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## MEMORANDUM

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**TO:** Peter Joseph, Town Manager

**CC:** Town Council

**FROM:** Adam Bliss, P.E., Town Engineer

**DATE:** February 28, 2019

**SUBJECT:** Recycling Contamination

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### **Executive Summary**

The Town Council was presented with contaminated recycling information during the February 26<sup>th</sup> meeting. The meeting generated a robust discussion on how to reduce fees incurred for contaminated recyclables exceeding 25 percent. This memorandum presents options for Council discussion on how to minimize the contaminated recycling fees at the Recycling Container sites (also known as Silver Bullets).

The options are attached to this memorandum and identify pros, cons, and potential costs. The Town has a good recycling rate of 35 percent and while we do not want this rate to decline, we should not subsidize out-of-Town users or intentional violators. The analysis presented at the February 26<sup>th</sup> meeting strongly suggests we eliminate two of the four Container sites in attempt to reduce contamination levels above level 3 (greater than 15 percent). The eliminated sites could be permanently or temporarily removed or relocated to the Transfer Station. With any change, one behavior pattern is apt to be substituted for another pattern with some unintended consequences. These types of issues are presented in the Table and intended to generate more discussion at the next meeting.

### **Background**

The Town of Freeport is an Owner Community of ecomaine, where our solid waste and recyclables are either processed for energy conversion or sold to the commodities markets. Owner Communities only pay contaminated recycling fees that exceed 25 percent whereas Member Communities pay fees based on a sliding scale for contaminations above 6 percent. All loads exceeding 25 percent are rejected and brought to the MSW energy conversion area where we pay \$70.50 per ton which will increase to \$73.00 per ton on July 1, 2019. All trips brought to ecomaine carry a transportation charge to cover fuel, mileage, and driver labor. The Town presently pays a \$0 tipping fee for recyclables with contamination rates between 0 and 25

percent. The rate will increase to \$35 per ton on July 1, 2019. I expect the rate increase to be reflected in our annual Operating Budget in the amount of \$30,000.

### **Defining the Problem**

There are three means for collecting recyclables which are at the (1) Transfer Station, (2) Recycling Containers, and 3) Curbside Collection by private haulers. Contaminated Recycling is a complex problem occurring within the Recycling Containers and at Curbside Collection. The Transfer Station is our best performer at an average contamination level of 2 percent because it is a well-monitored site controlled through regular operating hours and a security gate. Our worst performer is curbside collection at an average of 26 percent. Recent meetings with Pine Tree Waste and Town Council have indentified measures to reduce contamination levels at curbside. These measures include amending the Solid Waste Ordinance to pass contaminated recycling fees on to private haulers, monitoring curbside addresses where contamination levels are historically high, and targeting these addresses with recycling education materials.

### **Options, Solutions, and Focused Recommendations**

The attached Table provides options for addressing contamination. The analysis presented at the Council meeting supports removing two of the four containers, namely Doherty's Market and West Street (Public Safety Building). These two sites have the highest contamination above level 3, produce a lot of volume, and generate many trips to ecomaine. The Doherty's Market location is the least secure and has the highest potential for out-of-Town use. The West Street location seems to offer high security potential but is a poor performer and known to generate volume from out-of-Town users. While the West Street location is convenient for recyclers, it is challenging to maintain because of routine traffic conflicts with emergency and police vehicles and windblown materials.

Removal of all Container sites may be too extreme of an initial effort but there is certainly a precedent as other Communities have found their operating budgets cannot support additional fees. Security fencing and video monitoring come with high initial capital costs which would never be offset by revenue collected from relatively low fines. Enforcement would be difficult and time-inefficient since many hours of video would have to be reviewed to identify a violator for an occurrence that happened days or weeks beforehand. Video monitoring would only be able to identify the large, bulky items with difficulty on smaller, concealed items. Security fencing still leaves the potential as a deposit site.

Increased staffing for monitoring and educational outreach could be effective at reducing contamination levels. Cross-training may also allow them to perform other municipal services, if desired or as necessary.

Graphics are provided with the Table attached to this memorandum. I am happy to address questions and discuss other ideas during the March 5<sup>th</sup> Council meeting. Annual contaminated recycling costs average about \$10,000. Private hauler contamination fines average about \$3,000 per year.

