

2019 SOLID WASTE MANAGEMENT PLAN

Geauga Trumbull Solid Waste Management District

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Written by



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GLOSSARY

Access – For purposes of this document, access is associated with the availability of waste reduction and recycling services to waste generation within a solid waste management district. In most cases, access is used as the presence or absence of waste reduction and/or recycling opportunities, and as a component of measuring compliance with Goal 1 of the 2009 State Solid Waste Management Plan (2009 State Plan).

Annual District Report – This is a report that Ohio Administrative Code Rule 3745-27-90, requires each solid waste management district to submit to Ohio EPA by June 1 each year. Ohio EPA prescribes the form. Information in the report shall be based on the previous calendar year. This report will evaluate the solid waste management district's implementation of the strategies, programs, and activities listed in the implementation schedule of its approved solid waste management plan and the progress made toward the waste reduction and recycling requirements established in paragraphs (E)(1) and (E)(2) of this rule.

Annual District Report Review Form – A document published by Ohio EPA. The document combines the data reported by a solid waste management district in its annual district report, data reported to Ohio EPA by owners/operators of solid waste facilities in their facility annual reports, and data from adjacent states regarding imports of waste from Ohio. The document provides disposal, recycling, and generation data. Ohio EPA publishes a separate form for each of the 52 solid waste management districts.

Board of County Commissioners – Consists of the County Commissioners for a single county solid waste management district. The Board of County Commissioners is responsible for implementing the solid waste management district's solid waste management plan (as prepared by the policy committee and ratified by political jurisdictions).

Board of Directors – Consists of the county commissioners from all of the counties that comprise a joint solid waste management district. The board of directors is responsible for implementing the solid waste management district's solid waste management plan (as prepared by the policy committee and ratified by political jurisdictions).

Board of Trustees – The governing body for a regional solid waste management authority. The board of trustees consists of the same members as a policy committee. The board of trustees performs all of the functions assigned to a policy committee and board of county commissioners/board of directors for a solid waste management district. Thus, the board of trustees is responsible for preparing, ratifying, and implementing the solid waste management plan.

Broker/Recycling Broker – A business that accepts recyclable materials from collection or processing activities, may or may not pay a fee for the materials, and finds an end-user or another processor to purchase the materials. A broker can also be a processor of recyclable materials that also finds end-users for the processed materials.

Captive Landfill Facility refers to a privately-owned industrial or residual solid waste landfill that is used to dispose of solid waste generated exclusively by the owner of the landfill facility.

Clean Materials Recovery Facility (MRF) – A facility where source separated, recyclables are processed.

Commingled – Single stream (also known as “fully commingled” or “single-sort”) recycling refers to a system in which all paper fibers, cardboard, plastics, metals, and other containers are mixed for collection.

Commercial Solid Waste refers to solid waste generated at non-residential buildings, non-industrial businesses, and institutions. This category includes businesses such as shopping centers, retail stores, grocery stores, theaters, gas stations, business offices, hotels, restaurants, and similar service establishments. Institutions include government and non-profit offices, schools, prisons, churches, parks, and similar organizations.

Composting – As defined in Ohio Administrative Code Rule 3734-27-01(C)(3), the process of biological decomposition of solid wastes under controlled conditions resulting in compost. Controlled conditions include but are not limited to grinding, shredding, piling, physical turning, aerating, adding moisture, or other processing of solid wastes.

Composting Facility – As defined in Ohio Administrative Code Rule 3734-27-01(C)(4), a site, location, tract of land, installation, or building used for composting of solid waste in accordance with Chapter 3734 of the Revised Code and rules adopted thereunder.

There are four types of regulated compost facilities:

- **Class I Compost Facilities** - These facilities can be used to compost the greatest variety of solid wastes including mixed solid waste (glass, food, plastics, pesticides, household cleaners, etc.), food waste, yard waste and other industrial wastes. Class I facilities must have a permit, license and financial assurance.
- **Class II Compost Facilities** - These facilities can be used to compost only source-separated yard waste, food scraps, animal wastes, specified agricultural wastes, authorized bulking agents and additives, and other alternative materials. Alternative materials (feed stocks, bulking agents and additives) may be used in the compost process only if prior approval is obtained from the Director. Except in limited circumstances, Class II facilities must have a license, financial assurance and registration.
- **Class III Compost Facilities** - These facilities can be used to compost only source-separated yard waste, animal wastes, specified agricultural wastes, authorized bulking agents and additives. Class III facilities must be registered with Ohio EPA.
- **Class IV Compost Facilities** - These facilities can be used to compost only source-separated yard waste, authorized bulking agents, and the following additives: urea and bacteria or fungal inoculum. Class IV facilities must be registered with Ohio EPA.

Construction and Demolition Debris (C&DD) is defined in Ohio Administrative Code Rule 3745-400-01(F) as those materials resulting from the alteration, construction, destruction, rehabilitation, or repair of any manmade physical structure, including, without limitation, houses, buildings, industrial or commercial facilities, or roadways.

"Construction and demolition debris" does not include materials identified or listed as solid wastes, infectious wastes, or hazardous wastes pursuant to Chapter 3734. of the Revised Code and rules adopted under it; or materials from mining operations, nontoxic fly ash, spent nontoxic foundry sand, and slag; or reinforced or non-reinforced concrete, asphalt, building or paving brick, or building or paving stone that is stored for a period of less than two years for recycling into a usable construction material.

Current approved plan – Used when referring to a solid waste management district’s effective solid waste plan. The current approved plan is the solid waste management plan being updated using this format.

Curbside Recycling Program – A type of recycling opportunity through which source-separated, residential recyclables are collected at the place of residence. Curbside collection typically involves collecting recyclables in designated containers or in “blue bags” that are collected with regular trash and separated from the trash later. Curbside recycling programs are divided into two categories - “Subscription” and “Non-Subscription” services.

Daily Processing Capacity – This should be the amount of materials or waste, which can be processed during a normal operating day for a facility or activity. If the facility normally operates eight hours per day, the daily processing capacity would be based upon eight hours. If the facility normally operates ten hours per day, the daily processing capacity should be based upon ten hours.

Designated Solid Waste Facility – Those solid waste facilities designated in the initial or amended plan or as are designated pursuant to Ohio Revised Code Sections 343.013, 343.014, or 343.015.

Direct Haul – Waste that is transported from the point of collection to a landfill facility (i.e. the waste is not delivered to a transfer facility).

Dirty Materials Recovery Facility (Dirty MRF) (also known as a mixed solid waste materials recovery facility) – A type of facility where the owner/operator of the facility recovers recyclables from mixed solid waste. Residents are not required to separate recyclable materials from trash because the separation is done at the MRF.

District – The term used in examples in this document to indicate that the text is for a specific solid waste management district (instead of SWMD which is used to refer to solid waste management districts in general). The Montgomery County Solid Waste Management District operates under the direction of the Board of County Commissioners.

Diversion – The term used in this document when referring to waste that is reused, recycled, or reduced instead of being disposed in a landfill. Ohio's waste reduction and recycling rates measure diversion from landfills, not just recycling and reuse. So, volume reduction due to composting or incinerating waste is included in the reduction and recycling rate.

Drop-Off Recycling – Refers to a type of recycling opportunity that serves as a collection location for recyclable materials. Drop-off recycling locations are typically used by the residential population but may also be used by businesses and institutions. People who use drop-offs voluntarily transport recyclable materials to the host site.

A drop-off site typically consists of trailers, roll-off containers, or other types of collection containers where people place their recyclable materials. Drop-offs can be manned or unmanned, can collect recyclables as single or multiple streams, can be available on public or private property, can be available to the general public or serve a specific population, and can be provided by public entities, private companies, non-profit organizations or other providers. The drop-off does not have to be provided by the SWMD to be considered part of the recycling infrastructure.

A drop-off is categorized by the number of hours the drop-off is available for use and the population of the jurisdiction in which the drop-off is located. Accordingly, drop-offs are defined as being located in either urban or rural areas and as being available either full-time or part-time.

- An urban area is a political jurisdiction with a residential population of 5,000 or more.
- A rural area is a political jurisdiction with a residential population of less than 5,000.
- Full-time refers to a drop-off that available for at least 40 hours per week
- Part-time refers to drop-off that is available for use less than 40 hours per week but is available at a regularly-scheduled time at least once a month.

There are four potential types of drop-offs:

- An urban, full-time drop-off is located in a political jurisdiction with a residential population of 5,000 or more and is available at least 40 hours per week.
- A rural, full-time drop-off is located in a political jurisdiction with a residential population of less than 5,000 and is available at least 40 hours per week.
- An urban, part-time drop-off is located in a political jurisdiction with a residential population of 5,000 or more and is available for use less than 40 hours per week but is available at a regularly-scheduled time at least once a month.
- A part-time, rural drop-off is located in a political jurisdiction with a residential population of less than 5,000 and is available for use less than 40 hours per week but is available at a regularly-scheduled time at least once a month.

To be creditable recycling opportunity for achieving Goal 1, a drop-off must meet the criteria for one of the four types of drop-offs above and the general criteria below:

1. The drop-off must collect at least five of the materials designated as highly amenable to recycling in the 2009 State Plan. Those materials are listed in the following table:

Materials Designated to Demonstrate Compliance with Goal #1

Residential Sector	Commercial Sector
Corrugated cardboard	Corrugated cardboard
Newspaper	Office paper
Mixed paper	Mixed paper
Glass containers	Glass containers
Steel containers	Steel containers
Aluminum containers	Plastic containers
Plastic containers	Wood pallets and packaging
	Food waste

2. The drop-off is available to the public and the public can easily find and access the site.
3. The drop-off meets the following minimum standards (unless the SWMD can demonstrate that smaller capacity is adequate):
 - Rural drop-offs must provide a minimum of six cubic yards of capacity, and
 - Urban drop-offs must provide a minimum of 10 cubic yards of capacity.
4. There are signs that are adequate to, at a minimum:
 - Direct the public to the site or provide the location of the site,
 - List the materials that are accepted, and
 - Provide days and hours of operation (particularly important if the site is available less than 24 hours per day, seven days per week).
5. The drop-off meets the demand of the population for use of the drop-off site (e.g., provides collection containers with adequate capacity to handle the use of the site, is serviced frequently enough given the use of the site, etc.).

Dual stream collection – A recycling system in which fiber (paper and cardboard) is collected in one receptacle and all containers (glass, plastic, metal) are collected in another receptacle.

Electronic Waste or e-waste – Refers to discarded end-of-life and obsolete electrical devices or their parts. Televisions, computers, and cell phones are all common examples of electronic waste.

Excluded Waste (Exempt Waste) – Refers to those wastes that the definition of solid waste [see Ohio Administrative Code Rule 3734-27-01(S)(23)] specifically calls out (i.e. excludes) as not being solid waste. These wastes include slag, uncontaminated earth, non-toxic fly ash, spent, non-toxic foundry sand, material from mining, and construction and demolition debris. Please note that non-toxic fly ash and non-toxic foundry sand and spent foundry sand determined to be non-toxic in accordance with Ohio EPA Division of Surface Water Policy 0400.007.

Facility Data Report – A report published by Ohio EPA annually. The report summarizes data reported to Ohio EPA by owners/operators of solid waste landfills and transfer facilities in facility annual reports.

Fee Exempt Waste – refers to those wastes that Ohio Revised Code Section 3734.57 specifically excludes from being subject to solid waste fees. The fee exempt wastes are listed in ORC Section 3734.57 paragraphs (D)(1) through (D)(7).

Ferrous Metals – Metals that contain iron. Examples include steel, stainless steel, cast Iron, and wrought iron.

