INDUSTRY OVERVIEW
WASTE COLLECTION SERVICES IN CANADA

The waste collection services industry in Canada, is defined as collecting hazardous and non-hazardous waste and recyclable materials. Non-hazardous waste includes municipal solid waste and industrial and commercial waste. The industry includes transfer stations where waste is transferred from local vehicles to long-distance vehicles for transport to disposal facilities. The industry includes private solid waste management companies that provide curbside collection, recycling, and other waste management solutions to both households and businesses.

- The waste collection services industry in Canada experienced steady expansion during the five years leading up to 2017, growing at an annualized rate of 2.8 percent to $5.5 billion.
- Rising consumer spending and consumption levels have resulted in an increased residential waste output over the most recent 5-year period.
- Conversely, according to Statistics Canada non-residential waste output experienced a decline between 2012 and 2016, likely a result of a continued movement towards waste reduction and efficiency.
- **Key external drivers:**
  1. Population
  2. Value of non-residential construction
  3. Demand from manufacturing
  4. Demand from recycling facilities
  5. World price of crude oil
- The industry has experienced structural change in recent years, including:
  - **Shift to privatization** – Many local governments have had difficulty maintaining disposal sites and have sought relief by contracting waste collection services to private operators. However, the majority of municipalities in Canada continue to be served by public waste management agencies.
  - **Increased regulation** – Increased federal and provincial-level regulation has driven up industry costs across all segments. New regulations are aimed at further development in the diversion of recyclable, electronic, or compostable waste from landfills.
  - **Transfer stations** – In an effort to promote operational efficiency, large operators in the industry have focused on developing networks of transfer stations and disposal facilities. These enable operators to reduce costs.
  - **Vertical integration** – In response to increased regulations and costs, larger operators have focused on vertically integrating their waste management operations. This includes acquisitions to gain additional services, as well as acquisitions to gain additional landfill facilities.

**INDUSTRY GLANCE**

- **2018 Revenue**: $5.5B
- **Annual Growth 2013 – 2018**: 2.8%
- **Projected Annual Growth 2018 – 2023**: 1.6%
- **Number of Businesses in 2018**: 1,504

**PRODUCTS & SERVICES SEGMENTATION (2018)**

- Non-hazardous residential waste collection: 40%
- Non-hazardous non-residential collection: 28%
- Non-hazardous consolidation storage and preparation services: 15%
- Non-hazardous waste transfer facility services: 11%
- All other services: 6%

INDUSTRY OVERVIEW
WASTE TREATMENT & DISPOSAL SERVICES IN CANADA

The waste treatment and disposal services industry is defined as owners and operators of waste treatment or disposal facilities, including waste combustors, waste-to-energy (WTE) plants, solid waste landfills, and compost dumps, or other types of disposal facilities for hazardous or non-hazardous waste.

- Overall waste production has continued to grow and industry revenue has been increasing despite the trend toward recycling.
- Most waste directed to landfills is the product of consumer goods, and as disposable income levels rise there has been a higher level of consumption.
- **Key external drivers:**
  1. Consumer spending
  2. Population
  3. Industrial capacity utilization
  4. Value of non-residential construction
- The industry has experienced structural change in recent years, including:
  - **Waste volume increases** – The industry is poised for growth as a result of continued growth in the economy and higher consumer consumption levels with an end result of rising levels of residential waste production. The industry will also benefit from a growing manufacturing sector, and in turn lead to a projected 1 percent annualized growth rate in demand from the manufacturing sector. Rising prices and production in domestic oil and gas will stimulate demand from industry services.
  - **Waste-to-energy** – Industry operators will continue to turn to waste-to-energy operations and gas recovery landfills in an effort to combat rising landfill costs and regulations. Operators will benefit from regulation that supports the use of renewable energy, as there are tax incentives for renewable energy investment. Over the near term, it is expected that operators will shift their focus to operating WTE rather than traditional landfill operations.
  - **Diversion from landfills** – Over the most recent five-year period, many provincial governments have introduced waste reduction targets to limit waste sent to landfills. Regulations to limit landfill waste have led to higher landfill levies, provision of paper and organic municipal recycling collection services, and stringent regulations on waste disposal methods.

