Environment, Inc.	(14.7%)
Darling Ingredients Inc.	5.9%	Sharps Compliance Corp.	(6.7%)

## Environmental Services Industry Contacts

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## Select Public Trading Statistics (as of 11/30/2018)

### Solid Waste:

(\$ in millions, except per share data)

Company	Share Price 11/30/2018	% of 52 Wk High	Market Capitalization	Enterprise Value	Valuation Multiples			PE Multiples			LTM Operating Margins			Net Debt/EBITDA	
					TEV/Total Revenue	TEV/EBITDA	TEV/EBIT	LTM P/E	CY18 P/E	CY19 P/E	Gross	EBIT	EBITDA		
Waste Management, Inc.	WM	\$93.75	99.6%	\$39,970	\$49,905	3.4x	12.2x	18.9x	17.7x	23.4x	21.9x	38.0%	18.3%	28.1%	2.4x
Republic Services, Inc.	RSG	\$77.34	99.8%	\$25,102	\$33,274	3.3x	12.0x	20.2x	18.3x	24.5x	23.0x	38.3%	16.6%	27.8%	2.9x
Waste Connections, Inc.	WCN	\$78.48	96.5%	\$20,680	\$24,198	5.0x	15.9x	28.1x	28.4x	34.1x	30.2x	41.8%	17.9%	31.6%	2.3x
Advanced Disposal Services, Inc.	ADSW	\$26.95	96.5%	\$2,389	\$4,263	2.8x	11.1x	45.5x	49.4x	49.4x	44.4x	35.0%	6.0%	24.7%	4.9x
Casella Waste Systems, Inc.	CWST	\$32.65	94.7%	\$1,401	\$1,915	3.0x	16.3x	38.1x	35.3x	48.2x	37.0x	31.6%	7.9%	18.5%	4.4x
Mean				\$17,909	\$22,711	3.5x	13.5x	30.2x	29.8x	35.9x	31.3x	36.9%	13.3%	26.2%	3.4x
Median				\$20,680	\$24,198	3.3x	12.2x	28.1x	28.4x	34.1x	30.2x	38.0%	16.6%	27.8%	2.9x
High				\$39,970	\$49,905	5.0x	16.3x	45.5x	49.4x	49.4x	44.4x	41.8%	18.3%	31.6%	4.9x
Low				\$1,401	\$1,915	2.8x	11.1x	18.9x	17.7x	23.4x	21.9x	31.6%	6.0%	18.5%	2.3x

Source: Capital IQ

Total Enterprise Value (TEV) = Market Capitalization + Preferred Equity + Debt + Minority Interest - Cash

LTM = Last Twelve Months

### Special Waste:

(\$ in millions, except per share data)

Company	Share Price 11/30/2018	% of 52 Wk High	Market Capitalization	Enterprise Value	Valuation Multiples			PE Multiples			LTM Operating Margins			Net Debt/EBITDA	
					TEV/Total Revenue	TEV/EBITDA	TEV/EBIT	LTM P/E	CY18 P/E	CY19 P/E	Gross	EBIT	EBITDA		
Stericycle, Inc.	SRCL	\$48.07	62.6%	\$4,355	\$7,152	2.0x	11.7x	20.7x	27.9x	14.2x	14.7x	39.6%	9.8%	17.3%	4.6x
Clean Harbors, Inc.	CHH	\$64.53	89.0%	\$3,614	\$4,985	1.6x	10.7x	28.5x	27.4x	NM	NM	29.9%	5.5%	14.7%	2.9x
Darling Ingredients Inc.	DAR	\$21.88	97.8%	\$3,603	\$5,261	1.5x	9.4x	21.8x	21.8x	62.6x	22.7x	21.8%	3.4%	12.5%	3.7x
US Ecology, Inc.	ECOL	\$69.67	90.3%	\$1,535	\$1,786	3.3x	14.5x	21.6x	23.0x	30.5x	26.2x	31.7%	15.3%	22.7%	2.0x
Sharps Compliance Corp.	SMED	\$3.35	65.0%	\$54	\$51	1.2x	NM	NM	NM	NM	NM	28.8%	(1.4%)	2.5%	(3.3x)
Perma-Fix Environmental Services, Inc.	PESI	\$3.00	58.3%	\$36	\$38	0.8x	20.0x	109.0x	18.9x	NM	NM	24.1%	0.7%	3.8%	1.9x
Mean				\$2,199	\$3,212	1.7x	13.3x	40.3x	23.8x	35.8x	21.2x	29.3%	5.6%	12.2%	2.0x
Median				\$2,569	\$3,385	1.5x	11.7x	21.8x	23.0x	30.5x	22.7x	29.3%	4.5%	13.6%	2.5x
High				\$4,355	\$7,152	3.3x	20.0x	109.0x	27.9x	62.6x	26.2x	39.6%	15.3%	22.7%	4.6x
Low				\$36	\$38	0.8x	9.4x	20.7x	18.9x	14.2x	14.7x	21.8%	-1.4%	2.5%	(3.3x)