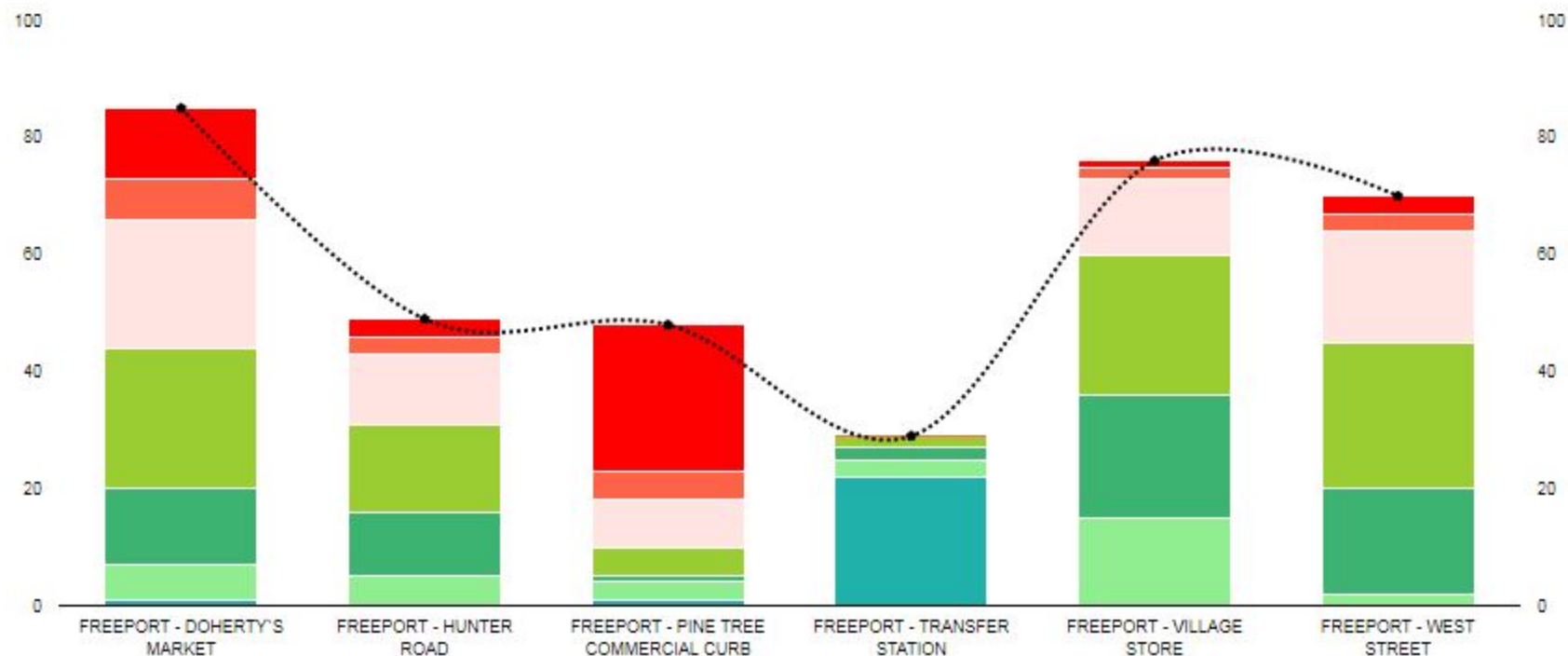
| Option Number | Description   | Pros   | Cons  | Cost                      |
|---------------|---|--|---|---------------------------|
| 1             | Remove 2 highest Contaminated Container Sites   | Contaminated Recycling fees decrease;<br>Contaminated Recycling rates decrease;<br>Positive public perception and good press from low reported contamination rates       | Other Container sites experience higher contamination rates through substitution;<br>Recycling rates decrease   | \$0                       |
| 2             | Remove all Container Sites  | Eliminates out-of-Town (pass-through) users;<br>No longer subsidize out-of-Town users;<br>Contaminated Recycling Fees Decrease;<br>Contaminated Recycling Rates Decrease | Recycling rates decrease;<br>People substitute Container sites for curbside collection (a high offender)  | \$0                       |
| 3             | Install security fencing around all sites and restrict to regular daytime schedule consistent with Transfer Station hours | Effective physical and time control measure  | Costly;<br>Lacks monitoring, an effective control measure;<br>Potential to remain a deposit site for large, bulky items   | \$15,000 - \$30,000       |
| 4             | Install security cameras  | Reduces large, bulky non-recyclable items only   | Costly;<br>Monitoring is time inefficient and does not provide enough benefit to balance out low amounts of collected fines;<br>Does not eliminate small, concealed items | \$10,000 - \$20,000       |
| 5             | Relocate one, multiple, or all Container sites to Transfer Station  | Excellent control over contamination problem;<br>Education outreach becomes more effective   | May need to hire additional staff person  | \$5,000 - \$50,000        |
| 6             | Hire (1) full-time staff person to monitor sites  | Addresses staffing need with the Department and potentially other Departments;<br>Provides monitoring and education outreach opportunity                                 | One person cannot be at all four sites at any given time  | \$35,000 - \$50,000       |
| 7             | Hire (1) half-time staff person to monitor sites  | Provides monitoring and education outreach opportunity   | Difficult to find applicants for positions that do not offer benefits;<br>One person cannot be at all four sites at any given time  | \$15,000 - \$20,000       |
| 8             | Increase Transfer Station sticker and Solid Waste License fees  | Potentially offsets contamination fees   | Doesn't address the contamination problem;<br>Initial negative public reaction  | \$0                       |
| 9             | Reduce Container opening sizes  | Eliminates large, bulky items  | Containers rotate from Town-to-Town so not viable unless fabricated components were routinely removed and replaced.   | \$1,000 - \$2,000         |
| 10            | Do Nothing  | None   | Costs increase; Negative Press;<br>Environmentally irresponsible  | \$10,000 (annual average) |