Flue Gas Desulfurization (FGD) Waste – Waste generated as a result removing sulfur dioxide (SO₂) from combustion gases generated at coal-fired power plants. As used in this document, the term usually refers to waste generated by wet scrubbers that remove sulfur dioxide (SO₂) emissions using lime.

Generation - This term refers to the amount (weight, volume, or percentage of the overall waste stream) of materials and products as they enter the waste stream and before materials recovery, composting, or combustion takes place.

Generation Fee – A fee established pursuant to Ohio Revised Code Section 3734.573 (A) and assessed on each ton of solid waste generated within the District.

Household Hazardous Waste (HHW) – refers to hazardous waste that is generated in households. Ohio's regulations define household as including all of the following:

1. Single and multiple unit residences
2. Hotels and motels
3. Bunkhouses
4. Ranger stations
5. Crew Quarters
6. Dormitories
7. Campgrounds
8. Picnic grounds
9. Day-use recreation areas

In Ohio, hazardous waste generated at a household is not regulated under the hazardous waste regulations. Thus, homeowners can dispose of HHW in their garbage.

Materials used in the home/apartment such as cleaners, paints, solvents, pesticides, used oil, batteries, and other automotive products that potentially can cause injuries to refuse workers, damage to equipment, and/or harm to the environment if disposed in the solid waste stream. HHW typically exhibits one or more characteristics of hazardous wastes, but is exempted from regulation as a hazardous waste because of generation by households.

Incineration – The controlled process by which solid wastes are burned and changed into gases and ash.

Industrial Solid Waste – is defined in OAC Rule 3745-29-01 as a type of solid waste generated by manufacturing or industrial operations and includes, but is not limited to, solid waste resulting from the following manufacturing processes: electric power generation; fertilizer/agricultural chemicals; food and food-related products/by-products; inorganic chemicals; iron and steel manufacturing; leather and leather products; nonferrous metals manufacturing; plastics and resins manufacturing; pulp and paper industry; rubber and miscellaneous plastic products; stone, glass, clay and concrete products; textile manufacturing; and transportation equipment.

Materials Recovery Facility (MRF) – A type of facility used for separating, sorting, or processing waste in order to segregate materials with value (e.g. aluminum, glass, plastics) from trash. The type of processing conducted at a MRF can range widely from buildings in which recyclables are sorted primarily by hand to mechanical facilities that recover recyclables from mixed solid waste. There are two types of MRFs – clean MRFs and dirty MRFs. See the definitions of those terms.

Municipal Solid Waste (also referred to as Residential/Commercial Waste) – is defined in Ohio Administrative Code Rule 3745-27-01(M)(5) as a type of solid waste generated from community, commercial, and agricultural operations, including, but not limited to, the following:

- (1) Solid waste generated by community operations, i.e. wastes derived from households (including single and multiple household residences, hotels, motels, bunkhouses, ranger stations, crew quarters, campgrounds, picnic grounds, and day-use recreation areas).
- (2) Solid waste generated by commercial operations (including stores, offices, restaurants, warehouses, and other non-manufacturing activities).
- (3) Solid waste generated from agricultural operations (including single-family and commercial farms, greenhouses, and nurseries).
- (4) Sludge from municipal, commercial or industrial waste water treatment plants, water treatment plants, and air pollution control facilities that is co-disposed with wastes specified in 1, 2, 3, and 5 in a sanitary landfill facility.
- (5) Fly and bottom ashes generated from the incineration of municipal solid waste provided the fly ash and bottom ash are not regulated as hazardous wastes.

Non-ferrous – Metals that do not contain iron. Non-ferrous metals include aluminum, brass, copper, nickel, tin, lead, and zinc, as well as precious metals like gold and silver. Non-ferrous metals exhibit properties such as low weight, higher conductivity non-magnetic and resistance to corrosion.

Non-Subscription Curbside Recycling Program – Refers to a type of curbside recycling program that is available to residents automatically within a defined area. To qualify as a non-subscription curbside recycling program for purposes of achieving Goal 1 of the 2009 State Plan, the curbside recycling service must meet all of the following criteria:

- All residents living in at least single-family homes within a jurisdiction (i.e. a city, village, or township) receive the service;
- Homeowners don't decide whether they receive curbside recycling – they receive the service whether they want it or not;
- Homeowners may or may not be billed for the service;
- A homeowner can choose not to participate in the curbside service but cannot opt out of paying for the service.
- To be a creditable for purposes of achieving Goal 1, the curbside service must also:
 - be available on a regular basis, at least once every two weeks;
 - collect at least five of the materials designated as highly amenable to recycling in the 2009 State Plan. Those materials are listed in the following table:

Materials Designated to Demonstrate Compliance with Goal #1

Residential Sector	Commercial Sector
Corrugated cardboard	Corrugated cardboard
Newspaper	Office paper
Mixed paper	Mixed paper
Glass containers	Glass containers
Steel containers	Steel containers
Aluminum containers	Plastic containers
Plastic containers	Wood pallets and packaging
	Food waste

North American Industrial Classification System (NAICS) - - NAICS was developed and adopted in 1997 to replace the Standard Industrial Classification (SIC) system. The NAICS is the standard used to classify business establishments in the United States, Canada, and Mexico to facilitate collecting, analyzing, and publishing data related to the business economy.

Ohio Administrative Code (OAC) – The compilation of rules governing the actions of all state agencies. The OAC is based upon authorities granted in the Ohio Revised Code.

Ohio Revised Code (ORC) – Contains all current statutes of the Ohio General Assembly consolidated into provisions, titles, chapters and sections.

Open dumping – Depositing solid waste into a body of water or onto the the ground at a site that is not licensed as a solid waste facility under section 3734.05 of the Ohio Revised Code. For the purpose of a solid waste management plan, open dumps are considered as areas off the road or adjacent to the road or right-of-way on where solid waste is dumped. Road right-of-ways with occasional litter or debris are not considered to be open dumps.

Other Waste – This term, refers to materials disposed in sanitary landfills, which were not classified as solid wastes. In this document, the term “exempt wastes” is used to refer to these materials disposed in sanitary landfills, which are not classified as solid wastes.

Participation Rate – As defined by the National Recycling Coalition, a participation rate is the number of households that separate out materials for recycling, divided by the total number of households serviced by the recycling program at least once over an established time period or number of collection events. In the case of a curbside recycling program, the participation rate is commonly measured by tracking whether a particular household (by address), sets out materials during the time period examined. In contrast, the set-out rate is defined as a count of the “set-outs” on the observed collection day, as a percent of the total number of households or entities serviced.

Pay-As-You-Throw (PAYT) – (see definition for Volume-Based Billing)

Plan – A term used to refer to a solid waste management district’s solid waste management plan.

PPD – The acronym for pounds per person per day.

Policy committee – The group that is responsible for preparing and ratifying a solid waste management plan for a solid waste management district. As prescribed in Ohio Revised Code Section 3734.54(B), a policy committee consists of the following members, one from each of the counties in the solid waste management district:

- The president of the board of county commissioners or his designee
- The chief executive officer (or his designee) of the municipal corporation with the largest population in the county
- A member representing townships
- The health commissioner (or his designee) of the health district with the largest territory within the county
- A member representing industrial, commercial, or institutional generators
- A member representing the general interest of citizens
- One member representing the public.

If there is an even number of counties in the solid waste management district, then the policy committee must have an additional member representing the public.

The policy committee for a single county solid waste management district has seven members. The policy committee for a four county solid waste management has 29 members (seven per county plus one additional public representative).

Processing Capacity – For purposes of this document, processing capacity refers to the design capacity of the facility (or the maximum amount of materials which could be processed), and not the actual amount of materials processed during a given time period.

Quarterly Fee Report – The report solid waste management districts submit to Ohio EPA to account for revenues and expenditures during the previous three months. A solid waste management districts submits four reports annually using a form prescribed by Ohio EPA (see Ohio Revised Code Section 3734.575).

Recycling - The systematic collection, sorting, decontaminating and returning of waste materials to commerce as commodities for use or exchange. Recycling also means to use, reuse or reclaim a material. It does not include incineration.

Reference Year – The calendar year selected by the policy committee/board of trustees as the year for collecting data that will serve as baseline data for a solid waste management plan.

The reference year is usually the calendar year prior to the calendar year the policy committee is required to begin updating a solid waste management plan. For example, if the policy committee is required to begin preparing its update in 2015, then the policy committee would select 2014 as the reference year.

Regional Solid Waste Management Authority - One of two structures a county/counties can form for purposes of complying with Ohio Revised Code Section 3734.52. The other structure is a solid waste management district.

A regional solid waste management authority is governed by one group – the board of trustees.

Residential Solid Wastes – Solid wastes generated at residential dwellings, such as single-family homes, apartment complexes, condominiums, mobile homes. Domiciles such as nursing homes, campgrounds, and other types of group quarters and institutions are considered to generate commercial waste.

Residential/Commercial Solid Waste – Refers to the combination of waste generated by the residential and commercial sectors. Residential/commercial solid waste is the same as municipal solid waste.

Reuse –Taking an object or material that would otherwise be disposed and using it for its original purpose or a different purpose, without converting the object or material. "Reuse" does not include using an object or material as fill. Reuse differs from recycling which is the breaking down of the material into raw materials which are used to make a new item.

Resource Recovery – This term refers to the conversion of solid waste into energy, or some material, which can be used to create energy at any stage before ultimate disposal. As used in this document, resource recovery does not include the recovery of materials through mechanical and advanced technology methods.

Salvage dealer/motor vehicle salvage dealer –Any person whose primary business is selling recovered motor vehicle parts.

Scrap dealer - The owner or operator of a business that purchases or receives scrap metal for the purpose of sorting, grading, and shipping metals to third parties for direct or indirect melting into new products.

Set-out Rate – The National Recycling Coalition defines a set-out rate as the number of households that set out materials on their assigned collection day, divided by the total number of households served. A set-out rate is a measurement commonly used in assessing curbside collection programs.

Single Stream Recycling – Refers to a recycling system in which all recyclable materials are collected in one container (i.e. commingled) instead of separated into individual commodities (such as newspaper, corrugated cardboard, plastics, glass, etc.).

Solid Waste Management District, SWMD, or District – One of two structures a county/counties can form for purposes of complying with Ohio Revised Code Section 3734.52. The other structure is a regional solid waste management authority.

A solid waste management district is a county which has established a resolution, or joint counties which have entered into an agreement for the purposes of preparing, adopting, submitting, and implementing a solid waste

management plan for the county or joint counties and for the purposes of providing for, or causing to be provided for, the safe and sanitary management of solid waste within all of the incorporated and unincorporated territory of the county or joint counties and in compliance with Chapters 343. and 3734. of the Revised Code.

A solid waste management district is governed by two groups – a policy committee and a board of county commissioners/board of directors.

Solid Waste – Unwanted residual solid or semi-solid materials resulting from industrial, commercial, agricultural, and community operations, but excluding earth or material from construction, mining, or demolition operations, or other waste materials of the type that would normally be included in demolition debris, non-toxic foundry sand, slag, and other substances that are not harmful to public health. It includes, but is not limited to, garbage, tires, combustible and non-combustible material, street dirt, and debris. Solid waste does not include any material that is an infectious waste or a hazardous waste.

Source Reduction – Any effort to reduce, at the source, the quantity of waste generated, toxic chemical use, or any release to the environment. Source reduction in generation of commercial or industrial wastes could result from process modifications, improvement in feedstock purity, better operating and management practices, and increases in the efficiency of machinery. It includes reducing the amount of materials entering the waste stream by voluntary or mandatory programs to eliminate the initial generation of waste.

Source separated recyclables - Materials that have been separated from trash at either the point of generation or the point of collection for the purpose of recycling the materials.