Source: Capital IQ

Total Enterprise Value (TEV) = Market Capitalization + Preferred Equity + Debt + Minority Interest - Cash

LTM = Last Twelve Months

### Industrial Services:

(\$ in millions, except per share data)

Company	Share Price 11/30/2018	% of 52 Wk High	Market Capitalization	Enterprise Value	Valuation Multiples			PE Multiples			LTM Operating Margins			Net Debt/EBITDA	
					TEV/Total Revenue	TEV/EBITDA	TEV/EBIT	LTM P/E	CY18 P/E	CY19 P/E	Gross	EBIT	EBITDA		
Covanta Holding Corporation	CVA	\$16.56	91.7%	\$2,146	\$4,589	2.5x	13.3x	37.6x	8.0x	NM	NM	31.1%	6.4%	18.3%	7.2x
Heritage-Crystal Clean, Inc.	HCCI	\$28.01	99.4%	\$666	\$629	1.6x	14.6x	23.6x	27.3x	38.5x	22.9x	22.6%	6.7%	10.8%	(0.4x)
CECO Environmental Corp.	CECE	\$8.31	90.5%	\$290	\$343	1.1x	14.4x	35.5x	NM	30.8x	19.5x	34.1%	3.0%	7.5%	2.2x
Cypress Energy Partners, L.P.	CELP	\$6.85	80.6%	\$82	\$169	0.6x	8.4x	11.4x	8.2x	NM	NM	14.0%	4.9%	6.8%	3.2x
Ecology & Environment, Inc.	EEI	\$11.00	76.1%	\$47	\$33	0.3x	6.1x	7.6x	22.3x	NM	NM	44.7%	4.1%	5.1%	(3.0x)
Fuel Tech, Inc.	FTKX	\$1.21	66.1%	\$29	\$25	0.5x	26.1x	NM	NM	NM	NM	36.6%	0.0%	1.8%	(4.4x)
Quest Resource Holding Corporation	QRHC	\$1.40	45.2%	\$21	\$25	0.3x	NM	NM	NM	NM	NM	15.3%	(3.9%)	(0.4x)	(8.9x)
Industrial Services of America, Inc.	ISDA	\$1.56	57.8%	\$13	\$21	0.3x	7.7x	34.1x	NM	NM	NM	6.6%	1.0%	4.4%	3.0x
Mean				\$409	\$729	0.9x	12.9x	25.0x	16.4x	34.7x	21.2x	25.6%	2.8%	6.8%	-0.1x
Median				\$65	\$101	0.5x	13.3x	28.8x	15.2x	34.7x	21.2x	26.9%	3.6%	5.9%	0.9x
High				\$2,146	\$4,589	2.5x	26.1x	37.6x	27.3x	38.5x	22.9x	44.7%	6.7%	18.3%	7.2x
Low				\$13	\$21	0.3x	6.1x	7.6x	8.0x	30.8x	19.5x	6.6%	-3.9%	-0.4%	(8.9x)

Source: Capital IQ

Total Enterprise Value (TEV) = Market Capitalization + Preferred Equity + Debt + Minority Interest - Cash

LTM = Last Twelve Months





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## Select Mergers and Acquisitions & Capital Raising News

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### ❖ Casella Announces Two Acquisitions

November 1, 2018 – Casella Waste Systems, Inc. announced it has acquired the assets of Boon & Sons, Inc. and Oceanside Rubbish, Inc. The transactions closed on November 1, and Casella expects to generate approximately \$16 million of annualized revenue from both acquisitions. Boon is a provider of residential, commercial and roll-off collection services in the Rochester, New York, market, and Oceanside is a provider of residential, commercial and roll-off collection services and operates a transfer station in the Southern Maine marketplace.