| Total Tons ▲ | Tons Contaminated | Tons Clean Materials | Number of Trips |
|--------------|-------------------|----------------------|-----------------|
| 420.76       | 58.97             | 361.79               | 357             |

| [LOCATION]                           | Contaminated Percent ▼ | Tons Contaminated | Total Clean Material | Total Tons | Total Trips | [Total Costs] |
|--------------------------------------|------------------------|-------------------|----------------------|------------|-------------|---------------|
| FREEPORT - PINE TREE COMMERCIAL CURB | 26.34%                 | 21.29             | 59.53                | 80.82      | 48          | \$2,788       |
| FREEPORT - DOHERTY`S MARKET          | 17.50%                 | 10.47             | 49.36                | 59.83      | 85          | \$4,046       |
| FREEPORT - WEST STREET               | 16.29%                 | 11.09             | 56.98                | 68.07      | 70          | \$3,207       |
| FREEPORT - HUNTER ROAD               | 16.26%                 | 5.93              | 30.52                | 36.45      | 49          | \$2,127       |
| FREEPORT - VILLAGE STORE             | 12.98%                 | 8.15              | 54.61                | 62.75      | 76          | \$2,731       |
| FREEPORT - TRANSFER STATION          | 1.82%                  | 2.05              | 110.79               | 112.84     | 29          | \$160         |

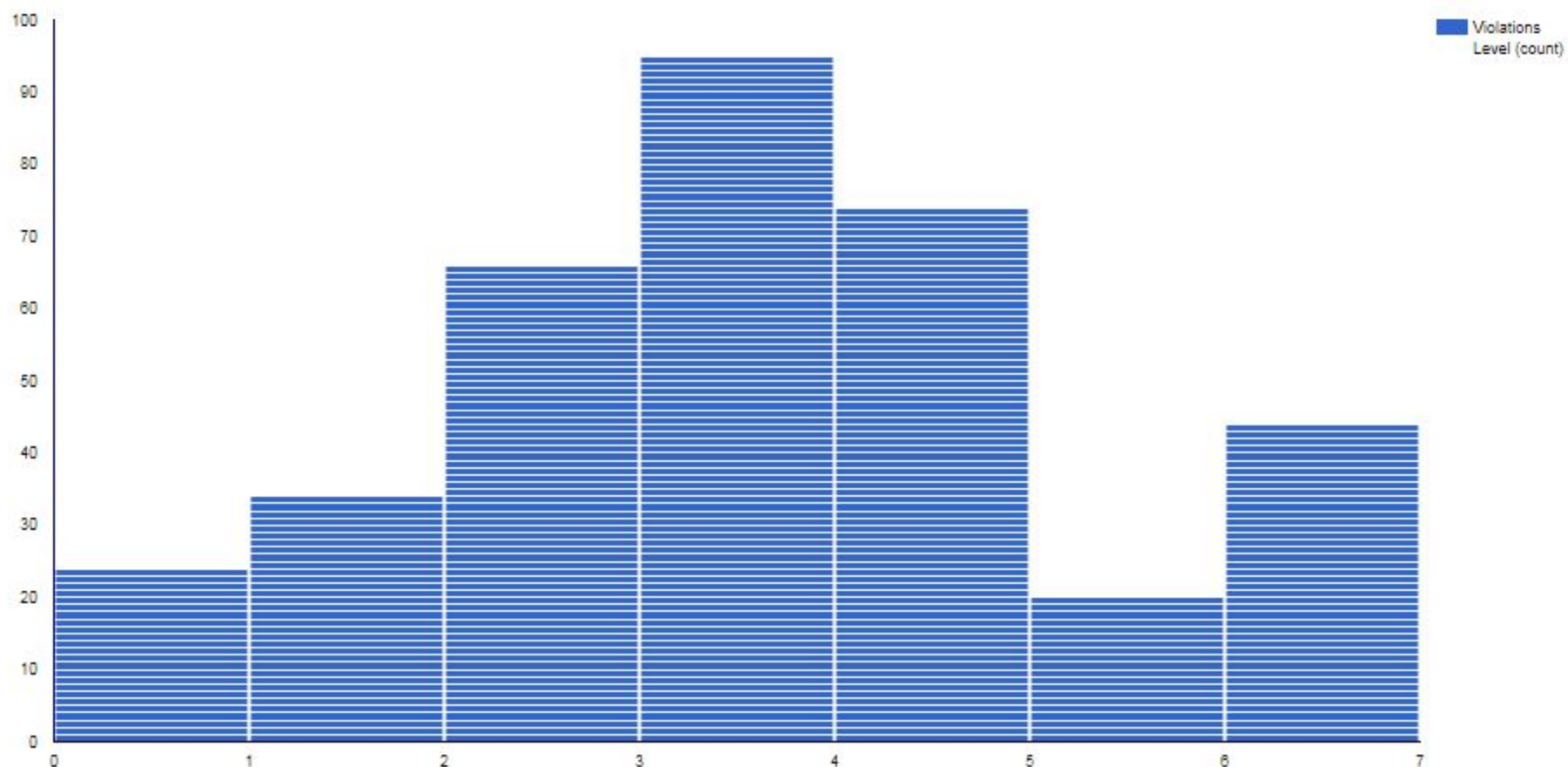
# Freeport Recycle Site Distribution of Violations and Number of Trips per Site.