---

**INDUSTRY GLANCE**

**2018 Revenue**
$5.1B

**Annual Growth 2013 – 2018**
1.4%

**Projected Annual Growth 2018 – 2023**
2.2%

**Number of Businesses in 2018**
742

**PRODUCTS & SERVICES SEGMENTATION (2018)**

- Hazardous waste treatment and disposal
- Solid waste treatment and disposal
- Waste-to-energy
- Non-hazardous waste transfer facility services
- Other

INDUSTRY OVERVIEW
RECYCLING FACILITIES IN CANADA

The recycling facilities industry in Canada is defined as operators of material-recovery facilities that separate and sort recyclable materials from non-hazardous waste streams. Operators also sort commingled recyclable materials, such as paper, plastics, used beverage cans and metals.

- The industry includes small-scale operators that rely on labour-intensive processes, to large-scale operators that benefit from the use of technological machinery for sorting.
- The industry has been boosted by efforts by the federal and local governments to develop programs that manage waste responsibly.
- Provincial regulation requires producers of materials that can be recycled, contribute to the recycling programs.
- Industry revenue has slowed in the most recent five years, compared with the decade before. This is a result of declining commodity prices that have diminished the cost benefit of recycled plastics.
- Key external drivers:
  1. Demand from recyclable material wholesaling
  2. Consumer spending
  3. Population
  4. World price of crude oil
- The industry has experienced structural change in recent years.
  - Recycling volume growth – The industry has benefited from increased regulations towards recycling programs. As a result, overall recycling volume has increased, with the largest segment, household recycling, growing at the fastest rate.
  - Demand for recycled materials – The industry has benefited from demand from downstream markets. The decline in the commodity markets eroded the financial benefit of purchasing recycled plastic goods, however as the world price of oil rebounds and stabilizes, demand is expected to pick up.
  - Technological growth – The industry has experienced strong technological growth in the past five years. Advances in automated processing equipment have led to more streamlined sorting processes. This has led to an increase in capital intensity across the industry in order to stay competitive.

INDUSTRY OVERVIEW
CURRENT HIGHLIGHTS

INDUSTRY NEWS

• In the fourth quarter of 2018, GFL announced that it was merging with Raleigh, North Carolina-based Waste Industries Inc. The transaction closed in November 2018, with a transaction value of $3.65 billion. This deal has now created the largest private environmental services company in North America, with operations in every Canadian province (excluding PEI) and 20 U.S. states.
• Additionally, in this quarter, Environmental 360 Solutions Inc. (E360S), a new environmental waste management company, was launched and completed its first acquisition. E360S was established by industry veteran Danny Ardellini, and is financially backed by Paul Coffey and Almada Inc.
• On November 21, 2018, the Honourable Bill Morneau, the Canadian Finance Minister, presented the federal government’s 2018 Fall Economic Statement. The proposed tax changes include an accelerated investment incentive for clean energy equipment, allowing businesses to immediately write off the full cost of specified clean energy equipment – a direct benefit to the waste-to-energy industry.1
• On November 23, 2018, federal, provincial, and territorial environment ministers agreed to work collectively toward a common goal of zero plastic waste.
• Climate Transparency, a coalition of international climate organizations released its annual review of G20 members’ climate policies. Canada is the highest producer of green house emissions on a per capita basis, producing 22 tonnes in contrast with the average of 8 tonnes per capita.2

TRENDS TO WATCH

• Continued deployment of technology in the industry that improves efficiency, including technology used to improve waste monitoring, collection route optimization, compacting, sorting, etc.
• Continued growth in urban populations, increased consumption of goods, changes in lifestyle and increasing wealth of the rising middle class will lead to substantial increases in global waste quantities.
• Shift towards creating a circular economy, whereby collection trucks are ultimately powered by the waste they collect – higher push to drive more waste-to-energy initiatives.
• Initiatives toward zero plastic waste.