Standard Industrial Classification (SIC) Codes – Refers to the system established by the U.S. government to classify business establishment. A SIC code consists of a four-digit numerical code that the government assigned to a business establishment to identify the primary business of the establishment. In 1997, the SIC system was replaced with the NAICS system. Standard Industrial Classification used to categorize industries, institutions, and businesses according to the product manufactured or services offered.

State Solid Waste Management Plan (also referred to as State Plan) – Ohio Revised Code Section 3750 requires the Ohio Environmental Protection Agency with the advice of the solid waste management advisory council, to prepare the state solid waste management plan. The law prescribes eight purposes for the state plan. The main purpose of the state plan is to reduce Ohio’s reliance on using solid waste landfill facilities to manage solid waste. To do this, the state plan establishes the waste reduction and recycling goals for both the State and Ohio’s 52 solid waste management districts (SWMDs).

Subscription Curbside Recycling Program – Refers to a type of curbside recycling service through which residents must take a voluntary action to sign up for and agree to pay for the service. To qualify as a subscription curbside recycling program for purposes of achieving Goal 1 of the 2009 State Plan, the curbside recycling service must meet all of the following criteria:

- The service is offered to all residents living in at least single-family homes within the jurisdiction (i.e. a city, village, or township);
- Homeowner’s decide whether to receive curbside recycling service. The only homeowners that have the ability to use a curbside program are those that contact a service provider to sign-up for the curbside program.
- The only homeowners that can participate in the service are those that pay for the service.
- The curbside recycling service must be available on a regular basis, at least once every two weeks.

The program must collect at least five of the materials designated as highly amenable to recycling in the 2009 State Plan. Those materials are listed in the table below:

Materials Designated to Demonstrate Compliance with Goal #1

Residential Sector	Commercial Sector
Corrugated cardboard	Corrugated cardboard
Newspaper	Office paper
Mixed paper	Mixed paper
Glass containers	Glass containers
Steel containers	Steel containers
Aluminum containers	Plastic containers
Plastic containers	Wood pallets and packaging
	Food waste

SWMD – The acronym for Solid Waste Management District.

TPD – The acronym for Tons Per Day.

TPY – The acronym for Tons Per Year.

Transfer Station/Transfer Facility – A facility, which receives deliveries of solid waste by local collection vehicles and provides for transfer to larger vehicles, which deliver wastes more economically to resource recovery or landfill facilities. As defined in Ohio Administrative Code Rule 3745-27-01(T)(28), any site, location, tract of land, installation, or building that is used or intended to be used primarily for the purpose of transferring solid wastes that are generated off the premises of the facility from vehicles or containers into other vehicles or containers for transportation to a solid waste disposal facility. The term does not include any facility that consists solely of portable containers that have an aggregate volume of fifty cubic yard or less nor any facility where legitimate recycling activities are conducted. The term does not include any facility that accepts scrap tires other than scrap tires which are accepted incidental to a mixed solid waste shipment.

Volume-Based Billing – A trash collection service where the amount a household pays for trash collection depends on the amount of trash the household disposes. The more waste the household throws away, the more the household pays for trash service. Volume-based billing treats trash collection like a utility, such as electricity or natural gas.

Volume Reduction – Activities such as incineration, which reduce the volume of waste to be disposed.

Waste Generation – This term refers to the amount (weight, volume, or percentage of the overall waste stream) of materials and products as they enter the waste stream and before materials recovery, composting, or combustion takes place.

Waste Minimization – Any effort to reduce or recycle the quantity of hazardous waste generated, and where feasible, to reduce or eliminate toxicity. Treatment of hazardous waste is not waste minimization, unless such treatment is part of a recycling process. (Please note that the definition of this term as used in this document does not include solid wastes.)

Waste Reduction – Refers to activities that decrease the quantities of waste disposed in landfills and includes recycling, volume reduction due to composting waste and volume reduction due to incinerating waste.

Waste Stream – The amount of materials that are destined for disposal. The waste stream may refer to specific, homogenous material or numerous materials mixed together.

White Goods – Discarded large appliances (such as refrigerators, ovens, dish washers, washing machines, clothes driers, hot water heaters, etc.).

Acronyms Used in this Document

2009 State Plan is used when referring to the *2009 State Solid Waste Management Plan* that was adopted in 2010.

ADR – Annual district report

Authority –regional solid waste management authority

C&DD - Construction and demolition debris

DO – Drop-off

FGD – Flue gas desulfurization waste

FTR – Full-time, rural drop-off

FTU – Full-time, urban drop-off

Format is used when referring to this document, the *District Solid Waste Management Plan Format*, version 4.0

GT – Geauga Trumbull

HHW – Household hazardous waste

HB – House bill

MRF – Material Recovery Facility

MSW – Municipal Solid Waste

NAICS - North American Industry Classification System

NSC – Non-subscription curbside recycling

PAYT – Pay as you throw trash collection

OAC – Ohio Administrative Code

Ohio EPA – Ohio Environmental Protection Agency

ORC – Ohio Revised Code

PA – Publicly available

PPD – Pounds per person per day

PTR – Part-time, rural drop-off

PTU – Part-time, urban drop-off

SIC – Standard Industrial Classification

SC – Subscription curbside recycling

State Plan is used when referring to the state solid waste management plan in general.

SWMD - Solid waste management district

TPD –Tons Per Day.

TPY –Tons Per Year.

i SOLID WASTE MANAGEMENT DISTRICT INFORMATION

Table i-1 Solid Waste Management District Information

SWMD Name	Geauga-Trumbull Solid Waste Management District
Member Counties	Geauga County and Trumbull County
Coordinator's Name (main contact)	Greg Kovalchick
Job Title	Director
Street Address	5138 Enterprise Blvd.
City, State, Zip Code	Warren, Ohio 44481
Phone	330-675-2673 toll free 1-800-707-2673
Fax	330-675-2672
E-mail address	greg@startrecycling.com
Webpage	http://www.gottagogreen.org

Table i-2 Members of the Policy Committee

Member Name	Representing
Geauga County	
Walter M. Claypool, Chairperson	County Commissioners
Mayor City of Chardon Designee Randall Sharpe/Paul Hornyak	Municipal Corporations
Kristina O'Brien, Bainbridge Township Trustee, Vice-Chairperson	Townships
Dave Sage	Health District
Sheryl Clemson	Generators
Ken Radtke	Citizens
vacant	Public
Trumbull County	
Dan Polivka	County Commissioners
Mayor Doug Franklin, City of Warren Rob Massucci, Criminal Investigations	Municipal Corporations
Tom Shay, Braceville Township Fiscal Officer	Townships
Frank Migliozi/Kris Wilster/Kevin Francis	Health District
vacant	Generators
Ken Kubala	Citizens
Edward Anthony	Public
Additional Public Representative	
Name	County
Mark Finamore	Trumbull County

Table i-3 Chairperson of the Policy Committee

Name	Walter M. Claypool
Street Address	470 Center St. Bldg 4
City, State, Zip Code	Chardon, Ohio 44024
Phone	440-279-1670
Fax	440-286-9177
E-mail Address	wclaypool@co.geauga.oh.us

Table i-4 Board of County Commissioners

Commissioner Name	County	Chairperson/President
Timothy C. Lennon	Geauga	
Walter M. Claypool	Geauga	
Ralph Spidalieri	Geauga	President
Daniel E. Polivka	Trumbull	President
Mauro Cantalamessa	Trumbull	
Frank S. Fuda	Trumbull	

Technical Advisory Committee

Table ii-5 is not provided. A Technical Advisory Committee was not used to prepare this plan update and has not been appointed.

Consultant Information

Identification of consultants for plan preparation: The SWMD used Resource Recycling Systems, Inc. (RRS) to prepare the solid waste management plan.

Consulting Firm:



Principal Consultant: Jamie Zawila

CHAPTER 1: INTRODUCTION

A. Brief Introduction to Solid Waste Planning in Ohio

In 1988, Ohio faced a combination of solid waste management problems, including rapidly declining disposal capacity at existing landfills, increasing quantities of waste being generated and disposed, environmental problems at many existing solid waste disposal facilities, and increasing quantities of waste being imported into Ohio from other states. These issues combined with Ohio's outdated and incomplete solid waste regulations caused Ohio's General Assembly to pass House Bill (H.B.) 592. H.B. 592 dramatically revised Ohio's outdated solid waste regulatory program and established a comprehensive solid waste planning process.

There are three overriding purposes of this planning process: to reduce the amount of waste Ohioans generate and dispose of; to ensure that Ohio has adequate, protective capacity at landfills to dispose of its waste; and to reduce Ohio's reliance on landfills.

B. Requirements of County and Joint Solid Waste Management Districts

1. Structure

As a result of H.B. 592, each of the 88 counties in Ohio must be a member of a solid waste management district (SWMD). County commissioners form a SWMD. A board of county commissioners has the option of forming a single county SWMD or joining with the board(s) of county commissioners from one or more other counties to form a multi county SWMD. Ohio currently has 52 SWMDs. Of these, 37 are single county SWMDs and 15 are multi county SWMDs¹.

Two bodies govern a SWMD. The first is the board of directors, which consists of the county commissioners from all counties in the SWMD. The second is a policy committee. The policy committee is responsible for developing a solid waste management plan for the SWMD. The board of directors is responsible for implementing the policy committee's solid waste management plan.²

2. Solid Waste Management Plan

In its Solid Waste Management Plan, the policy committee must, among other things, demonstrate that the SWMD will have access to at least 10 years of landfill capacity to manage all of the SWMD's solid wastes that will be disposed. The solid waste management plan must also show how the SWMD will meet the waste reduction and recycling goals established in Ohio's state solid waste management plan and present a budget for implementing the solid waste management plan.

Solid waste management plans must contain the information and data prescribed in Ohio Revised Code (ORC) 3734.53, Ohio Administrative Code (OAC) Rule 3745-27-90. Ohio EPA prescribes the format that details the information that is provided and the manner in which that information is presented. The format is very similar in concept to a permit application for a solid waste landfill.

¹ Counties have the option of forming either a SWMD or a regional solid waste management Authority (Authority). The majority of planning districts in Ohio are SWMDs, and Ohio EPA generally uses "solid waste management district", or "SWMD", to refer to both SWMDs and Authorities.

² In the case of an Authority, it is a board of trustees that prepares, adopts, and submits the solid waste management plan. Whereas a SWMD has two governing bodies, a policy committee and board of directors, an Authority has one governing body, the board of trustees. The board of trustees performs all of the duties of a SWMD's board of directors and policy committee.

The policy committee begins by preparing a draft of the solid waste management plan. After completing the draft version, the policy committee submits the draft to Ohio EPA. Ohio EPA reviews the draft and provides the policy committee with comments. After revising the draft to address Ohio EPA's comments, the policy committee makes the plan available to the public for comment, holds a public hearing, and revises the plan as necessary to address the public comments.

Next, the policy committee ratifies the plan. Ratification is the process that the policy committee must follow to give the SWMD's communities the opportunity to approve or reject the draft plan. Once the plan is ratified, the policy committee submits the ratified plan to Ohio EPA for review and approval or disapproval. From start to finish, preparing a solid waste management plan can take up to 33 months.

The policy committee is required to submit periodic updates to its solid waste management plan to Ohio EPA. How often the policy committee must update its plan depends upon the number of years in the planning period. For an approved plan that covers a planning period of between 10 and 14 years, the policy committee must submit a revised plan to Ohio EPA within three years of the date the plan was approved. For an approved plan that covers a planning period of 15 or more years, the policy committee must submit a revised plan to Ohio EPA within five years of the date the plan was approved.