*Distribution of location violations and number of trips per site. Violations range from a low of level 0 to a high of level 6.*



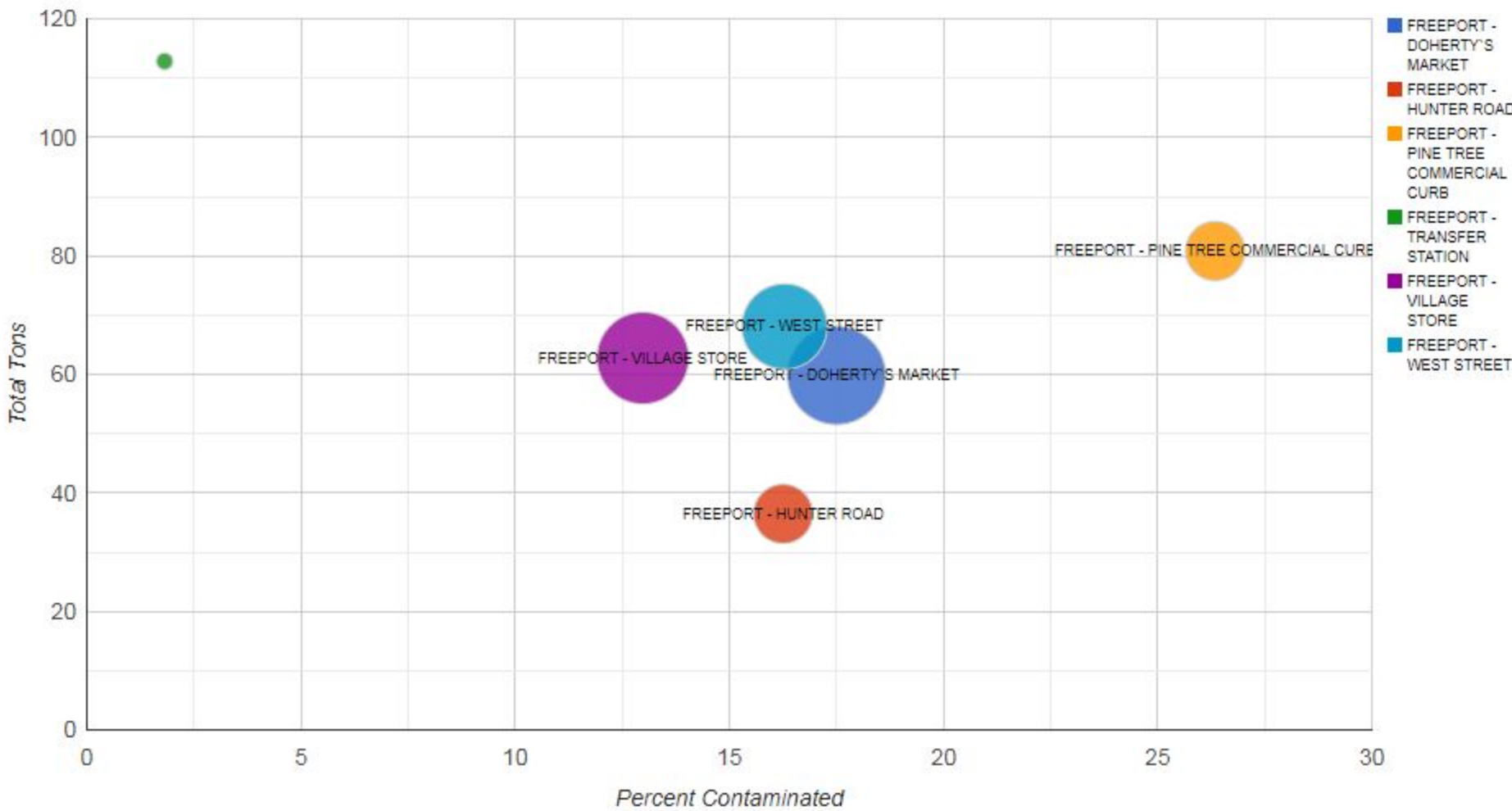
# Freeport Histogram of Contamination Level Violations