Sources: S&P Capital IQ, and Company websites.
2 https://www.climate-transparency.org/countries/americas/canada
INDUSTRY OVERVIEW
M&A TRANSACTIONS & PERFORMANCE

• The chart above highlights the quarterly merger and acquisition (M&A) market activity within the sanitary services industry, including waste management, collection, and recycling operators.

• M&A activity within the industry has been robust in recent years as market participants seek consolidation in a fragmented waste management market.

• Since 2014, there have been several large transactions where two large market participants have combined. Examples include Waste Connections US, Inc. acquiring Progressive Waste Solutions Ltd. for a reported $2.8 billion which closed in June 2016, Waste Connections Inc.‘s acquisition of Groot Industries Inc. in January 2017 for a reported $375 million and, most recently, GFL Environmental Inc.‘s $3.7 billion acquisition of Waste Industries.

• 2018 had 46 reported transactions – slightly lower than the 5-year average of 67 reported transactions. Conversely, 2018 had a total reported transaction value of $4.3 billion, compared with the 5-year average of $2.8 billion. Based on the highly fragmented nature of the industry, there is possibility of many smaller players and participants being active in M&A activity, without any public disclosure.

• There has been a high level of transaction activity led by Advanced Disposal Services, Covanta Environmental Solutions, GFL Environmental Inc., Lakeshore Recycling Systems LLC, Waste Connections, Inc., Waste Management, Inc. and multiple private equity investors. These acquisitions have focused on acquiring regional service providers, as well as acquiring new service lines.

• The strong transaction levels have been a result of the low cost of borrowing, increased level of specialization and the desire of industry leaders to gain additional market share.

• Additionally, as a result of improving underlying commodity prices, including oil prices, there has been an increased level of consolidation among recycling companies as recycled plastics become more economical for downstream customers.

Source: Capital IQ. Data as of December 31, 2018, based on publicly disclosed information.
*All figures are in CAD unless otherwise stated.
The key external drivers that affect the waste collection and disposal industries in Canada include: world price of crude oil, population of Canada, consumer spending and industrial capacity utilization. Growth in the industry is expected to be fueled by rising consumption levels and increased regulations.
SELECT RECENT M&A TRANSACTIONS

- Waste Connections (TSX:WCN) acquired privately-owned American Disposal Services, Inc. for an undisclosed amount.
  - American Disposal Services provides recycling services to approximately 400,000 residential, commercial, and industrial customers, annually, with annualized revenue of approximately $175 million.
  - Waste Connections is a Toronto-based full-service, vertically integrated waste management company, providing non-hazardous hauling and disposal services.

- Environmental 360 Solutions Inc. (E360S) acquired Can Pak Environmental Inc. for an undisclosed amount.
  - Can Pak is a central Alberta-based provider of waste collection and disposal services. The company serves residential, commercial, and industrial customers in Alberta.
  - E360S is a newly formed environmental waste management company backed by private equity group Almada Inc. and Paul Coffey. The company is backed with $100 million, and plans to execute an aggressive acquisition strategy.

- GFL Environmental Inc. (GFL) acquired Waste Industries for a reported $3.65 billion.
  - Waste Industries is a vertically integrated regional provider of non-hazardous solid waste collection, transfer, recycling and disposal services. The company operates in the eastern U.S., Colorado and Tennessee, serving more than 1.6 million households.
  - GFL is a diversified environmental services company. Following this merger, GFL will become the largest privately owned environmental services company in North America.

- US Ecology, Inc. (NASDAQ:ECOL) acquired privately-held Ecoserv Industrial Disposal, a subsidiary of Ecoserv, LLC.
  - Ecoserv Industrial Disposal is a leading provider of non-hazardous industrial wastewater disposal solutions in the Gulf Coast, serving refinery, petrochemical, and environmental services customers.
  - US Ecology is a leading North American provider of environmental services to commercial and government entities, offering treatment, disposal, and recycling of hazardous and non-hazardous materials. US Ecology operates in the US, Canada and Mexico.
INDUSTRY CONSOLIDATORS

The waste collection and services industry is a highly fragmented industry, with a number of regional players serving local markets. Additionally, there are many different specialized services within waste collection that add to the fragmentation. The industry is currently undergoing high levels of consolidation as large players, both public and private, and regional players seek to add specialization, waste routes and market share through both vertical and horizontal acquisition. Below we have highlighted the industry consolidators, based on the number of reported transactions since 2013.