C. District Overview

The Geauga Trumbull Solid Waste Management District (SWMD), formed as a two-county member district on April 19, 1993 after the withdrawal of Ashtabula County from the Ashtabula, Geauga and Trumbull Joint Solid Waste Management District. The District operates from one centralized location located in the City of Warren, Ohio. The



Trumbull County location is a campus for the solid waste district management system. The campus has administrative offices, and a permanent HHW recycling facility, which operates seasonally and serves as a drop-off for electronics, appliances and drop-off recyclables.

Lack of active permitted municipal solid waste landfills in District, means the SWMD relies on neighboring districts for landfill disposal. All waste is hauled or transferred out of district for disposal. Waste collection throughout the District is either by contract, self-haul by a political jurisdiction or by individual residential or business subscription, or by subscription (residents subscribe with a private company for service). The District operates in an

open market system, which means customers have a choice of any waste hauler because the system is open to competition.

The SWMD's waste management strategy is decentralized relying on private sector service. The private sector has a long history of providing waste management services throughout both counties. The SWMD is a facilitator and/or a direct service provider if needed. Public-private partnerships serve the SWMD well but in some instances direct involvement is needed for managing materials where the private sector falls short on services.

The SWMD continues to work in a cost-conscious manner, using the per ton contract fee to support House Bill 592 programming. The \$5.50 per ton contract fee on waste disposed has not changed since 2013. The per ton contract fee secures approximately \$1.6 million which is used on programming to promote recycling, waste reduction, and responsible disposal of all waste from households, retail establishments, industry, and schools. The SWMD contracts services with the private sector to provide drop-off recycling infrastructure throughout both counties for

residents to have recycling opportunity. Curbside recycling is secured through political jurisdiction contracts or residents directly subscribe with their service provider. Hard to recycle materials such as HHW, electronics, and appliances are directed to the HHW seasonal facility in Trumbull County or single day collection events in Geauga County. The SWMD offers political jurisdictions scrap tire grants for management.

Over the next 15-years the SWMD is planning to expand programming and service options. Specifically adding a Geauga County HHW facility for more convenience to Geauga County residents. Also, a recycling incentive grant will be available to help implement curbside recycling or improve recycling programs. The SWMD will place focus on cultivating waste reduction and recycling programs in businesses and institutions.

D. Waste Reduction and Recycling Goals

As explained earlier, a SWMD must achieve goals established in the state solid waste management plan. The current state solid waste management plan is the *2009 Solid Waste Management Plan (2009 State Plan)*. The 2009 State Plan established nine goals as follows:

1. The SWMD shall ensure that there is adequate infrastructure to give residents and commercial businesses opportunities to recycle solid waste.
2. The SWMD shall reduce and recycle at least 25 percent of the solid waste generated by the residential/commercial sector and at least 66 percent of the solid waste generated by the industrial sector.
3. The SWMD shall provide the following required programs: a Web site; a comprehensive resource guide; an inventory of available infrastructure; and a speaker or presenter.
4. The SWMD shall provide education, outreach, marketing, and technical assistance regarding reduction, recycling, composting, reuse, and other alternative waste management methods to identified target audiences using best practices.
5. The SWMD shall provide strategies for managing scrap tires, yard waste, lead-acid batteries, household hazardous wastes, and obsolete/end-of-life electronic devices.
6. The SWMD shall explore how to incorporate economic incentives into source reduction and recycling programs.
7. The SWMD will use U.S. EPA's Waste Reduction Model (WARM) (or an equivalent model) to evaluate the impact of recycling programs on reducing greenhouse gas emissions.
8. The SWMD has the option of providing programs to develop markets for recyclable materials and the use of recycled-content materials.
9. The SWMD shall report annually to Ohio EPA regarding implementation of the SWMD's solid waste management plan.

All nine SWMD goals in this state plan are crucial to furthering solid waste reduction and recycling in Ohio. However, by virtue of the challenges posed by Goals 1 and 2, SWMDs typically dedicate more resources to achieving those two goals than to the remaining goals. Thus, Goals 1 and 2 are considered the primary goals of the state plan.

Each SWMD is encouraged to devote resources to achieving both goals. However, each of the 52 SWMDs varies in its ability to achieve both goals. Thus, a SWMD is not required to demonstrate that it will achieve both goals. Instead, SWMDs have the option of choosing either Goal 1 or Goal 2 for their solid waste management plans. This affords SWMDs with two methods of demonstrating compliance with the State's solid waste reduction and recycling goals. Many of the programs and services that a SWMD uses to achieve Goal 1 help the SWMD make progress toward achieving Goal 2 and vice versa.

A SWMD's solid waste management plan will provide programs to meet up to eight of the goals. Goal 8 (market development) is an optional goal. While Goal 9 requires submitting annual reports to Ohio EPA, and no demonstration of achieving that goal is needed in the solid waste management plan.

The SWMD is meeting Goal 2. See K for discussion of Goal 2 and the SWMD's efforts in achieving this goal. See Chapter 5 and Appendix I for descriptions of waste reduction and recycling programs provided to meet the eight State Goals.

CHAPTER 2: DISTRICT PROFILE

This chapter provides context for the SWMD's solid waste management plan by providing an overview of general characteristics of the SWMD. Characteristics discussed in this chapter include:

- The communities and political jurisdictions within the SWMD;
- The SWMD's population in the reference year and throughout the planning period;
- The available infrastructure for managing waste and recyclable materials within the SWMD;
- The commercial businesses and institutional entities located within the SWMD;
- The industrial businesses located within the SWMD; and
- Any other characteristics that are unique to the SWMD and affect waste management within the SWMD or provide challenges to the SWMD.

Understanding these characteristics helps the policy committee make decisions about the types of programs that will most effectively address the needs of residents, businesses, and other waste generators within the SWMD's jurisdiction.

Population distribution, density, and change affect the types of recycling opportunities that make sense for a particular community and for the SWMD as a whole.

The make-up of the commercial and industrial sectors within the SWMD influences the types of wastes generated and the types of programs the SWMD provides to assist those sectors with their recycling and waste reduction efforts.

Unique circumstances, such as hosting an amusement park, a large university, or a coal burning power plant present challenges, particularly for providing waste reduction and recycling programs.

The policy committee takes all of these circumstances into account to develop the overall waste management strategy.

A. Profile of Political Jurisdictions

1. Counties in the Solid Waste Management District

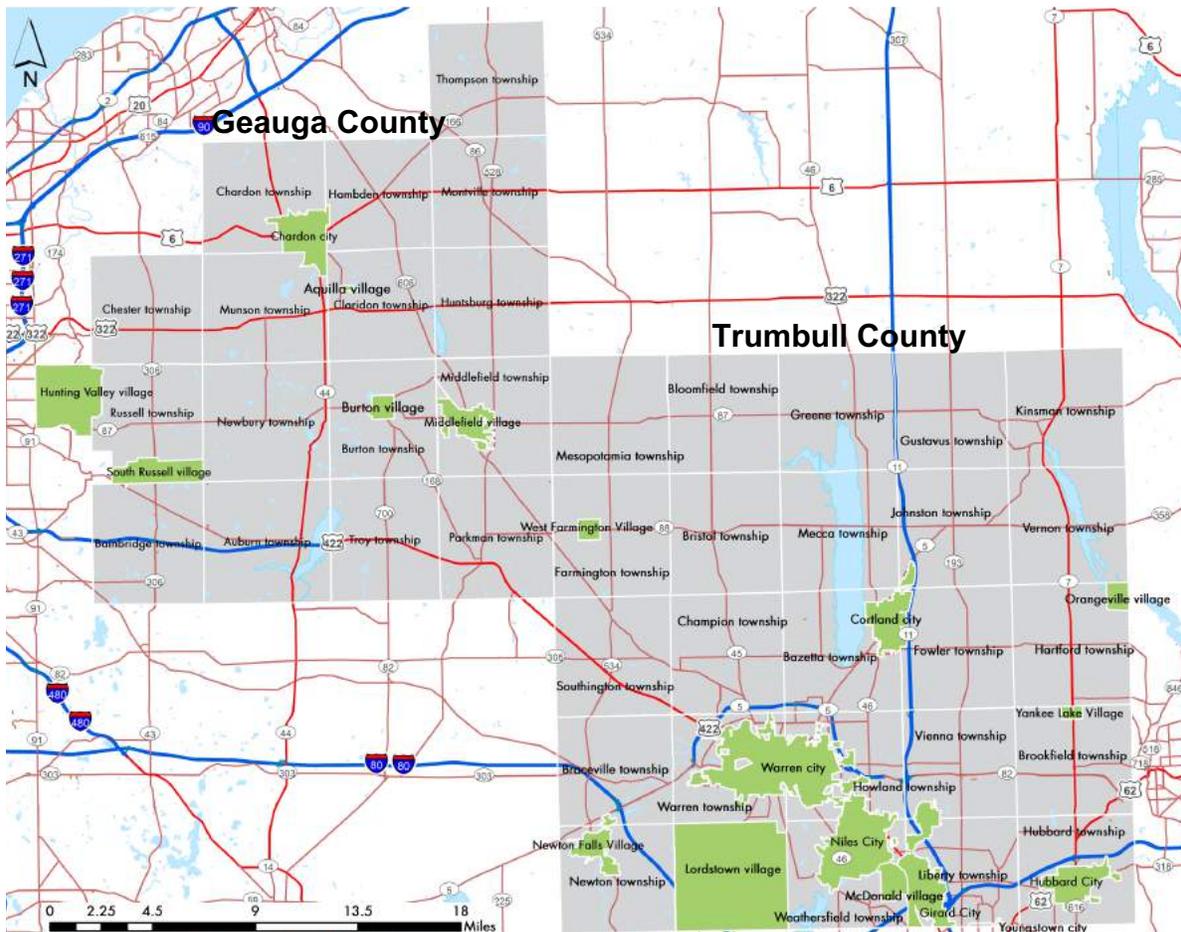
The Geauga-Trumbull SWMD is a two county District geographically located in northeastern Ohio. Geauga County is part of the Cleveland-Elyria-Mentor metropolitan statistical area, and has a population just under 100,000. Trumbull County to the east of Geauga, is part of the Youngstown-Warren-Boardman metropolitan statistical area, and has historically played a major role in Ohio manufacturing. Trumbull's population is more than twice that of Geauga at over 200,000 people. In the last ten years, Geauga's population has grown, and the western portion of the County has several bedroom communities for the Cleveland area. During that same time, Trumbull County's population has declined as manufacturing jobs have left the area.

2. County Overview

Gauga County is the county just to the east of Cuyahoga County where Cleveland is located. It spans 404 square miles, with the most populated portions of the County towards the western half. Only around 16 percent of Geauga County is considered developed land. Nearly half of Geauga County is forest, and another 16 percent is cropland. There are two east-west US highways in Geauga County. US Route 322 connects Pennsylvania to Cleveland and cuts through Chester Township in the northwest

corner of Geauga County, the second most populated township in Geauga. South of 322 is US Route 422, which provides a northwest trending connection between Youngstown and Warren, in Trumbull County to Cleveland. US Route 422 traverses the southern portion of Geauga County and provides a route from Bainbridge Township, the most populated township in Geauga, to Cleveland. Ohio State Route 44 runs north-south through the center of Geauga County, providing a route from Geauga to Akron and Lake Erie. Chardon is the County seat and the only incorporated city in the County. In 2015, the population of Chardon was 5,193. The population of Geauga County has increased by 1 percent from 2010 to 2015, and is projected to continue to grow at a slow rate. The Amish account for 8.6 percent of the total population in Geauga County.