- *Level 0 loads which contain < 3% contaminants by volume*
- *Level 1 loads which contain 3-5% contaminants by volume*
- *Level 2 loads which contain 6-10% contaminants by volume*
- *Level 3 loads which contain 11-15% contaminants by volume*
- *Level 4 loads which contain 16-20% contaminants by volume*
- *Level 5 loads which contain 21-25% contaminants by volume*
- *Level 6 loads which contain 26% or higher contaminants by volume*



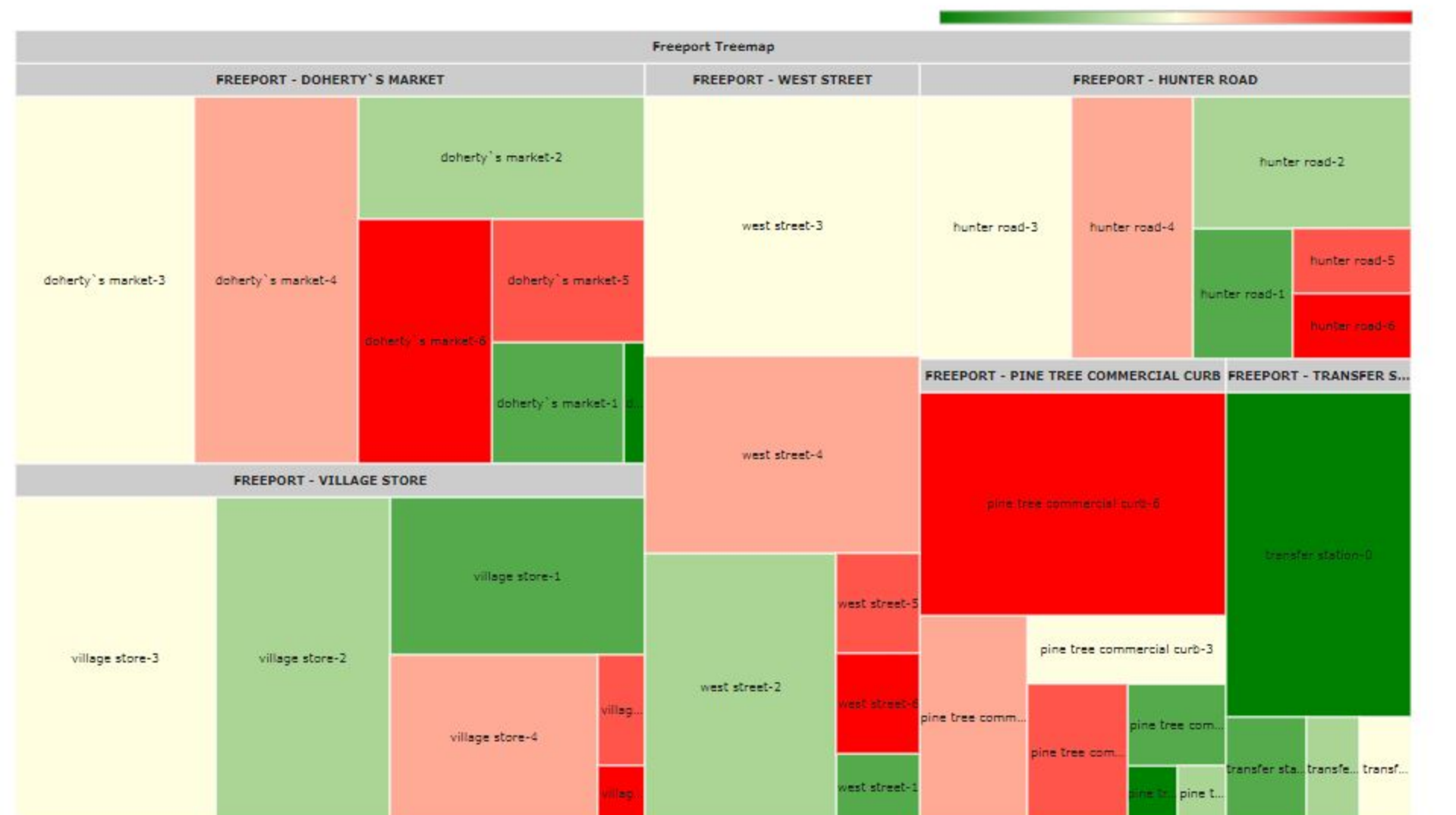
# Freeport Silver Bullets Contaminated Percents vs Tons Bubble Chart with Bubble Size expressed as Total Trips

*Note: Transfer Station has lowest percentage of contaminated materials based on monitoring of submittals.*



Breakdown of the seven(7) levels of Violations by site and number of trips. The size of the boxes represent the number of trips and the color represents the level of violation.