<table>
<thead>
<tr>
<th>Buyer</th>
<th>Number of Transactions</th>
<th>Total Disclosed Transaction Value (C$MM)</th>
<th>Target Company</th>
<th>Last Transaction</th>
<th>Transaction Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced Disposal Services South, LLC</td>
<td>19</td>
<td>100</td>
<td>CGS Services, Inc.</td>
<td></td>
<td>Feb-2017</td>
</tr>
<tr>
<td>Waste Management, Inc.</td>
<td>16</td>
<td>1,149</td>
<td>EnviroSolutions, Inc.</td>
<td></td>
<td>Apr-2018</td>
</tr>
<tr>
<td>GFL Environmental Inc.</td>
<td>13</td>
<td>3,734</td>
<td>Waste Industries Inc.</td>
<td></td>
<td>Nov-2018</td>
</tr>
<tr>
<td>Waste Connections, Inc.</td>
<td>9</td>
<td>3,491</td>
<td>American Disposal Services, Inc.</td>
<td></td>
<td>Dec-2018</td>
</tr>
<tr>
<td>Lakeshore Recycling Systems, LLC</td>
<td>7</td>
<td>na</td>
<td>Royal Container Service, LLC</td>
<td></td>
<td>Oct-2018</td>
</tr>
<tr>
<td>Covanta Environmental Solutions LLC</td>
<td>6</td>
<td>67</td>
<td>Quantex Technologies Inc.</td>
<td></td>
<td>Feb-2018</td>
</tr>
<tr>
<td>Clean Earth, Inc.</td>
<td>5</td>
<td>na</td>
<td>Dart Disposal and Recycling Technologies, Inc.</td>
<td></td>
<td>Sep-2018</td>
</tr>
<tr>
<td>WCA Waste Corporation</td>
<td>5</td>
<td>na</td>
<td>Global Waste Services, LLC</td>
<td></td>
<td>Sep-2018</td>
</tr>
<tr>
<td>Republic Services, Inc.</td>
<td>4</td>
<td>207</td>
<td>Industrial Waste &amp; Debris Box Rentals, Inc.</td>
<td></td>
<td>Announced</td>
</tr>
</tbody>
</table>

HIGHLIGHTED BUYERS

Waste Connections, Inc. is an integrated waste services company that provides non-hazardous solid waste collection and disposal services to commercial, industrial, municipal, and residential customers. Waste Connections is currently the third largest waste management company in North America.

**Funding:**
Publicly listed (NYSE:ADSW)

**Recent News:**
- Acquisition of American Disposal Services, Inc. (Closed Dec 2018)
- Acquisition of Groot Industries (Closed Jan 2017)
- Acquisition of Progressive Waste (Closed Jun 2016)

Waste Management Inc., through its subsidiaries, provides waste management environmental services to residential, commercial, industrial, and municipal customers in North America.

**Funding:**
Publicly listed (NYSE:WM)

**Recent News:**
- Acquisition of EnviroSolutions, Inc. (Closed Apr 2018)
- Acquisition of TLC Waste Disposal Services (Announced Apr 2018)

GFL is a diversified environmental services company. GFL provides services in solid waste management, liquid waste management and infrastructure, serving the Canadian and U.S. markets.