Trumbull County borders Pennsylvania, and is just north of Mahoning County. US Interstate 80 passes through the southwest corner of Trumbull County, connecting Indiana, Ohio, and Pennsylvania. Ohio State Route 5 intersects I-80, and provides a connection from the interstate to Warren. Ohio State Route 11 connects Trumbull County to Youngstown and Mahoning County. Warren and Niles are the largest Cities in the County with a 2016 estimated population of 39,898 and 18,458 respectively. Both cities are located in the southern half of the County. Population in the County is concentrated in the southern half, and particularly along the corridor connecting the City of Warren with the City of Youngstown in neighboring Mahoning County. Kent State University Trumbull is located in Warren, one of seven region campuses of Kent State University, and serves more than 2,500 students. Outside of the southern corridor, Trumbull County is rural with land use dedicated to forests or cropland. The Mosquito Creek Wilderness Area is located in the north central area of the County. Trumbull County has steadily lost population from 2010 to 2015, decreasing by 2 percent.



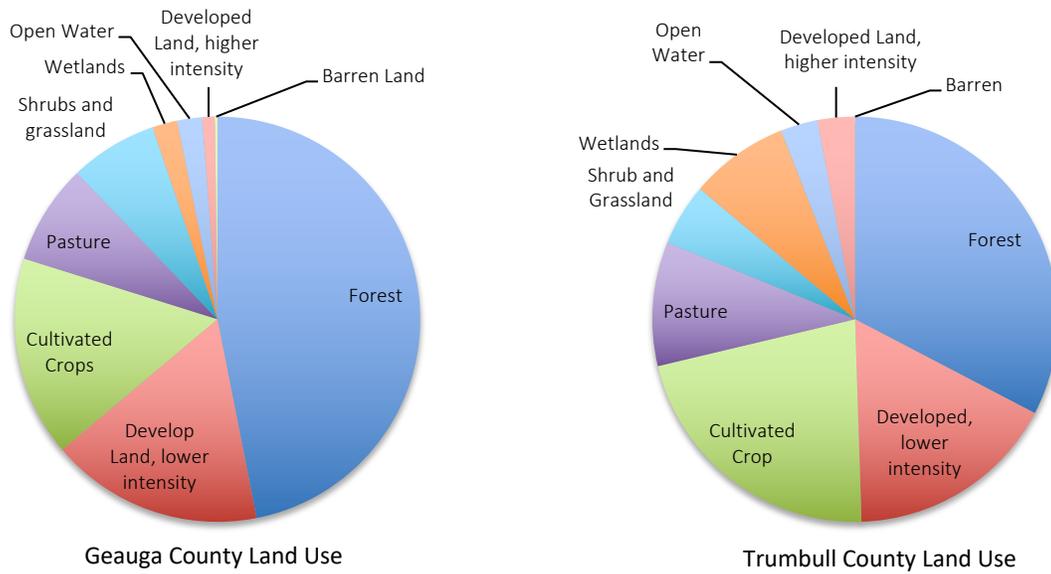


Figure 2-1 Geauga and Trumbull Counties Map and Land Use

B. Population

1. Reference Year Population

In 2015, Geauga and Trumbull Counties were the 29th and 14th most populous counties in Ohio out of 88 total counties. Ohio law requires that the entire population of a municipality located in more than one solid waste management district be added to the solid waste management district containing the largest portion of the jurisdiction's population. The District only has two communities located in more than one solid waste district. The majority of both Hunting Valley Village in Geauga County and the City of Youngstown are located in other districts, and thus are subtracted from the total population. No additions were made to the SWMD's population.

Table 2-1 Population of District in the Reference Year

	Geauga	Trumbull
Before Adjustment	94,102	203,751
Additions		
NONE		
Subtractions		
Hunting Valley Village	122	
Youngstown City		11
After Adjustment	93,980	203,740
Total Adjusted Population	297,720	

2. Population Distribution

Geauga County has 16 townships, 5 villages (one partial) and one city. As mentioned above Chardon City is the largest city and the county seat. Bainbridge is the largest township followed closely by Chester Township. Both townships are on the west side of the County. The County has a population density of 233 people per square mile.

Trumbull County has 25 townships, 6 cities (one partial), and 6 villages. The City of Warren is the largest jurisdiction, and the County seat. Champion Township just to the north of Warren is the largest township in Trumbull County. The population density of Trumbull County is higher than Geauga County at 331 people per square mile.

Table 2-2 Population of the Largest Community in each County

County		Largest Political Jurisdiction		
Name	Population	Community Name	Population	Percent of Total County Population
Geauga	93,980	Bainbridge Township	11,517	12%
Trumbull	203,740	City of Warren	40,245	20%

The majority of the population in Geauga County resides in unincorporated townships. Trumbull County is unique because the population is almost equally distributed between cities and unincorporated townships.

Table 2-3 Population Distribution

County	Percent of Population in Cities	Percent of Population in Villages	Percent of Population in Unincorporated Township
Geauga	6%	9%	85%
Trumbull	41%	6%	53%

3. Population Change

From 2010 to 2015, Geauga County population increased by 0.7 percent, and Trumbull County population declined by 4 percent. Overall the District’s population declined by 2 percent. Mahoning County, often considered a sister county to Trumbull County, also saw a 4 percent population decline during that time period. The surrounding counties of Ashtabula, Lake, Cuyahoga, and Portage experienced either population decline or no change in population from 2010 to 2015. Cuyahoga County where Cleveland is located has the highest population density of the region at more than 2,700 people per square mile.

While the District’s population declined, Ohio’s population grew 0.11 percent from 2010 to 2015. Ohio lost over 614,000 private sector jobs from 2000-2010 but is expected to experience job growth in the period from 2010 to 2020. Employment growth in the Northeast Region is expected to be slightly faster at 0.66 percent than the state increase.

The Geauga County population is expected to increase by 3 percent, and Trumbull County population is expected to decline by 12 percent from 2015 to 2035. Overall the District population will decrease by 7 percent during that time. This projection is based on Ohio Department Strategic Analysis (ODSA) Planning Research and Strategic Planning Office projected estimates for 2015, 2020, 2025, 2030, and 2035. To determine population estimates between these years, straight-line interpolation was used.

Population projections can gauge future demand for services, but in projection calculations there are room for errors because of the difficulty associated with forecasting. As projected by ODSA, population is expected to decrease.

4. Implications for Waste Management

Population is projected to decrease through the planning period but per capita waste generation is projected to increase. Population affects waste generation rates but factors of population growth such as household income, people per household, and economic activity also contribute. Economic activity and population growth affect household income and household income impacts per capita waste generation; and higher income households tend to produce higher amounts of waste. But, higher income households also tend to achieve higher participation rates of recycling. These complex factors are all simultaneously involved and affect each other because they dynamically occur over time. Adding to complexity, there are significant differences between the two counties in the SWMD.

As mentioned above, Geauga County is associated with the Cleveland metro area. The per capita personal income in 2015 was well above the state average at \$61,323. Trumbull County has historically been part of the ‘Steel Valley’ and is considered at the center of the Rust Belt. In 2015, Trumbull County had a per capita personal income of \$36,831 which was below the state average. Both counties experienced a positive per capita income change from 2010 to 2015. Geauga County experienced the greatest gains at 23.7 percent growth, above the state average of 19.8 percent. Trumbull County experienced 18.7 percent growth, just below the state average³. From 2011 to 2015, the average percent of Geauga County living in poverty was 7.5 percent. In Trumbull County, the average percent of the population living in poverty is more than double Geauga County at 17.3 percent.

Residential/commercial generation from 2011 to 2015 varied by nearly 75,000 tons, with the highest generation year occurring in the reference year. It might be expected that as population decreases generation should also decrease, however this has not historically been the case. For example, 2015 population had declined by 10,000 people from 2011, and yet both recycling and disposal tonnages were higher in 2015 than 2011.

C. Profile of Commercial and Institutional Sector

The top sectors for employment in the District are car manufacturing, government, call center, auto parts, educational services, trucking, security, titanium, and food services. Overall the state of Ohio reported that 10 percent of employment was manufacturing based in 2010. The percent of county employment that is manufacturing based is higher in both Geauga and Trumbull Counties than the state average, at 15.5 percent and 14.2 percent respectively.

Table 2-3 Top Employers by Employment in Commercial and Institutional Sectors

Business	Type of Business
Geauga County	
Chardon Local Schools	Government
Geauga County Government	Government
Kenston Local Schools	Government
University Hospital Health System	Service
Walmart Stores Inc.	Retail
Trumbull County	
HM Health Services	Service
Sears Holdings/Kmart Corporation	Retail
Trumbull County Government	Government

³ Ohio Department of Development Services Agency. “Ohio County Indicators”. July 2017.

Business	Type of Business
Valley Care Health System	Service
Warren City Schools	Government
Walmart Stores Inc	Retail

Commercial operations exist in every jurisdiction in the SWMD, with some areas having more concentrated activity and population than others. Geauga County is more rural with commercial operations concentrated in the northwest and southwest corners of the County, as well as long major roadways that cut through the County. Trumbull County has a much larger population that is heavily concentrated in the southern half of the County so that commercial activity is centered around those population centers such as the Cities of Warren and Niles.

Gauga County has 6 school districts serving 8,700 students. Another 3,000 students are enrolled in private schools. Trumbull County’s school system is more than three times larger than Geauga County, and includes 24 school districts serving nearly 28,000 students. Nearly 1,700 students are enrolled in private schools in Trumbull County. Both counties have access to higher education, each hosting a satellite campus of the Kent State University system.

D. Profile of Industrial Sector

The top manufacturing employers by employment in the county are listed in Table 2-4.

Table 2-4 SWMD Top Employers by Employment in Manufacturing Sectors

Business	Type of Business
Geauga County	
Great Lakes Cheese Company	Manufacturing
Hexpol Compounding	Manufacturing
Masco Corp/KraftMaid Cabinetry Inc.	Manufacturing
Stock Equipment Company	Manufacturing
Tarkett/Johnsonite Inc.	Manufacturing
Trumbull County	
Delphi Automotive Systems, LLC	Manufacturing
General Motors Corporation	Manufacturing

Source: Lexis Nexis and Ohio County Profiles

In Geauga County, manufacturing is more spread out throughout the County. Trumbull County has a long history as a manufacturing center in the state of Ohio. This activity has been concentrated in the southern half of the County, focused around the City of Warren and Niles in Trumbull and Youngstown in Mahoning County.

Table 2-5 shows the 2014 commuter flows to Geauga and Trumbull Counties. Work inflow is when nonresidents commute into an area for work; work outflow is when the residents commute to work in other areas. Both counties show greater outflow of workers than inflow.

Table 2-5 Commuter Flows (All Jobs), 2011

Area	Work Inflow	Live and Work in Area	Work Outflow	Net Inflow/Outflow
Geauga	18,878	10,901	31,232	12,354 outflow
Trumbull	32,702	39,477	40,669	7,967 outflow

Source: A Workforce Analysis of the West Region published by Ohio Department of Job and Family Service 2014s

E. Other Characteristics

Geauga’s townships govern the vast majority of the land area serving over 85 percent of Geauga’s residents. While not as large of an unincorporated population, Trumbull County has 53 percent residing in townships. Townships embody the values of “grassroots governments”. Township officials live in the communities they serve and stay in touch with ever changing needs. Limited by law in the amount of taxes they can levy, township officials deliver quality services with the least possible burden to taxpayers.

A limited government structure drives the nature of programming and direction for the SWMD. Importance is on the services not provided by the private sector. These gaps are the focus of SWMD programming and expenses. Emphasis is placed on sufficient programming, and when possible more program options and longer terms of service, to maintain minimal level of funding needed.

CHAPTER 3: WASTE GENERATION

This chapter of the solid waste management plan provides a summary of the SWMD's historical and projected solid waste generation. The policy committee needs to understand the waste the SWMD will generate before it can make decisions regarding how to manage the waste. Thus, the policy committee analyzed the amounts and types of waste that were generated within the SWMD in the past and that could be generated in the future.