The scale runs from **Green** to **Red** with Green representing the cleanest recycle materials.



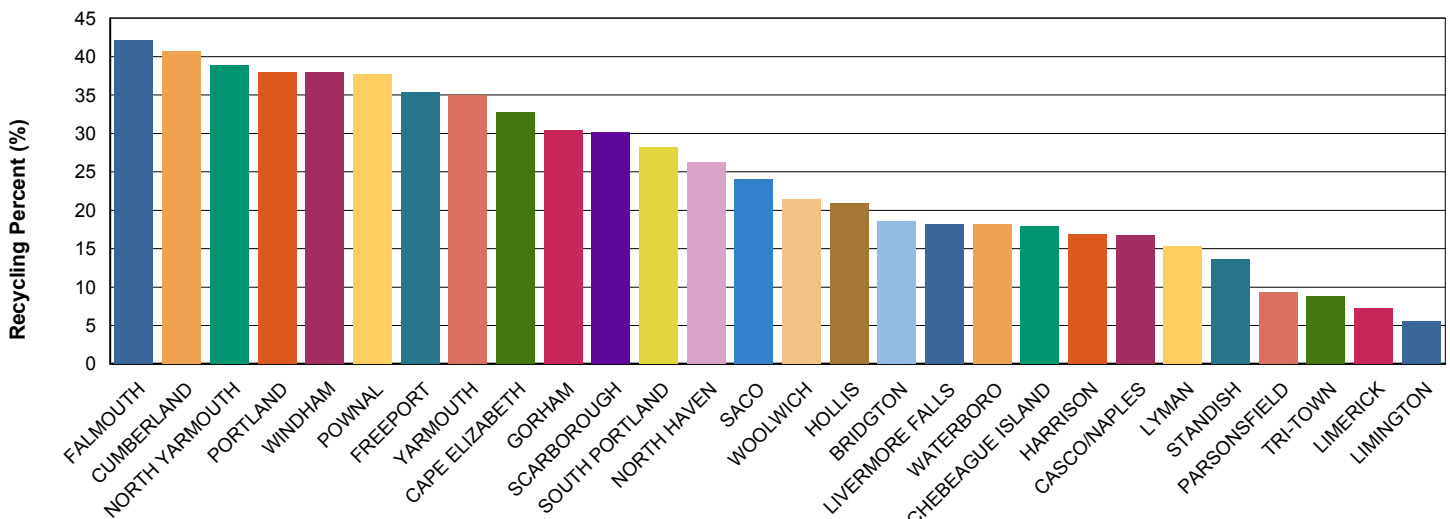


## Neighborhood Recycling Monthly Totals

For the period: 7/1/2017 to 6/30/2018

| Origin                                    | Population   | Town Tons<br>MSW | Town Tons -<br>Rec Drop-Off | Town Tons<br>-Rec Curb | Town Tons<br>-Rec Total | Town MSW +<br>Rec Total | Town % Rec   |
|---|--------------|------------------|-----------------------------|------------------------|-------------------------|-------------------------|--------------|
| BRIDGTON                                  | 5,120        | 2,344.05         | 534.79                      | -                      | 534.79                  | 2,878.84                | 18.6%        |
| CAPE ELIZABETH                            | 9,015        | 2,099.19         | 1,023.05                    | -                      | 1,023.05                | 3,122.23                | 32.8%        |
| CASCO/NAPLES                              |              | 2,100.94         | 421.60                      | -                      | 421.60                  | 2,522.54                | 16.7%        |
| Casco MSW Actual; Recycling Split (45%):  | 3,742        | 953.75           | 189.72                      | -                      | 189.72                  | 1,143.47                | 16.6%        |
| Naples MSW Actual; Recycling Split (55%): | 3,872        | 1,147.19         | 231.88                      | -                      | 231.88                  | 1,379.07                | 16.8%        |
| CHEBEAGUE ISLAND                          | 346          | 233.09           | 50.83                       | -                      | 50.83                   | 283.92                  | 17.9%        |
| CUMBERLAND                                | 7,211        | 1,353.01         | -                           | 929.27                 | 929.27                  | 2,282.28                | 40.7%        |
| FALMOUTH                                  | 11,185       | 2,023.94         | 349.60                      | 1,122.76               | 1,472.36                | 3,496.30                | 42.1%        |
| <b>FREEPORT</b>                           | <b>7,879</b> | <b>1,524.77</b>  | <b>654.76</b>               | <b>176.96</b>          | <b>831.72</b>           | <b>2,356.49</b>         | <b>35.3%</b> |
| GORHAM                                    | 16,381       | 2,653.71         | 205.40                      | 954.04                 | 1,159.44                | 3,813.15                | 30.4%        |
| HARRISON                                  | 2,730        | 916.28           | 185.51                      | -                      | 185.51                  | 1,101.79                | 16.8%        |
| HOLLIS                                    | 4,281        | 1,102.37         | -                           | 290.51                 | 290.51                  | 1,392.88                | 20.9%        |
| LIMERICK                                  | 2,892        | 1,343.81         | 105.00                      | -                      | 105.00                  | 1,448.81                | 7.2%         |
| LIMINGTON                                 | 3,713        | 1,663.14         | 97.29                       | -                      | 97.29                   | 1,760.43                | 5.5%         |
| LIVERMORE FALLS                           | 3,187        | 509.63           | 113.38                      | -                      | 113.38                  | 623.01                  | 18.2%        |
| LYMAN                                     | 4,344        | 1,280.03         | 231.03                      | -                      | 231.03                  | 1,511.06                | 15.3%        |