**Funding:**
Private equity backed (BC Partners, Teachers Private Capital)

**Recent News:**
- Acquisition of Waste Industries Inc. (Closed Nov 2018)
- Acquisition of Smithrite Disposal Ltd. (Closed Mar 2018)
- Acquisition of Deep Foundations Contractors Inc. (Announced Feb 2018)
- Acquisition of Carney’s Waste Systems Ltd. (Closed Feb 2018)

Source: S&P Capital IQ, Company websites.
# PUBLIC COMPARABLE ANALYSIS

## TRADING MULTIPLES & OPERATING STATISTICS

(Figures in USD millions, except percentages and ratios)

<table>
<thead>
<tr>
<th>Company</th>
<th>Market Cap</th>
<th>Enterprise Value</th>
<th>Revenue</th>
<th>Revenue Growth</th>
<th>EBITDA</th>
<th>EBITDA Margin</th>
<th>EV/EBITDA</th>
<th>EV/Revenue</th>
<th>Valuation (LTM)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Large Capitalization Waste, Recycling and Remediation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waste Management, Inc.</td>
<td>$37,941</td>
<td>$47,876</td>
<td>$14,724</td>
<td>3.0%</td>
<td>$4,139</td>
<td>4.5%</td>
<td>28.2%</td>
<td>11.0x</td>
<td>11.6x 3.3x</td>
</tr>
<tr>
<td>Republic Services, Inc.</td>
<td>$23,398</td>
<td>$31,570</td>
<td>$10,071</td>
<td>2.1%</td>
<td>$2,804</td>
<td>3.3%</td>
<td>28.2%</td>
<td>10.8x</td>
<td>11.3x 3.1x</td>
</tr>
<tr>
<td>Waste Connections, Inc.</td>
<td>$19,565</td>
<td>$23,083</td>
<td>$4,818</td>
<td>6.6%</td>
<td>$1,524</td>
<td>8.8%</td>
<td>32.1%</td>
<td>13.7x</td>
<td>15.1x 4.8x</td>
</tr>
<tr>
<td>Median</td>
<td>$23,398</td>
<td>$31,570</td>
<td>$10,071</td>
<td>3.0%</td>
<td>$2,804</td>
<td>4.5%</td>
<td>28.2%</td>
<td>11.0x</td>
<td>11.6x 3.3x</td>
</tr>
<tr>
<td>Mean</td>
<td>$26,968</td>
<td>$34,176</td>
<td>$9,871</td>
<td>3.9%</td>
<td>$2,822</td>
<td>5.5%</td>
<td>29.5%</td>
<td>11.8x</td>
<td>12.7x 3.7x</td>
</tr>
<tr>
<td><strong>Small Cap &amp; Specialty Services</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stericycle, Inc.</td>
<td>$3,324</td>
<td>$6,121</td>
<td>$3,521</td>
<td>-2.2%</td>
<td>$610</td>
<td>-1.0%</td>
<td>21.7%</td>
<td>8.1x</td>
<td>10.0x 1.7x</td>
</tr>
<tr>
<td>Clean Harbors, Inc.</td>
<td>$2,764</td>
<td>$4,135</td>
<td>$3,190</td>
<td>10.4%</td>
<td>$467</td>
<td>6.6%</td>
<td>14.8%</td>
<td>8.2x</td>
<td>8.8x 1.3x</td>
</tr>
<tr>
<td>Advanced Disposal Services, Inc.</td>
<td>$2,123</td>
<td>$3,996</td>
<td>$1,548</td>
<td>4.9%</td>
<td>$383</td>
<td>3.7%</td>
<td>27.6%</td>
<td>9.0x</td>
<td>10.4x 2.6x</td>
</tr>
<tr>
<td>Covanta Holding Corporation</td>
<td>$1,739</td>
<td>$4,182</td>
<td>$1,863</td>
<td>8.7%</td>
<td>$341</td>
<td>1.4%</td>
<td>23.4%</td>
<td>9.5x</td>
<td>12.3x 2.2x</td>
</tr>
<tr>
<td>US Ecology, Inc.</td>
<td>$1,388</td>
<td>$1,638</td>
<td>$542</td>
<td>11.2%</td>
<td>$123</td>
<td>8.8%</td>
<td>23.3%</td>
<td>11.9x</td>
<td>13.3x 3.0x</td>
</tr>
<tr>
<td>Casella Waste Systems, Inc.</td>
<td>$1,223</td>
<td>$1,736</td>
<td>$637</td>
<td>7.6%</td>
<td>$118</td>
<td>9.6%</td>
<td>21.8%</td>
<td>11.4x</td>
<td>14.8x 2.7x</td>
</tr>
<tr>
<td>Heritage-Crystal Clean, Inc</td>
<td>$530</td>
<td>$514</td>
<td>$399</td>
<td>11.8%</td>
<td>$43</td>
<td>9.1%</td>
<td>12.4%</td>
<td>9.5x</td>
<td>11.9x 1.3x</td>
</tr>
<tr>
<td>Charah Solutions, Inc.</td>
<td>$243</td>
<td>$480</td>
<td>$706</td>
<td>0.0%</td>
<td>$78</td>
<td>7.4%</td>
<td>12.8%</td>
<td>4.9x</td>
<td>6.1x 0.7x</td>
</tr>
<tr>
<td>Median</td>
<td>$1,563</td>
<td>$2,866</td>
<td>$1,127</td>
<td>8.2%</td>
<td>$232</td>
<td>7.0%</td>
<td>21.8%</td>
<td>9.2x</td>
<td>11.2x 2.0x</td>
</tr>
<tr>
<td>Mean</td>
<td>$1,667</td>
<td>$2,850</td>
<td>$1,551</td>
<td>6.6%</td>
<td>$270</td>
<td>5.7%</td>
<td>19.7%</td>
<td>9.1x</td>
<td>11.0x 1.9x</td>
</tr>
</tbody>
</table>