### ❖ Santek Waste Services Completes Fifth Acquisition

November 9, 2018 – Officials with Santek Waste Services, LLC announced the company's acquisition of the MAT Transfer Station in Conroe, Texas, bringing the company's total asset purchases to five. Effective November 1, Santek purchased the MAT Transfer Station. The facility resides on an 18-acre parcel of land and is permitted to accept up to 1,350 tons per day. Santek Chief Business Development Officer Edward Caylor said the MAT Transfer Station acquisition is a strategic complement to the company's growth initiatives in the Conroe and North Houston markets.

### ❖ Soft-Pak Acquires FASTPace Trash Software

November 15, 2018 – Soft-Pak Software Solutions, an operational software solution for the waste and recycling industry, announced its expansion by acquiring FASTPace Roll Off Software on October 31. The acquisition includes all software, clients and employees related to FASTPace Software. According to the company, the acquisition will provide value to the existing FASTPace users, as Soft-Pak plans to immediately add services and infrastructure reliability to the proven FASTPace SaaS solution. FASTPace has been servicing waste operators for 25 years.

### ❖ GFL Completes Merger with Waste Industries

November 15, 2018 – Last month, GFL Environmental Inc. and Waste Industries entered into a definitive merger agreement in a transaction that values Waste Industries at a total enterprise value of \$2.825 billion (approximately C\$3.65 billion). GFL announced that it has completed the merger. The combined company, which is dubbed as the largest privately owned environmental services company in North America with operations in all Canadian provinces except Prince Edward Island and in 10 states in the U.S., will now operate 98 collection operations, 59 transfer stations, 29 materials recovery facilities, 10 organics facilities and 47 landfills and will now have more than 8,850 employees. The merger was financed in part through an additional equity investment from GFL's current consortium of investors led by affiliates of BC Partners, Ontario Teachers' Pension Plan, certain shareholders of GFL, including Dovigi, and from rollover investors of Waste Industries, including the founding Poole family and HPS Investment Partners. Additional debt financing for the merger was provided through GFL's Second Amended and Restated Term Loan B Facility. Upon completion of the merger, Ven Poole, the former chairman and CEO of Waste Industries, joined GFL's Board of Directors.

### ❖ Anheuser-Busch Invests in Closed Loop to Improve Glass Recycling

November 16, 2018 – Anheuser-Busch announced a \$250,000 investment in Closed Loop Fund projects to improve glass recycling capabilities in Texas communities. The first of these projects will be announced in early 2019 and will help drive progress toward the brewer's 2025 sustainability goals announced last spring. Investing in Closed Loop Fund projects will enable Anheuser-Busch to increase the percentage of recycled glass used at its Longhorn production facility as part of its commitment to using 100 percent majority recycled or returnable packaging by 2025.

### ❖ Meridian Waste Acquires Two C&D Landfills

November 26, 2018 – Meridian Waste, an integrated, non-hazardous solid waste services company, announced its asset acquisition of two construction and demolition (C&D) landfills located in Knoxville, Tennessee. Poplar View Landfill and Riverside Landfill have access to downtown, major highways and area construction projects, noted the company. Poplar View Landfill and Riverside Landfill accept the following waste types: appliances (without compressors), asphalt, cardboard, common construction material, dirt, rock, concrete, furniture, metal, paper, shingles, roofing materials, wiring, brush and other landscaping waste, carpet, flooring, drywall, insulation, non-friable asbestos, plastic and wood.

### ❖ BioHiTech Acquires Stake in HEBioT Renewable Resource Recovery Facility

November 30, 2018 – BioHiTech Global, a technology and services company that provides waste management solutions, announced it has entered into a definitive agreement to acquire an additional 26.8 percent ownership stake in the nation's first HEBioT (high efficiency mechanical and biological treatment) renewable resource recovery facility located in Martinsburg, West Virginia. According to the company, the acquisition will make BioHiTech the largest owner of the Martinsburg facility and enable the company to consolidate an estimated \$7 million in annual high margin revenue generated by the operations in its financial statements beginning in 2019. The company is acquiring the additional ownership stake in the Martinsburg facility from Entsorga USA in exchange for the



