

## APPENDIX D Disposal Data

### A. Reference Year Waste Disposed

The majority of waste collected in the Darke County SWMD is managed through the Rumpke Transfer Facility in Greenville. However, some waste is transported directly to a landfill for disposal (Direct Haul). The following table shows data for waste hauled directly to a landfill.

**Table D-1a: Waste Disposed in Reference Year - Publicly-Available Landfills (Direct Haul)**

Facility Name	Location		Waste Accepted from the SWMD			
	County	State	Residential/ Commercial (tons)	Industrial (tons)	Excluded (tons)	Total (tons)
Apex Sanitary Landfill	Jefferson	OH			10	10
Celina Sanitary Landfill	Mercer	OH	362		690	1,052
Cherokee Run Landfill	Logan	OH	83		4	87
Evergreen Recycling & Disposal	Wood	OH		24		24
Preble County Sanitary Landfill	Preble	OH	14			14
Rumpke Waste Inc Hughes Rd. Landfill	Hamilton	OH	378	672		1,050
Stony Hollow Landfill, Inc.	Montgomery	OH	15	25	3	43
Total Landfilled in Ohio			854	721	707	2,282
<b>Out of State Landfills</b>						
Randolph Farms, Inc	Randolph	IN	9,021	1,315	7	10,343
<b>Adjusted total direct haul waste</b>			<b>9,875</b>	<b>2,036</b>	<b>714</b>	<b>12,625</b>

Source(s) of Information: Ohio Environmental Protection Agency, Annual District Review Form for 2018, Darke SWMD.

### Table D-1b Waste Disposed in Reference Year – Captive (ISW) Landfills - Omitted

Industrial solid waste (ISW) landfills are used to dispose of manufacturing waste. Currently, all ISW landfills in Ohio are owned/operated by the manufacturing companies that use the landfills. These are known as captive landfills, as the owning company is the only company that can dispose of its ISW in the facility.

There are no captive landfills in the District and no waste from the District was reported as transported to a captive landfill outside of the District.

Table D-2: Waste Transferred in Reference Year <sup>1</sup>

Facility Name	Location		Waste Received from the SWMD			
	County	State	Residential/ Commercial (tons)	Industrial (tons)	Excluded (tons)	Total (tons)
Maharg Solid Waste Transfer Facility	Mercer	OH	6			6
Montgomery County South Transfer Facility	Montgomery	OH	11			11
Shelby County Transfer Station	Shelby	OH	98			98
Miami Co. Solid Waste & Recycling Facility Miami	Miami	OH	1			1
Greenville Transfer & Scrap Tire Collection Facility	Darke	OH	32,794	683	1,299	34,777
<b>Total</b>				<b>683</b>	<b>1,299</b>	<b>34,892</b>

Source(s) of Information: Source(s) of Information: Ohio Environmental Protection Agency, Annual District Review Form for 2018, Darke SWMD.

Table D-3: Waste Incinerated/Burned for Energy Recovery in Reference Year – Omitted.

No waste from the Darke County SWMD was reported as incinerated in the reference year.

Table D-4: Total Waste Disposed in Reference Year

	Residential/ Commercial (tons)	Industrial (tons)	Excluded (tons)	Total (tons)	% of Total Waste Disposed
Direct Hauled	9,874.85	2,036.45	714.05	12,625.35	27%
Transferred	32,909.38	683.48	1,299.38	34,892.24	73%
Incinerated	0	0	0	0.00	0%
<b>Total</b>	<b>42,784</b>	<b>2,720</b>	<b>2,013</b>	<b>47,518</b>	<b>100%</b>
<b>Percent of Total</b>	90%	6%	4%	100%	

Source(s) of Information: Ohio Environmental Protection Agency, Annual District Review Form for 2018, Darke SWMD.

No waste from the District was incinerated. 90% of the waste that was disposed of in landfills was from residential and commercial sources, 6% was industrial waste, and 4% was excluded waste which included approximately 3 tons of asbestos, 345 tons of construction and demolition waste, and 359 tons of unidentified exempt waste.