Source: Capital IQ. Data as of December 31, 2018.

LTM refers to last twelve months. NTM refers to next twelve months.
### PUBLIC COMPARABLE ANALYSIS
TRADING MULTIPLES & OPERATING STATISTICS

(Figures in USD millions, except percentages and ratios)

<table>
<thead>
<tr>
<th>Company</th>
<th>Stock Price</th>
<th>52-Week High</th>
<th>% of 52-Week High</th>
<th>EBITDA (CY+1)</th>
<th>EBITDA (CY+2)</th>
<th>5-Year EPS CAGR</th>
<th>Gross Margin</th>
<th>EBIT</th>
<th>EBITDA</th>
<th>Total Debt / EBITDA</th>
<th>LTM EBITDA / Int Exp</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Large Capitalization Waste, Recycling and Remediation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waste Management, Inc.</td>
<td>$90</td>
<td>$93</td>
<td>97%</td>
<td>5%</td>
<td>5%</td>
<td>11%</td>
<td>38%</td>
<td>18%</td>
<td>28%</td>
<td>2.4x</td>
<td>11.1x</td>
</tr>
<tr>
<td>Republic Services, Inc.</td>
<td>$73</td>
<td>$76</td>
<td>96%</td>
<td>2%</td>
<td>6%</td>
<td>10%</td>
<td>38%</td>
<td>17%</td>
<td>28%</td>
<td>2.9x</td>
<td>7.1x</td>
</tr>
<tr>
<td>Waste Connections, Inc.</td>
<td>$80</td>
<td>$81</td>
<td>98%</td>
<td>7%</td>
<td>10%</td>
<td>12%</td>
<td>42%</td>
<td>18%</td>
<td>32%</td>
<td>2.5x</td>
<td>11.8x</td>
</tr>
<tr>
<td><strong>Median</strong></td>
<td>$80</td>
<td>$81</td>
<td>97%</td>
<td>5%</td>
<td>6%</td>
<td>11%</td>
<td>38%</td>
<td>18%</td>
<td>28%</td>
<td>2.5x</td>
<td>11.1x</td>
</tr>
<tr>
<td><strong>Mean</strong></td>
<td>$81</td>
<td>$83</td>
<td>97%</td>
<td>4%</td>
<td>7%</td>
<td>11%</td>
<td>39%</td>
<td>18%</td>
<td>29%</td>
<td>2.6x</td>
<td>10.0x</td>
</tr>
<tr>
<td><strong>Small Cap &amp; Specialty Services</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stericycle, Inc.</td>
<td>$59</td>
<td>$77</td>
<td>76%</td>
<td>-7%</td>
<td>7%</td>
<td>8%</td>
<td>39%</td>
<td>10%</td>
<td>17%</td>
<td>4.7x</td>
<td>6.3x</td>