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issuance of approximately \$1.886 million in BioHiTech preferred stock, convertible into BioHiTech common stock at a fixed price of \$2.64 per share. Entsorga USA, a company owned by the principals of the Italian engineering firm that developed the HEBioT technology, will remain as a minority owner of the facility. The Martinsburg facility is expected to begin the commissioning process in December and to ramp production throughout the first quarter of 2019. The facility will utilize a HEBioT process for the disposal and recycling of mixed municipal solid waste (MSW) into an Environmental Protection Agency-approved solid recovered fuel (SRF). The HEBioT process is expected to divert from landfills as much as 80 percent of the waste that enters the facility. The Martinsburg facility has secured 10-year agreements for both the supply of MSW from a regional hauler and the off-take of the SRF production by a multibillion dollar cement company with operations nearby. The Martinsburg facility is the first of a series of facilities utilizing the patented HEBioT process that BioHiTech plans to build in the U.S. in the coming years. The company noted it controls the exclusive development rights to the HEBioT technology in 12 Northeastern states and the District of Columbia. A second site is currently under development in Rensselaer, New York, with other potential locations in early stage planning.

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## Select Industry News

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### ❖ **Simmons to Take Over as GBB President**

November 5, 2018 – Gershman, Brickner & Bratton, Inc. (GBB) announced new leadership roles for Harvey Gershman and Steve Simmons, effective January 1, 2019. Gershman is stepping down as president and will take on the new role of GBB founder owner associate. Simmons will succeed Gershman as the firm's president. Gershman, who co-founded GBB in 1980, has led the firm as president since its inception. As GBB founder owner associate, he will continue to provide strategic guidance and business development assistance to the GBB ownership group and management team, acting as a senior advisor to provide internal peer review, quality assurance and overall strategic guidance to clients. Inspired by Earth Day 1970, Gershman focused his professional career on helping communities and clients do better things with waste. He has become a recognized industry thought leader specializing in strategic guidance and infrastructure and services development assistance to solid waste service/system managers and owners. In 2013, the Solid Waste Association of North America (SWANA) presented him with the Robert L. Lawrence Distinguished Service Award, one of the highest honors in the solid waste industry, for his significant contribution to the solid waste management profession. In 1993, he was awarded SWANA's Professional Achievement Award. Simmons, currently senior vice president and part of the GBB ownership team, will transition to be the next president of GBB. After first joining GBB as a principal associate in 2012, he became a member of the ownership group in 2016. As president, he will lead the firm's senior management team and set the long-term path for GBB, as well as lead client project teams. He has worked both with engineering/consulting firms and energy companies throughout his 35-year career to help communities and companies alike develop programs and projects implementing the 3 E's of sustainability: environment, economy and equity.

### ❖ **Elgin, Illinois Drastically Cuts Recycling Contamination Rate**

November 8, 2018 – Elgin, Illinois has dropped its recycling contamination rate to around 16 percent from 40 percent two years ago. Elgin officials explained that although residents are doing well when it comes to recycling properly, they will have to become more vigilant amid changes in the recycling market. The town has a contract with Waste Management, and in 2016, Elgin became the first municipality in the Chicago area to join the company's "Recycle Often. Recycle Right." contamination reduction program.

### ❖ **Smithfield Foods Moves Toward Zero Waste-to-Landfill in North Carolina**

November 12, 2018 – Smithfield Foods, Inc. announced a key step toward achieving zero waste-to-landfill status across its North Carolina processing facilities. Smithfield will achieve this goal with support from its newest partner, Waste Connections. The project will create a recycling facility that processes materials specifically from food production facilities. This project is part of Smithfield's companywide sustainability initiative to reduce solid waste to landfills 10 percent by 2020 across all locations and its goal to reduce greenhouse gas (GHG) emissions 25 percent by 2025 throughout its supply chain. Waste Connections will increase Smithfield's savings in rebate value of recycled materials through its specialized recycling facility in Clinton, North Carolina. Waste Connections' investment in the recycling facility will play a major role in assisting Smithfield's Tar Heel, Clinton, Wilson and Kinston locations in reaching their environmental target of eliminating waste to landfills.