**B. Historical Waste Analysis**

**Table D-5: Historical Disposal Data**

Year	Population	Residential/ Commercial Solid Waste		Industrial Solid Waste	Excluded Waste	Total Waste
		Rate (ppd)	Weight (tons)	Weight (tons) <sup>2</sup>	Weight (tons) <sup>3</sup>	Weight (tons) <sup>4</sup>
2014	52,363	3.64	34,830	955	2,565	38,350
2015	51,359	3.79	35,480	1,312	3,166	39,958
2016	50,968	4.14	38,482	1,387	1,945	41,814
2017	50,682	4.35	40,207	1,924	1,777	43,908
2018	50,469	4.65	42,784	2,719	2,014	47,517

*1. Residential/Commercial Waste*

The amount of residential commercial waste for disposal increased steadily from 2014 to 2018. As shown above, the per capita generation rose from 3.64 pounds per person per day to 4.65 pounds per person per day. Using the data that is available to the District, it is not possible to calculate how much of the increase is due to disposal from households and how much is due to increased commercial activity.

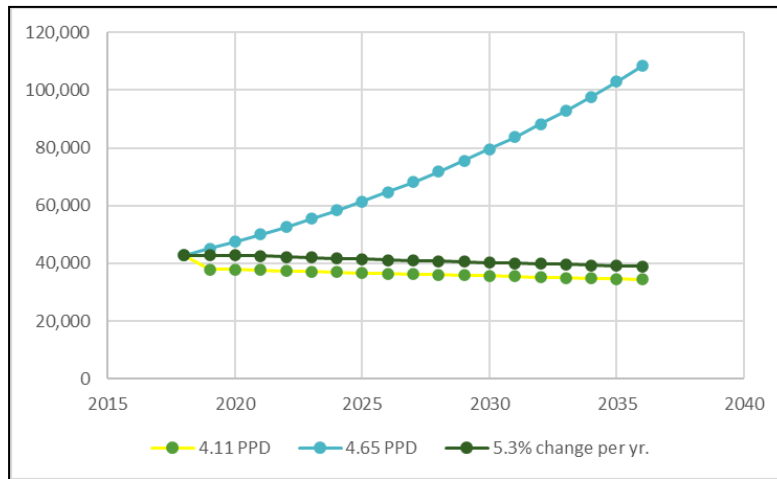
The 2015 Darke SWMD Plan projected residential/commercial waste disposal in 2018 to be 3.52 lbs./person/day. The actual amount in 2018 exceeded the projection by 1.13 pound per day. Comparing the amount of reported residential/commercial recycling in 2014 through 2018 with the amount projected in the District plan, it appears that either the waste generation projections were underestimated, or the recycling projections were overly optimistic.

To project residential/commercial disposal the District considered three methods that could be used to project disposal for the planning period. Figure D-1 illustrates the difference in the three in projecting waste disposal from 2018 through the planning period.

Three different disposal rates are assumed:

1. The average disposal rate for the 5 years 2014 through 2018 which is **4.11** pounds per person per day.
2. The per capita disposal rate for 2018 which is **4.65** pounds per person per day.
3. The average percent of change from year to year in the 5 years 2014 through 2018 which is **5.3%**

**Figure D-1. Residential/Commercial Disposal Projections: 4.11 PPD, 4.65 PPD or Average Annual Percent Change 5.3% per year.**



It is reasonable that two factors are contributing to the increase in disposal. The local commercial sector has been growing. Two large retail stores expanded, a new major retailer with regional draw opened during this period, and several smaller chain retailers opened. In a rural county where the data base is small, a few changes in the commercial sector can make a big difference in the per person waste generation. The District believes that the expansion of commercial activity will level off soon. Although residential/commercial waste has grown in recent years, it is the intention of this Plan to vigorously work to increase residential and commercial recycling and thus decrease disposal.

**Table D-5a: Residential/Commercial Disposal Rate for Selected SWMDs and Average for Ohio in 2018 for Comparison**

District	Population (rounded to nearest thousand)	Residential/Commercial Disposal Rate (lbs./person/day)
Preble County SWMD	42,000	3.32
Miami County SWMD	80,000	4.12
Auglaize County SWMD	46,000	3.06
Mercer County SWMD	41,000	3.97
North Central Joint SWMD: 6 county district)	325,000	4.42
State of Ohio 2018 average all districts		4.82

The SWMDs listed in Table D-4a are, except for the North Central Joint SWMD, single county, primarily rural districts located near Darke County. The North Central District is comprised of six counties, of which Allen County is the most populous with slightly more than 102,000 people. The other 5 counties range in size from Union at 59,000 to the least populous, Hardin,

with slightly more than 31,000. Table D-4a shows that in 2018, the Darke SWMD residential/commercial disposal rate exceeded that of neighboring rural and semi-rural counties. The disposal rate for the entire state in 2018 as reported by Ohio EPA was 4.82 pounds/person/day.