</tr>
<tr>
<td>Clean Harbors, Inc.</td>
<td>$72</td>
<td>$73</td>
<td>99%</td>
<td>12%</td>
<td>7%</td>
<td>11%</td>
<td>30%</td>
<td>5%</td>
<td>15%</td>
<td>3.5x</td>
<td>5.6x</td>
</tr>
<tr>
<td>Advanced Disposal Services, Inc.</td>
<td>$27</td>
<td>$28</td>
<td>97%</td>
<td>3%</td>
<td>5%</td>
<td>16%</td>
<td>35%</td>
<td>6%</td>
<td>25%</td>
<td>4.9x</td>
<td>4.1x</td>
</tr>
<tr>
<td>Covanta Holding Corporation</td>
<td>$16</td>
<td>$18</td>
<td>90%</td>
<td>9%</td>
<td>2%</td>
<td>16%</td>
<td>31%</td>
<td>6%</td>
<td>18%</td>
<td>7.3x</td>
<td>2.2x</td>
</tr>
<tr>
<td>US Ecology, Inc.</td>
<td>$74</td>
<td>$77</td>
<td>96%</td>
<td>13%</td>
<td>10%</td>
<td>10%</td>
<td>32%</td>
<td>15%</td>
<td>23%</td>
<td>2.2x</td>
<td>10.7x</td>
</tr>
<tr>
<td>Casella Waste Systems, Inc.</td>
<td>$31</td>
<td>$34</td>
<td>92%</td>
<td>7%</td>
<td>9%</td>
<td>5%</td>
<td>32%</td>
<td>8%</td>
<td>18%</td>
<td>4.4x</td>
<td>4.6x</td>
</tr>
<tr>
<td>Heritage-Crystal Clean, Inc</td>
<td>$21</td>
<td>$25</td>
<td>85%</td>
<td>-1%</td>
<td>22%</td>
<td>15%</td>
<td>23%</td>
<td>7%</td>
<td>11%</td>
<td>0.7x</td>
<td>30.8x</td>
</tr>
<tr>
<td>Charah Solutions, Inc.</td>
<td>$8</td>
<td>$12</td>
<td>66%</td>
<td>NM</td>
<td>25%</td>
<td>46%</td>
<td>15%</td>
<td>6%</td>
<td>11%</td>
<td>3.8x</td>
<td>3.5x</td>
</tr>
<tr>
<td><strong>Median</strong></td>
<td>$29</td>
<td>$31</td>
<td>91%</td>
<td>7%</td>
<td>8%</td>
<td>13%</td>
<td>31%</td>
<td>7%</td>
<td>18%</td>
<td>4.1x</td>
<td>5.1x</td>
</tr>
<tr>
<td><strong>Mean</strong></td>
<td>$38</td>
<td>$43</td>
<td>87%</td>
<td>5%</td>
<td>11%</td>
<td>16%</td>
<td>30%</td>
<td>8%</td>
<td>17%</td>
<td>3.9x</td>
<td>8.5x</td>
</tr>
</tbody>
</table>

Source: Capital IQ. Data as of December 31, 2018.
LTM refers to last twelve months. NTM refers to next twelve months. CY refers to current year.
## PUBLIC COMPARABLE ANALYSIS