| NORTH HAVEN                               | 355          | 199.85           | 71.11                       | -                      | 71.11                   | 270.96                  | 26.2%        |
| NORTH YARMOUTH                            | 3,565        | 650.06           | -                           | 413.38                 | 413.38                  | 1,063.44                | 38.9%        |
| PARSONSFIELD                              | 1,898        | 738.73           | -                           | 75.99                  | 75.99                   | 814.72                  | 9.3%         |
| PORTLAND                                  | 66,194       | 9,031.65         | 845.62                      | 4,688.13               | 5,533.76                | 14,565.40               | 38.0%        |
| POWNAI                                    | 1,474        | 238.16           | -                           | 144.10                 | 144.10                  | 382.26                  | 37.7%        |
| SACO                                      | 18,482       | 5,352.29         | 71.88                       | 1,628.22               | 1,700.11                | 7,052.40                | 24.1%        |
| SCARBOROUGH                               | 18,919       | 5,510.20         | 507.03                      | 1,869.69               | 2,376.72                | 7,886.91                | 30.1%        |
| SOUTH PORTLAND                            | 25,002       | 5,787.64         | 188.56                      | 2,088.93               | 2,277.49                | 8,065.13                | 28.2%        |
| STANDISH                                  | 9,874        | 2,995.03         | 471.36                      | -                      | 471.36                  | 3,466.39                | 13.6%        |
| TRI-TOWN                                  | 4,643        | 1,716.21         | 165.87                      | -                      | 165.87                  | 1,882.08                | 8.8%         |
| Baldwin MSW & Recycling Split (1/3):      |              | 572.07           | 55.29                       | -                      | 55.29                   | 627.36                  |              |
| Hiram MSW & Recycling Split (1/3):        |              | 572.07           | 55.29                       | -                      | 55.29                   | 627.36                  |              |
| Porter MSW & Recycling Split (1/3):       |              | 572.07           | 55.29                       | -                      | 55.29                   | 627.36                  |              |
| WATERBORO                                 | 7,693        | 2,081.63         | 460.66                      | -                      | 460.66                  | 2,542.29                | 18.1%        |
| WINDHAM                                   | 17,001       | 2,394.06         | 124.18                      | 1,339.70               | 1,463.88                | 3,857.94                | 37.9%        |
| WOOLWICH                                  | 3,072        | 842.75           | 12.24                       | 216.95                 | 229.19                  | 1,071.94                | 21.4%        |
| YARMOUTH                                  | 8,349        | 1,953.06         | 891.28                      | 161.31                 | 1,052.58                | 3,005.64                | 35.0%        |
| Grand Total:                              |              | <b>60,639.26</b> | <b>7,782.02</b>             | <b>16,099.94</b>       | <b>23,881.96</b>        | <b>84,521.22</b>        | <b>28.3%</b> |