The SWMD's policy committee calculated how much solid waste was generated for the residential/commercial and industrial sectors. Residential/commercial waste is essentially municipal solid waste generated by households, small and large businesses, schools, government, etc. in a community. Manufacturing operations generate industrial solid waste. The policy committee added the quantities of waste disposed from both residential/commercial and industrial sources in landfills and the quantity of wastes reduced/recycled to determine total waste generation.

The SWMD's policy committee obtained reduction and recycling data by surveying communities, recycling service providers, collection and processing centers, commercial and industrial businesses, owners and operators of composting facilities, and other entities that recycle. Responding to a survey is voluntary, meaning that the policy committee relies upon an entity's ability and willingness to provide data. When entities do not respond to surveys, the policy committee gets only a partial picture of recycling activity. How much data the policy committee obtains has a direct effect on the SWMD's waste reduction and recycling generation rates.

The policy committee also obtains disposal data from Ohio EPA. Owners/operators of solid waste facilities submit annual reports to Ohio EPA. In these reports, owners/operators summarize the types, origins, and amounts of waste that were accepted at their facilities. Ohio EPA adjusts the reported disposal data by adding in waste disposed in out-of-state landfills.

The policy committee analyzed historic quantities of waste generated to project future waste generation. The details of this analysis are presented in Appendix G. The policy committee used the projections to make decisions on how best to manage waste and to ensure future access to adequate waste management capacity, including recycling infrastructure and disposal facilities.

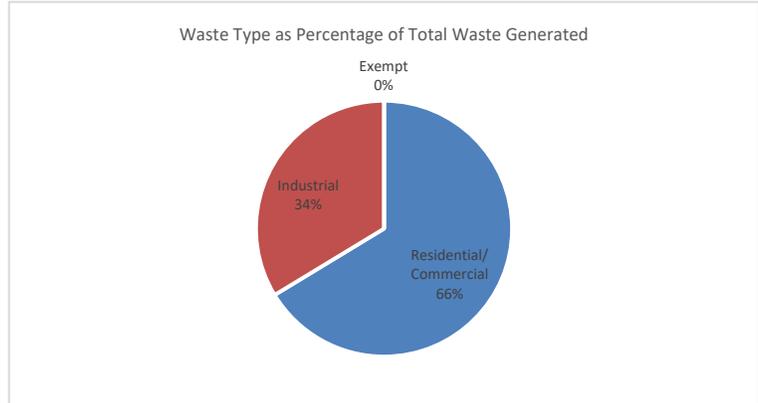
A. Solid Waste Generated in Reference Year

In 2015, the District generated 476,405 tons of material, as shown in Table 3-1 and Figure 3-1. Generation is the sum of waste landfilled, composted, and recycled. The District collects waste disposal, composting, and tire recycling from Ohio EPA (facilities are required to submit annual reports to Ohio EPA). Recycling data is collected from several sources. The District conducts surveys of commercial and industrial businesses recyclers, buybacks, brokers, and scrap dealers to determine the amounts recycled. These surveys are voluntary and relies on the willingness of any company to provide the data. In addition, Ohio EPA collects data from commercial 'big box stores' and material recovery facilities (MRFs).

Table 3-1 and Figure 3-1 Solid Waste Generated in the Reference Year

Type of Waste	Quantity Generated (tons)
Residential/ Commercial	315,959
Industrial	160,447
Excluded (Exempt)	0
Total	476,405

Source: Appendices G and K
 Sample Calculation:
 Total = Residential/Commercial + Industrial + Excluded



1. Residential/Commercial Waste Generated in the Reference Year

During the reference year, the SWMD generated 315,959 tons of waste in the residential/commercial sector. The residential/commercial sector is the largest generator in the SWMD, generating two thirds of the District’s solid waste.

Using the 2015 County population of 297,720 people, calculates a residential/commercial waste generation rate of 5.82 pounds per person per day. The SWMD collected recycling and waste disposal data to calculate waste generation.

As shown in Figure 3-2 the SWMD’s waste generation is similar to other districts in the region. Lake County has the greatest per capita waste generation, and Ashtabula has the lowest per capita waste generation.

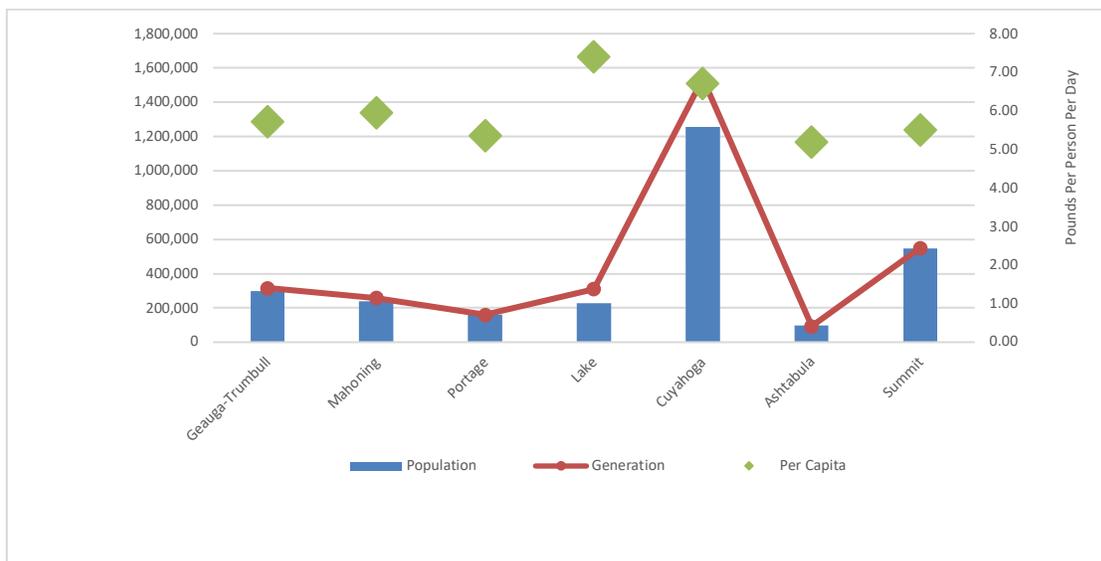


Figure 3-2 Regional SWMD’s Residential/Commercial Waste Generation and Per Capita Generation CY 2015

Approximately 26 percent of the waste generated by the residential/commercial sector was diverted from the landfill in 2015, totaling 81,870 tons. Forty-nine percent of the residential/commercial solid waste sent for disposal was transferred. Nearly 70 percent of the transferred waste is transferred through Environmental Transfer Services in Trumbull County. Only 9 percent of waste is transferred through Geauga County at the Broadview Heights Recycling Center. Of direct waste hauled, the majority, 77 percent, is

disposed in 2 landfills in Mahoning County. Carbon Limestone Landfill in Mahoning receives 65 percent and Mahoning Landfill receives 12 percent.

More than 31,800 tons of recycled material was reported by buybacks, brokers, haulers, processors, and MRFs. The main materials reported includes corrugated cardboard, ferrous metals, comingled recyclables, all other paper, and non-ferrous metals. Less than 3,000 tons was identified as coming from curbside recycling. Drop-off recycling diverted more than 5,000 tons of recyclables from the landfill in 2015, and the commercial sector reported a similar amount diverted. Another major source of diversion for the District is yard waste (organic) composting.

In comparison to SWMD's in the region, as shown in Figure 3-3. Summit County diverted 25 percent of their total waste generated from landfill, just one percent lower than Geauga-Trumbull counties. The county that diverted the most waste from landfill was Ashtabula, diverted 38 percent. Cuyahoga County, the largest county in the region by population, diverted 29 percent of waste from landfill.

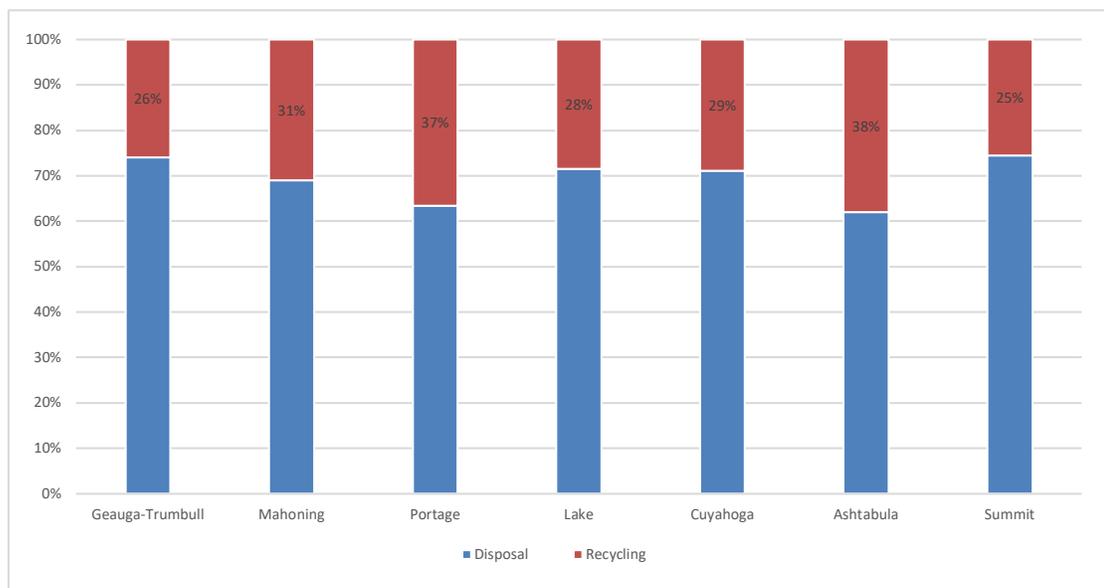


Figure 3-3 Regional SWMD Residential/Commercial Disposal and Recycling CY 2015

2. Industrial Waste Generated in the Reference Year

The industrial sector solid waste generation accounts for 34 percent of the total waste generation in the county. In the reference year, 70,931 tons were sent to disposal and more than 90,000 tons were recycled, so that 56 percent of the waste generated in the industrial sector is diverted from the landfill (Figure 3-4).

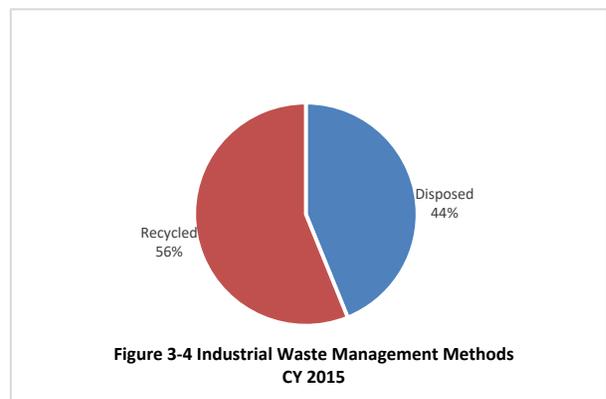


Figure 3-4 Industrial Waste Management Methods CY 2015

3. Excluded Waste Generated in the Reference Year

Excluded waste accounts for less than 10 percent of waste generated in the District, and is therefore not considered in the analysis of this plan.

B. Historical Waste Generated

1. Historical Residential/Commercial Waste Generated

Over the past five years the residential/commercial sector have disposed of between 206,000 and 234,000 tons and recycled between 27,000 and 81,000 tons (Figure 3-5). The tons recycled was greatest in the reference year, but the previous year saw the lowest tons recycled. Total waste generation has remained between 242,000 and 315,000.