### ❖ **Waste Management Relocates Corporate Headquarters in Houston**

November 14, 2018 – Waste Management has signed a contract to move its corporate headquarters to a soon-to-open skyscraper at the corner of Capitol and Travis Streets in Houston. Waste Management will relocate into nine floors of Capitol Tower in 2020, consolidating employees from two downtown buildings: 1001 Fannin and 1021 Main, the Houston Chronicle reports. The Houston-based waste and recycling hauler will occupy 284,000 square feet in the building at 800 Capitol. The company has 1,927 full- and part-time employees in the Houston area, according to the report.





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## ❖ Rubicon Launches E-commerce Site to Help Kickstart Consumer Recycling

November 19, 2018 – Rubicon Global, a technology company providing waste, recycling, and smart city solutions to businesses and governments worldwide, launched its first e-commerce marketplace designed to give consumers and small businesses access to key resources needed to build their own recycling and sustainability programs from the very beginning. The RUBICONMarketplace is now live with recycling bins from CleanRiver Recycling Solutions, 100 percent compostable bin liners from Commit to Green and mail-in recycling programs from TerraCycle as part of the site's first round of product and service offerings. In addition to the products already being offered, users can download the RUBICONMethod, a step-by-step guide that will help any consumer or small business establish a waste reduction or recycling program for free. In the coming months, additional partnerships and products will be added to the marketplace.

## ❖ AMCS Open Its Global Headquarters in Limerick, Ireland

November 26, 2018 – Pat Breen TD, Ireland's minister of state for trade, employment, business, European Union digital single market and data protection, officially opened AMCS' new global technical and support headquarters in Limerick, Ireland. Following a successful and significant round of funding in April, AMCS is on a major growth trajectory, according to the company. "This new facility is critical for our continuing expansion and provides us with the capacity to increase our Limerick team by up to 100 people over the next three years in the areas of product development, sales and global customer support," said AMCS CEO and Founder Jimmy Martin in a statement. Founded in 2003, AMCS now employs 450 people in 10 different countries, including 110 employees based in Limerick, with an annual turnover of more than 50 million euro. "As an indigenous software developer, we are delighted to be opening our new global headquarters here in Limerick," added Martin. AMCS is an innovative technology company specializing in providing technology to the waste and recycling industry. AMCS said it enjoys positive collaborations with both the University of Limerick and the Limerick Institute of Technology to promote global career opportunities for Limerick graduates.

## ❖ Waste Industry Veteran, NHL Legend Launch Environmental 360 Solutions

November 26, 2018 – Waste industry veteran Danny Ardellini of Almada Inc. and National Hockey League (NHL) legend Paul Coffey announced the launch of Environmental 360 Solutions Inc. (E360S), a new environmental waste management company. E360S has acquired Can Pak Environmental Inc., a central Alberta, Canada-based family-operated business serving residential, commercial and industrial properties, from Mark Pedersen, its owner and president. With operations in Red Deer, Medicine Hat, Beaumont, Drayton Valley, Edson, Edmonton and Calgary, E360S now has nearly 100 employees, more than 35 trucks and two recycling facilities, servicing more than 150,000 customers weekly.

## ❖ Sanitation Salvage Surrenders License, Goes Out of Business

November 28, 2018 – Following months of controversy, Sanitation Salvage, based in the Bronx, New York, has surrendered its license and gone out of business. According to the New York Daily News, the private hauler sent a letter to the city's Business Integrity Commission (BIC) yesterday announcing its decision to end its operations. In the past year, Sanitation Salvage has reportedly killed two New Yorkers in truck crashes. Mouctar Diallo, a 21-year-old immigrant who had been working for Sanitation Salvage for more than a year, was run over in a November 2017 crash. The true nature of his death was covered up, and police were told he was unknown to the company. In April 2018, a second Sanitation Salvage truck operated by the same driver, killed 72-year-old Leon Clarke, a resident of the Bronx's John Adams Houses, as he was crossing the street with a cane. These fatal accidents sparked the attention of labor unions, environmentalists and community groups, which expressed their concerns and pushed for the hauler's license to be suspended. These concerns, along with information on off-the-book employees, fatal accidents, unsafe conditions and more released by nonprofit ProPublica and radio network Voice of America and a further investigation conducted by the BIC, led the BIC to suspend Sanitation Salvage's license in August.

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Sources include Waste360, Waste Dive and various publicly available news publications. Additional information is available upon request.