We believe that the average disposal amount over five years, 4.11 ppd, is a realistic amount for the Darke County SWMD and is in line with neighboring rural counties. The calculation is 4.11 ppd x 365 days a year x population = annual pounds of waste for disposal. The annual pounds divided by 2,000 = projected residential/commercial tons disposed.

## 2. *Industrial Waste*

Per capita data calculations are not usually relevant to industrial waste generation. The two major factors that affect the amount of waste requiring disposal are the types of industries and the level of production. In 2017 and 2018, the amount of industrial waste increased while the amount of recycling remained about the same. In 2017, a major manufacturer expanded both manufacturing and distribution capabilities adding about 100 employees. The timing of the increase in waste generation corresponds with the manufacturing growth. In spite of the 2020 Covid -19 virus, most manufacturers in the District have continued to operate. But there has been no indication that there will be additional expansions or new industrial openings in the near future. Therefore, the District does not expect the increase in industrial waste for disposal to grow as quickly as in the recent past. The average amount of growth in industrial waste in the five-year period from 2014 to 2018 was 30.79%. When this percentage is applied year after year, the amount expands quickly. The District is using annual growth of 10% per year to calculate industrial waste projections for 2019, 2020, and 2021, and for the first seven years of the planning period (2022 through 2028.) The projection is held constant at the 2028 tonnage for the rest of the planning period.

## 3. *Excluded waste*

The amount of excluded waste is particularly difficult to predict in a District like Darke SWMD where there is no predictable stream of excluded waste. The amount of excluded waste will vary from year to year depending upon random events. For instance, a one-time event like a major storm or the demolition of a large building can result in thousands of tons of demolition debris. Excluded waste was only 4% of the total waste disposal from the District in the reference year and has historically been less than 10%. The OEPA plan format allows the District to omit excluded waste calculations from projections if the amount is less than 10% of total waste generation. Excluded waste projections for the planning period are not included in this Plan.

C. Disposal Projections

Table D-6 Projections for Waste to be Disposed

Year	Residential/ Commercial Solid Waste	Industrial Solid Waste	Total Waste
	Weight (tons)	Weight (tons)	Weight (tons)
2018	42,784	2,719	45,504
2019	37,956	2,991	40,947
2020	37,820	3,291	41,111
2021	37,584	3,620	41,204
2022	37,348	3,982	41,330
2023	37,112	4,380	41,492
2024	36,876	4,818	41,694
2025	36,640	5,299	41,939
2026	36,435	5,829	42,264
2027	36,229	6,412	42,642
2028	36,025	7,054	43,078
2029	35,819	7,054	42,873
2030	35,614	7,054	42,668
2031	35,409	7,054	42,463
2032	35,204	7,054	42,258
2033	34,999	7,054	42,053
2034	34,794	7,054	41,848
2035	34,589	7,054	41,643
2036	34,500	7,054	41,554

The projections in Table D-6 are based upon the amount of waste deposited in Ohio and Indiana landfills as reported in Tables D-4 and D-5. Excluded waste is not included in the calculation. Note that because it is exceedingly difficult to project waste generation or disposal over long time periods, the District has used the option allowed in the Plan Format to keep the amount of industrial disposal stable after the first 7 years of the planning period. The Planning Period is in the shaded area.

Table D-6a. Projections for Waste to be Disposed and Transferred

Year	Total Waste	Waste Transferred (73.43% Total Disposal)
	Weight (tons)	Weight (tons)
2018	45,504	33,413
2019	40,947	40,947
2020	41,111	41,111
2021	41,204	41,204
2022	41,330	41,330
2023	41,492	41,492
2024	41,694	41,694
2025	41,939	41,939
2026	42,264	42,264
2027	42,642	42,642
2028	43,078	43,078
2029	42,873	42,873
2030	42,668	42,668
2031	42,463	42,463
2032	42,258	42,258
2033	42,053	42,053
2034	41,848	41,848
2035	41,643	41,643
2036	41,554	41,554

Source: The disposal data in this table is taken from the calculations of total disposal as shown in Table D-6. The percentage transferred is the percentage calculated for the reference year, 2018, in Table D-4. It is assumed that the percent to be managed through transfer facilities will remain at 73.43% throughout the planning period. The Planning Period is highlighted.

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