

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
Out of State Landfills						
Randolph Farms, Inc	Randolph	IN	9,021	1,315	7	10,343
Adjusted total direct haul waste			9,875	2,036	714	12,625

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, because the company owning the facility 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.

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Table D-2: Waste Transferred in Reference Year ¹

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
Total			32,910	683	1,299	34,892

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	9,875	2,036	714.	12,625	27%
Transferred	32,909	683	1,299.	34,892	73%
Incinerated	0	0	0	0.00	0%
Total	42,784	2,720	2,013	47,517	100%
Percent of Total	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. The remainder was 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)	Weight (tons)	Weight (tons)
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 ¹	50,469	4.65	42,784	2,719	2,014	47,517
2019	50,447	4.93	45,410	1,535	2,779	49,724

¹ 2018, Reference year is highlighted

1. Residential/Commercial Waste

The amount of residential/commercial waste for disposal increased steadily from 2014 to 2019.¹ As shown above, the per capita disposal rose from 3.64 pounds per person per day to 4.93 pounds per person per day in 2019. 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 the reference year, 2018, exceeded the projection by 1.13 pounds 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 four methods that could be used to project disposal for the planning period:

1. Use the average residential/commercial disposal amount for 6 years, 2014 through 2019, which is **4.25** pounds per person per day.

¹ The amount of disposal for 2019 was not available to the District at the time the Draft Plan was prepared. When the District prepared the Annual District Report for 2019, the amount of out of state waste disposal reported directly to the District was less than that reported by IDEM to OEPA. Since verified 2019 disposal amounts were available by the time this final Plan was prepared, 2019 data was added. Six years of historic data is included. The Plan reference year remains 2018. The 2019 disposal data was taken into consideration in revising the waste generation projections included in this final Plan. The projected waste for the planning period has been recalculated in consideration of the fact that 2019 residential/commercial waste disposal was substantially more than expected.

2. Use the per capita disposal amount for the reference year, 2018, which is **4.65** pounds per person per day.

3. Use the per capita disposal rate for the last year for which reporting is available, 2019, which is **4.93** pounds per person per year.

4. Make a calculation based on the average percent of change from year to year for all 6 years, 2014 through 2019, which is **5.47%**.

It is reasonable that two factors are contributing to the increase in residential/commercial disposal. The local commercial sector has been growing. Two large retail stores expanded, a new major retailer with regional draw opened during the period, 2014 to 2018. In addition to large retailers, 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 generation and disposal has grown in recent years, it is the intention of this Plan to vigorously work to increase residential and commercial recycling and to decrease disposal or, at least, to keep the per capita amount of waste sent for disposal from growing.

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 but was less than the average for the state. The disposal rate for the entire state in 2018 as reported by Ohio EPA was 4.82 pounds/person/day. It was 4.68 pounds/person/day in 2019.

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Since the amount of District disposal increased each year from 2014 through 2019, the District has decided that the per capita disposal amount for 2019, which is more than that in the reference year, should be used as the base amount for calculating disposal for the planning period. However, the District is not projecting continued growth in per capita disposal. The District believes that the disposal amount for the 2019, 4.93 ppd, is a realistic amount for the Darke County SWMD to use in projecting disposal for 2020, 2021 and the first three years of the planning period. This amount is substantially more than the 6-year average. The District is not pleased to be generating that much waste for disposal, but we believe that the programs included in this Plan will be successful in stopping the increase in the per capita disposal amounts. As the programs in this Plan are fully implemented, the per capita amount will be brought down to 2018 amounts or lower. For the remainder of the planning period, from 2025 on, the waste generated for disposal is calculated at the 2018 rate. The calculation is 4.65 ppd x 365 days a year x population equals annual pounds of waste for disposal. The annual pounds divided by 2,000 equals projected residential/commercial tons disposed. Note that the population of Darke County is projected to decrease during the planning period. Part of the decrease in residential/commercial waste for disposal shown in Table D-6, reflects the reduction in population. The amount of waste per person projected for disposal is constant at 4.93 ppd from 2020 to 2025 and 4.65 ppd for the remainder of the planning period.

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 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 15.92%. 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 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 demotion 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	45,410	1,535	46,945
2020	45,387	1,689	47,076
2021	45,104	1,857	46,961
2022	44,821	2,043	46,864
2023	44,538	2,247	46,785
2024	41,721	2,472	44,193
2025	41,454	2,719	44,173
2026	41,222	2,991	44,213
2027	40,989	3,290	44,280
2028	40,758	3,619	44,377
2029	40,525	3,619	44,145
2030	40,294	3,619	43,913
2031	40,061	3,619	43,680
2032	39,829	3,619	43,449
2033	39,598	3,619	43,217
2034	39,365	3,619	42,985
2035	39,133	3,619	42,753
2036	39,033	3,619	42,653

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% Total Disposal)
	Weight	Weight
	(tons)	(tons)
2018	45,504	33,218
2019	46,945	34,270
2020	47,076	34,365
2021	46,961	34,282
2022	46,864	34,211
2023	46,785	34,153
2024	44,193	32,261
2025	44,173	32,246
2026	44,213	32,276
2027	44,280	32,324
2028	44,377	32,395
2029	44,145	32,226
2030	43,913	32,056
2031	43,680	31,887
2032	43,449	31,718
2033	43,217	31,549
2034	42,985	31,379
2035	42,753	31,210
2036	42,653	31,137

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 % throughout the planning period. The Planning Period is highlighted.

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