### GROWTH, MARGINS & MULTIPLES

<table>
<thead>
<tr>
<th>Company</th>
<th>Revenue Growth (LTM)</th>
<th>EBITDA Margin (LTM)</th>
<th>EV/EBITDA (LTM)</th>
<th>Revenue Growth (NTM)</th>
<th>EBITDA Margin (NTM)</th>
<th>EV/EBITDA (NTM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waste Management, Inc.</td>
<td>3%</td>
<td>28%</td>
<td>11.6x</td>
<td>4%</td>
<td>28%</td>
<td>11.0x</td>
</tr>
<tr>
<td>Republic Services, Inc.</td>
<td>2%</td>
<td>32%</td>
<td>11.3x</td>
<td>3%</td>
<td>32%</td>
<td>10.8x</td>
</tr>
<tr>
<td>Waste Connections, Inc.</td>
<td>7%</td>
<td>17%</td>
<td>15.1x</td>
<td>NA</td>
<td>NA</td>
<td>9.8x</td>
</tr>
<tr>
<td>Stericycle, Inc.</td>
<td>NA</td>
<td>18%</td>
<td>10.0x</td>
<td>9%</td>
<td>18%</td>
<td>8.1x</td>
</tr>
<tr>
<td>Clean Harbors, Inc.</td>
<td>10%</td>
<td>23%</td>
<td>8.8x</td>
<td>7%</td>
<td>23%</td>
<td>8.2x</td>
</tr>
<tr>
<td>Advanced Disposal Services, Inc.</td>
<td>5%</td>
<td>23%</td>
<td>10.4x</td>
<td>4%</td>
<td>23%</td>
<td>8.5x</td>
</tr>
<tr>
<td>Covanta Holding Corporation</td>
<td>9%</td>
<td>18%</td>
<td>12.3x</td>
<td>1%</td>
<td>18%</td>
<td>11.9x</td>
</tr>
<tr>
<td>US Ecology, Inc.</td>
<td>11%</td>
<td>8%</td>
<td>13.3x</td>
<td>1%</td>
<td>8%</td>
<td>11.4x</td>
</tr>
<tr>
<td>Casella Waste Systems, Inc.</td>
<td>8%</td>
<td>11%</td>
<td>14.8x</td>
<td>9%</td>
<td>11%</td>
<td>9.5x</td>
</tr>
<tr>
<td>Heritage-Crystal Clean, Inc</td>
<td>12%</td>
<td>11%</td>
<td>11.9x</td>
<td>7%</td>
<td>11%</td>
<td>4.9x</td>
</tr>
<tr>
<td>Charah Solutions, Inc.</td>
<td>NA</td>
<td>0%</td>
<td>6.1x</td>
<td>0%</td>
<td>0%</td>
<td>0.0x</td>
</tr>
</tbody>
</table>

Source: Capital IQ. Data as of December 31, 2018.

“LTM” refers to last twelve months. “NTM” refers to next twelve months.
PUBLIC COMPARABLE ANALYSIS
PERFORMANCE ANALYSIS

INDUSTRY PEER GROUP
MEDIAN EV/NTM EBITDA

PEER GROUP PERFORMANCE

• The robust price appreciation in public equities has outpaced corporate earnings growth, which has resulted in significant valuation multiple expansion.

• The median EV/NTM EBITDA multiple for the large cap waste management peer group currently trades at 11.0x, while the small cap and specialized waste peer group trades at 9.0x.

• The Large Cap Waste – Peer Group has underperformed the S&P 500 over the most recent 10-year period, ending December 31, 2018. However, this peer group outperformed the Dow Jones US Waste & Disposal Services Index.

• The Small Cap & Specialized Waste – Peer Group has underperformed S&P 500 significantly, lagging by 186 percent over the 10-year period.

Source: Capital IQ. Data as of December 31, 2018.
Custom indices are market capitalization weighted. Further detail on index constituents is provided on pages 10 and 11.
PUBLIC COMPARABLE ANALYSIS
PERFORMANCE ANALYSIS

YEAR-TO-DATE PERFORMANCE

• Equity markets experienced volatility in 2018, as many factors including Brexit, trade tensions, government policies, and a fear of slowing corporate growth.

• The public waste industry participants experienced this volatility and closed the year erasing previous gains achieved during 2017.

• The Large Cap Waste – Peer Group outperformed the S&P 500 during the year, ending December 31, 2018, finishing the year with a 5 percent gain.

• The Small Cap & Specialized Waste – Peer Group underperformed the S&P 500, closing the year with a loss of 21 percent.

Source: Capital IQ. Data as of December 31, 2018.
Custom indexes are market capitalization weighted. Further detail on index constituents is provided on pages 10 and 11.
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