## Recycling Percent by Origin



## Neighborhood Recycling Monthly Totals

For the period: 6/1/2018 to 6/30/2018

| Origin                                    | Population   | Town Tons<br>MSW | Town Tons -<br>Rec Drop-Off | Town Tons<br>-Rec Curb | Town Tons<br>-Rec Total | Town MSW +<br>Rec Total | Town % Rec   |
|---|--------------|------------------|-----------------------------|------------------------|-------------------------|-------------------------|--------------|
| BRIDGTON                                  | 5,120        | 203.73           | 52.67                       | -                      | 52.67                   | 256.40                  | 20.5%        |
| CAPE ELIZABETH                            | 9,015        | 168.79           | 78.64                       | -                      | 78.64                   | 247.43                  | 31.8%        |
| CASCO/NAPLES                              |              | 180.26           | 30.11                       | -                      | 30.11                   | 210.37                  | 14.3%        |
| Casco MSW Actual; Recycling Split (45%):  | 3,742        | 81.70            | 13.55                       | -                      | 13.55                   | 95.25                   | 14.2%        |
| Naples MSW Actual; Recycling Split (55%): | 3,872        | 98.56            | 16.56                       | -                      | 16.56                   | 115.12                  | 14.4%        |
| CHEBEAGUE ISLAND                          | 346          | 34.37            | 4.87                        | -                      | 4.87                    | 39.24                   | 12.4%        |
| CUMBERLAND                                | 7,211        | 108.07           | -                           | 74.52                  | 74.52                   | 182.59                  | 40.8%        |
| FALMOUTH                                  | 11,185       | 181.83           | 28.33                       | 84.90                  | 113.23                  | 295.06                  | 38.4%        |
| <b>FREEPORT</b>                           | <b>7,879</b> | <b>133.49</b>    | <b>67.47</b>                | <b>13.24</b>           | <b>80.71</b>            | <b>214.20</b>           | <b>37.7%</b> |
| GORHAM                                    | 16,381       | 221.27           | 13.53                       | 65.46                  | 78.99                   | 300.26                  | 26.3%        |
| HARRISON                                  | 2,730        | 84.76            | 14.87                       | -                      | 14.87                   | 99.63                   | 14.9%        |
| HOLLIS                                    | 4,281        | 93.22            | -                           | 24.25                  | 24.25                   | 117.47                  | 20.6%        |
| LIMERICK                                  | 2,892        | 111.38           | 11.13                       | -                      | 11.13                   | 122.51                  | 9.1%         |
| LIMINGTON                                 | 3,713        | 142.97           | 10.10                       | -                      | 10.10                   | 153.07                  | 6.6%         |
| LIVERMORE FALLS                           | 3,187        | 24.29            | 7.86                        | -                      | 7.86                    | 32.15                   | 24.4%        |
| LYMAN                                     | 4,344        | 120.92           | 18.80                       | -                      | 18.80                   | 139.72                  | 13.5%        |
| NORTH HAVEN                               | 355          | 11.12            | 10.50                       | -                      | 10.50                   | 21.62                   | 48.6%        |
| NORTH YARMOUTH                            | 3,565        | 51.23            | -                           | 32.12                  | 32.12                   | 83.35                   | 38.5%        |
| PARSONSFIELD                              | 1,898        | 76.69            | -                           | 6.26                   | 6.26                    | 82.95                   | 7.5%         |
| PORTLAND                                  | 66,194       | 750.25           | 81.60                       | 382.26                 | 463.86                  | 1,214.10                | 38.2%        |
| POWNA                                     | 1,474        | 24.59            | -                           | 12.99                  | 12.99                   | 37.58                   | 34.6%        |
| SACO                                      | 18,482       | 456.54           | 3.53                        | 140.08                 | 143.61                  | 600.15                  | 23.9%        |
| SCARBOROUGH                               | 18,919       | 474.51           | 44.20                       | 159.94                 | 204.14                  | 678.65                  | 30.1%        |
| SOUTH PORTLAND                            | 25,002       | 500.42           | 20.54                       | 178.84                 | 199.38                  | 699.80                  | 28.5%        |
| STANDISH                                  | 9,874        | 286.77           | 42.24                       | -                      | 42.24                   | 329.01                  | 12.8%        |
| TRI-TOWN                                  | 4,643        | 146.64           | 12.84                       | -                      | 12.84                   | 159.48                  | 8.1%         |
| Baldwin MSW & Recycling Split (1/3):      |              | 48.88            | 4.28                        | -                      | 4.28                    | 53.16                   |              |
| Hiram MSW & Recycling Split (1/3):        |              | 48.88            | 4.28                        | -                      | 4.28                    | 53.16                   |              |
| Porter MSW & Recycling Split (1/3):       |              | 48.88            | 4.28                        | -                      | 4.28                    | 53.16                   |              |
| WATERBORO                                 | 7,693        | 148.24           | 39.89                       | -                      | 39.89                   | 188.13                  | 21.2%        |
| WINDHAM                                   | 17,001       | 191.29           | 5.05                        | 114.72                 | 119.77                  | 311.06                  | 38.5%        |
| WOOLWICH                                  | 3,072        | 66.32            | -                           | 18.04                  | 18.04                   | 84.36                   | 21.4%        |
| YARMOUTH                                  | 8,349        | 179.30           | 78.13                       | 14.80                  | 92.93                   | 272.23                  | 34.1%        |
| Grand Total:                              |              | <b>5,173.26</b>  | <b>676.90</b>               | <b>1,322.42</b>        | <b>1,999.32</b>         | <b>7,172.57</b>         | <b>27.9%</b> |

## Recycling Percent by Origin