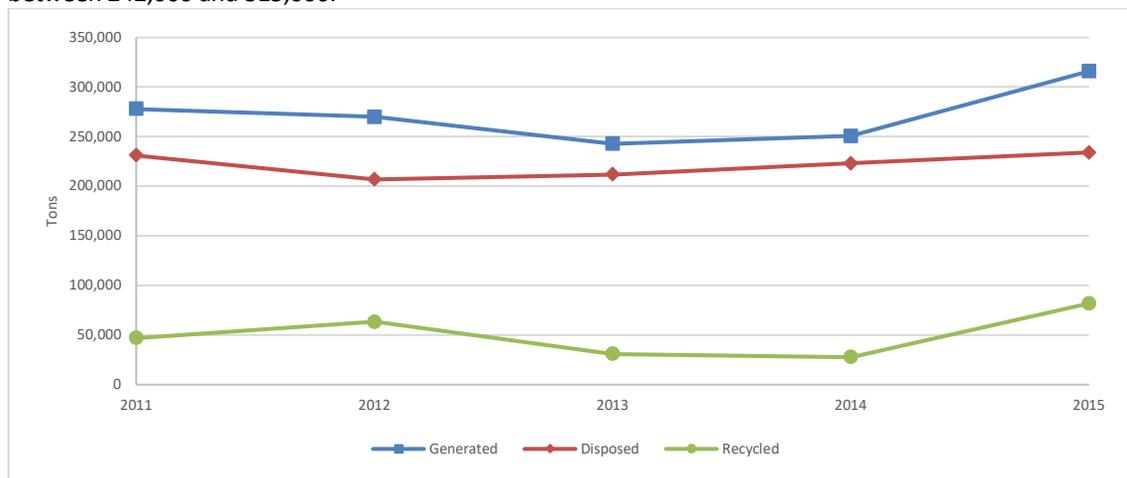


Figure 3-5 Historical Residential/Commercial Waste Management Methods

In Figure 3-6 residential waste disposal demonstrates a downward trend till 2013, which can be attributed to the economic recession of 2008. The SWMD shows signs of a gradual increase in residential/commercial waste generation for 2013, 2014, and 2015.

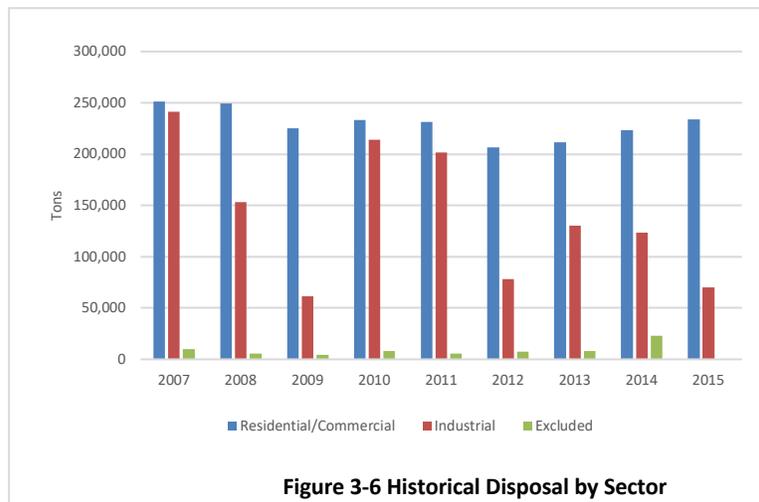


Figure 3-6 Historical Disposal by Sector

Regionally, Geauga-Trumbull County has similar per-capita waste generation as surrounding counties. However, it is difficult to directly compare Geauga-Trumbull to Districts such as Cuyahoga, Lake, and Ashtabula due to varying population. When comparing Districts with similar populations, Geauga-Trumbull residents generate 5.64 pounds per person per day falling in the middle. Adams-Clermont has the highest

per capita waste generation rate at 6.53, and Delaware-Knox-Marion-Morrow has the lowest at 5.03 pounds per person per day.

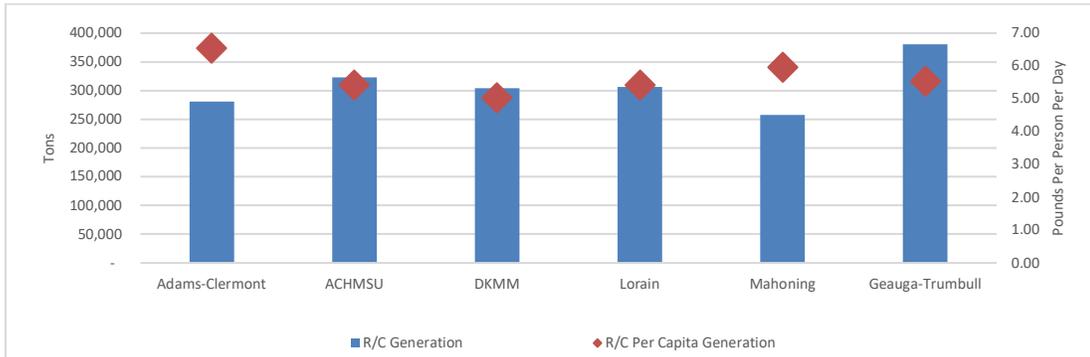


Figure 3-7 Residential/Commercial Waste Generation and Population Comparable Counties

2. Historical Industrial Waste Generated

Industrial generation declined from more than 381,000 tons in 2010 to just over 160,000 tons in 2015. Industrial recycling also declined from 168,000 tons in 2010 to 90,000 tons in 2015. Since 2000, Ohio experienced a decline in manufacturing (goods-producing) employment resulting in declining industrial waste generation. The 2008 and 2009 recession plummeted manufacturing employment. In manufacturing rich counties like Trumbull County, the job market was devastated. Industries not only downsized they closed.

Industrial waste disposal sharply increased in 2010 and 2011 over 2009 figures. The cause for the spike is a result of WCI Steel cleaning up sediment in the Mahoning River and larger volumes of disposal of auto fluff due to increased operations of auto fluff from the national “Cash for Clunkers” program. While not as dramatic, waste disposal increases were seen in 2013 and 2014. Fracking came to Ohio in 2011 and into Trumbull County in 2013. Fracking is a drilling technology that uses sand, water and chemicals injected at high pressures to blast open shale rock releasing the trapped gas. Solid waste generated throughout hydro-fracking process is sent to municipal landfills. Waste from fracking is likely attributed to the increase in disposal for 2013 and 2014. Because of lack of production in wells in Trumbull County, in 2014, some companies decided not to proceed with development plans for more well drilling. A return to industrial waste tons seen in 2014 is unlikely.

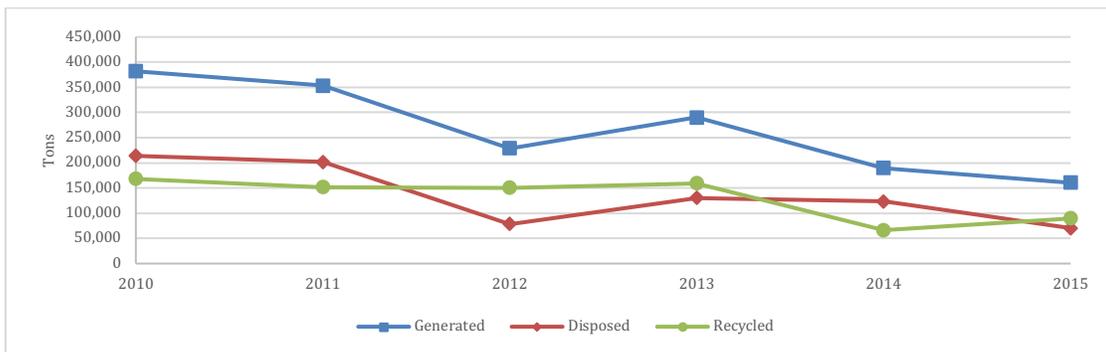


Figure 3-8 Historical Industrial Waste Management Methods

C. Waste Generation Projections

Table 3-2 presents the SWMD's waste generation for the first 6 years of the planning period.

Table 3-2 Waste Generation Projections

Year	Population	Residential/ Commercial				Industrial			Total (tons)
		Disposal (tons)	Recycle (tons)	Generation (tons)	Per Capita Generation (ppd)	Disposal (tons)	Recycle (tons)	Generation (tons)	
2015	297,720	234,088	81,870	315,959	5.82	70,391	90,056	160,447	476,405
2019	293,029	230,400	89,777	320,177	5.99	69,244	158,195	227,438	547,615
2020	291,856	229,478	90,291	319,769	6.00	68,960	157,546	226,506	546,275
2021	290,683	228,556	90,809	319,365	6.02	68,677	156,900	225,577	544,942
2022	289,510	227,633	91,331	318,964	6.04	68,395	156,257	224,652	543,616
2023	288,338	226,711	91,856	318,567	6.05	68,115	155,616	223,731	542,298
2024	287,165	225,789	92,384	318,174	6.07	67,836	154,978	222,814	540,987

Source: Appendices G and K

Sample Calculation:

Generation = Disposal + Recycle

Total = Residential/Commercial Generation + Industrial Generation

Per Capita Generation = ((Generation x 2000) / 365) / Population

Waste generation projections were estimated based on projected service industry job growth in the region⁴, projected population changes, and historical trends of waste generation, disposal, and recycling.

- Residential/commercial disposal projections – Based on average per capita disposal for years 2010, 2011, 2014, and 2015. Years 2012 and 2013 were excluded as anomalously low disposal years. R/C disposal is projected to decline during the planning period below 230,000 tons in 2019 to just over 225,000 tons in 2024. The 2015 per capita disposal is 4.31 and held constant over the planning period so that disposal declines as a result of population decline (see appendix D).
- Industrial waste projections - Waste generation projections were estimated by analyzing historical trends of waste generation, disposal, and recycling and predicted Ohio manufacturing employment for the region. The average yearly service industry growth is projected as 0.41 percent. The waste disposal analysis in Appendix D and diversion analysis in Appendix F projects a decline in disposal and recycling of 0.41 percent each year.

⁴ 2024 Job Outlook for Cleveland-Elyria-Mentor Metropolitan Statistical Area (Geauga County) and Youngstown-Warren-Boardman Metropolitan Statistical Area (Trumbull County) by the Ohio Department of Job and Family Services 2017.

CHAPTER 4: WASTE MANAGEMENT

Chapter 3 provided a summary of how much waste the SWMD generated in the reference year and how much waste the policy committee estimates the SWMD will generate during the planning period. This chapter summarizes the policy committee's strategy for how the SWMD will manage that waste during the planning period.

A SWMD must have access to facilities that can manage the waste the SWMD will generate. This includes landfills, transfer facilities, incinerator/waste-to-energy facilities, compost facilities, and facilities to process recyclable materials. This chapter describes the policy committee's strategy for managing the waste that will be generated within the SWMD during the planning period.

To ensure that the SWMD has access to facilities, the solid waste management plan identifies the facilities the policy committee expects will take the SWMD's trash, compost, and recyclables. Those facilities must be adequate to manage all of the SWMD's solid waste. The SWMD does not have to own or operate the identified facilities. In fact, most solid waste facilities in Ohio are owned and operated by entities other than the SWMD. Further, identified facilities can be any combination of facilities located within and outside of the SWMD (including facilities located in other states).

Although the policy committee needs to ensure that the SWMD will have access to all types of needed facilities, Ohio law emphasizes access to disposal capacity. In the solid waste management plan, the policy committee must demonstrate that the SWMD will have access to enough landfill capacity for all of the waste the SWMD will need to dispose of. If there isn't adequate landfill capacity, then the policy committee develops a strategy for obtaining adequate capacity.

Ohio has more than 30 years of remaining landfill capacity. That is more than enough capacity to dispose of all of Ohio's waste. However, landfills are not distributed equally around the state. Therefore, there is still the potential for a regional shortage of available landfill capacity, particularly if an existing landfill closes. If that happens, then the SWMDs in that region would likely rely on transfer facilities to get waste to an existing landfill instead of building a new landfill.

Finally, SWMD has the ability to control which landfill and transfer facilities can, and by extension cannot, accept waste that was generated within the SWMD. The SWMD accomplishes this by designating solid waste facilities (often referred to as flow control). A SWMD's authority to designate facilities is explained in more detail later in this chapter.

A. Waste Management Overview

The SWMD manages waste through a combination of landfills, recycling programs and facilities, transfer stations, and composting facilities. Figure 4-1 depicts total waste generation management in the reference year. The majority of waste generated is managed through landfill disposal.

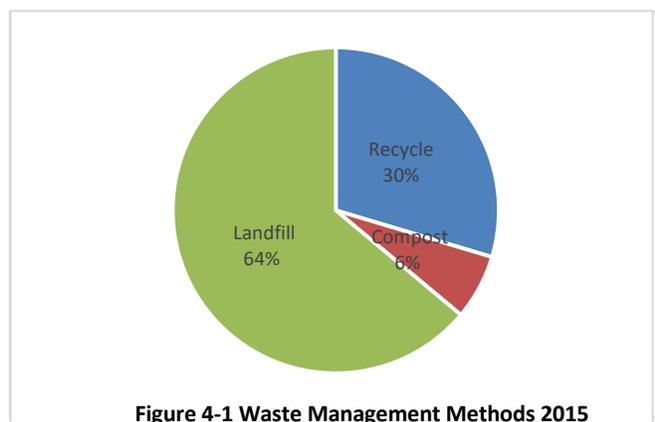


Figure 4-1 Waste Management Methods 2015

Table 4-1 Methods for Managing Waste

Year	Generated ¹	Recycle ²	Compost ³	Transfer ⁴	Landfill ⁵
2015	476,405	141,151	30,775	105,340	304,479
2019	546,275	201,570	46,267	103,265	298,437
2020	544,942	201,146	46,563	102,850	297,232
2021	543,616	200,726	46,861	102,435	296,029
2022	542,298	200,311	47,161	102,020	294,826
2023	540,987	199,900	47,463	101,605	293,625
2024	546,275	201,570	46,267	103,265	298,437

Source:

¹Reference Year Appendix Table G-1 and Projections Table G-2

²Reference Year Appendix Table E-5 and Projections Table K-3 subtracting compost

³Reference Year Appendix Table B-5 and Projections Table E-7

⁴Reference Year Appendix Table D-2 and Projections Table D-5

⁵Reference Year Appendix Table D-3 and Projections Table D-5

Landfill capacity remains abundant and exceeds available volume of waste generated locally. Consequently, tipping fees are low, and landfills continue to be the most feasible and economical disposal option today.

The SWMD is not expecting changes in the management of waste through the planning period. Following historical trends, the planning period expects waste to be similarly managed as shown in Figure 4-2.

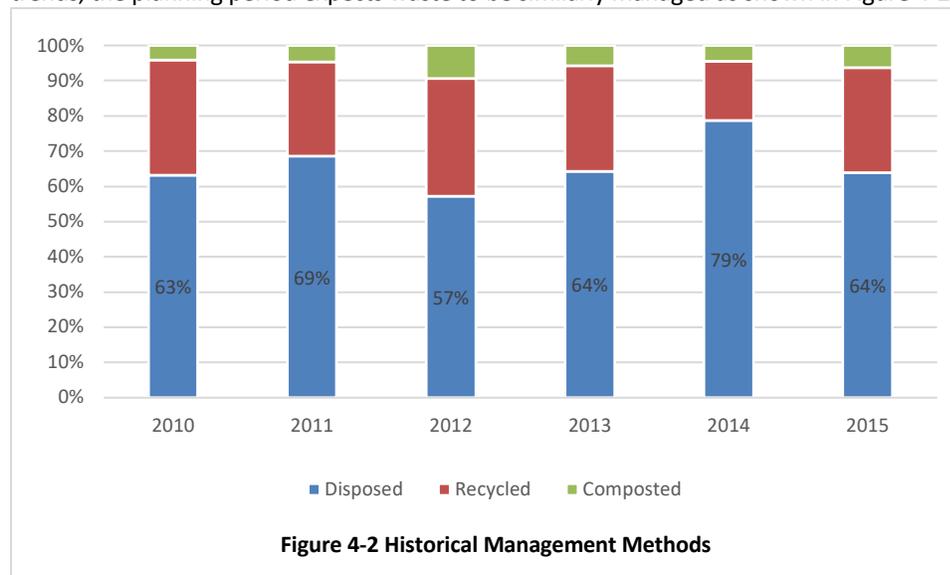


Figure 4-2 Historical Management Methods

B. Profile of Waste Management Infrastructure

1. Landfill Facilities

There are no active permitted solid waste disposal facilities in Geauga or Trumbull County. Fortunately, affordable disposal capacity is available within close proximity to the two counties. The volume of waste each landfill receives is dependent on its own collection and transport capabilities or upon its relationships with independent haulers, and its permit to accept approved daily waste tons.

Landfills used by the SWMD include 8 out-of-district but in-state landfills, and 1 out-of-state landfill. The majority of the facilities are owned and operated by the private sector. The source of information is Ohio EPA.

2. Transfer Facilities

There are 11 transfer facilities that accepted waste from the SWMD during the reference year. One transfer facility is located in Geauga County and one in Trumbull County. Both facilities are privately owned and operated. Of the remaining 9, all are privately owned and operated. Information for this section was obtained from Ohio EPA.

3. Composting Facilities

There were 14 registered Class IV compost and yard waste management facilities accepting SWMD materials in 2015 and 1 Class III. Nine of the facilities are located in Geauga County and 5 are in Trumbull County.

4. Processing Facilities

The District relies on out-of-district material recovery facility (MRF) processing capacity. A MRF is a specialized facility that receives, separates and prepares recyclable materials for marketing to end-user manufacturers. Materials collected at the curb and through drop-off programs are sent to MRFs. There are six single-stream or multi-stream MRFs that accept residential and commercial recyclables operating in the region. All of these facilities have complex sorting equipment and are able to process limited materials (plastic bottle and jugs, paper, cardboard, glass, and cans). If other materials are placed in the bins destined for these MRF it can be dangerous for the workers and sorting machinery.

Three of the MRFs are located in Summit County to the west of the District. Portage County, south of Geauga and west of Trumbull, operated a publicly owned MRF until 2017. There is also a Waste Management MRF in Cuyahoga County. During the last plan update (2013 Plan Update) there were no MRFs operating in the District. In 2016, Neo-Arc opened a dirty MRF in Trumbull County. However, Neo-Arc was unable to meet the recycling facility exemption status by diverting 60%. In January 2017, the Neo-Arc MRF converted to a clean MRF, then closed operations in 2017.

5. Waste Collection

Municipal solid waste is collected from residents, businesses or institutions and transported to landfills by a number of private waste operators. There is much competition for collection of municipal solid waste. A total of 14 companies compete for residential and commercial trash collection. Of these only 4 service residential and commercial recycling collection. Waste haulers contract directly with individual homeowners and commercial establishments. However, municipalities secure these services for their residents through a competitive bidding process.

C. Solid Waste Facilities Used in the Reference Year

1. Landfill Facilities

Table 4-2 lists the landfills receiving waste from the District in the reference year which is direct hauled, i.e., not transferred through a transfer facility.

Table 4-2 Landfill Facilities Used by the District in the Reference Year (2015 Direct Hauled)

Facility Name	Location		Waste Accepted from SWMD (tons)	Percent of all SWMD Waste Disposed	Remaining Capacity (years)
	County	State			
<i>In-District</i>					
None		Ohio		0%	
<i>Out-of-District</i>					
Lake County Solid Waste Facility	Lake	Ohio	15,228	9%	6.6
Lorain County Landfill LLC	Lorain	Ohio	1,695	1%	11.7
Carbon Limestone Landfill LLC	Mahoning	Ohio	116,626	68%	60.7

Facility Name	Location		Waste Accepted from SWMD (tons)	Percent of all SWMD Waste Disposed	Remaining Capacity (years)
	County	State			
Mahoning Landfill, Inc.	Mahoning	Ohio	21,652	13%	45.7
Countywide Recycling & Disposal Facility	Stark	Ohio	36	0%	75.6
Kimble Sanitary Landfill	Tuscarawas	Ohio	361	0%	30.8
Geneva Landfill	Ashtabula	Ohio	11,683	7%	85.9
American Landfill, Inc.	Stark	Ohio	4,667	3%	84.5
Total			171,948	100%	444

Source:
Appendix D, Table D-1

2. Transfer Facilities

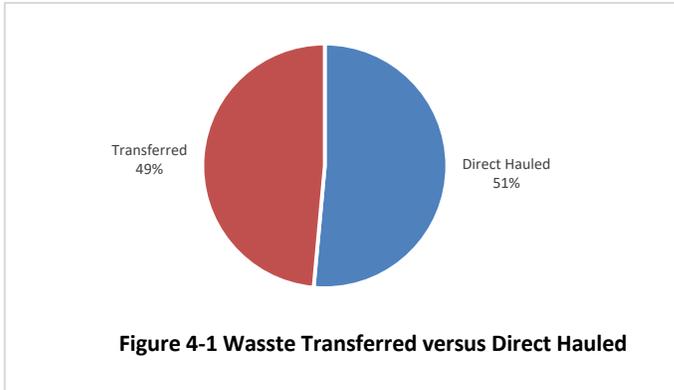
Table 4-3 lists the transfer facilities receiving waste from the District in the reference year before landfilling.

Table 4-3 Transfer Facilities Used by the District in the Reference Year (2015)

Facility Name	Location		Waste Accepted from District (tons)	Percent of all District Waste Transferred	Landfill Where Waste was Taken to be Disposed
	County	State			
<i>In-District</i>					
Environmental Transfer Systems Inc.	Trumbull	Ohio	95,908.23	65%	Carbon Limestone Landfill LLC, Mahoning Landfill Inc.
Universal Disposal Inc.	Geauga	Ohio	13,095.85	9%	Lorain County Landfill LLC, Kimble Sanitary Landfill
<i>Out-of-District</i>					
Kimble Transfer & Recycling Facility - Canton	Stark	Ohio	28.41	0%	Kimble Sanitary Landfill
PennOhio Coal Co, dba Kimble Transfer & Recycling	Tuscarawas	Ohio	867.09	1%	Kimble Sanitary Landfill
Republic Waste Recovery (Akron Recyclery)	Summit	Ohio	11.87	0%	Countywide Recycling & Disposal Facility
Harvard Road Transfer Station	Cuyahoga	Ohio	458.84	0%	Noble Rd Landfill
BFI Glenwillow Transfer Station	Cuyahoga	Ohio	9208	6%	Lorain County Landfill LLC, Countywide Recycling & Disposal Facility
Cleveland Transfer/Recycling Station	Cuyahoga	Ohio	14,161.84	9%	American Landfill Inc.
Broadview Heights Recycling Center	Cuyahoga	Ohio	5,659.16	4%	Noble Rd Landfill
<i>Out-of-State</i>					
Tri-County Transfer		PA	8,091	5%	
Valley Waste		PA	495	0%	
Total			147,985	100%	0

Source:
Appendix D, Table D-2

A little more than half the SWMDs waste is direct hauled to a landfill. Of the waste transported Environmental Transfer Systems transfers the majority. Environmental Transfer Systems transported to either Carbon Limestone Landfill or Mahoning Landfill.



3. Composting Facilities

Table 4-4 lists the composting facilities receiving materials from the District in the reference year.

Table 4-4 Composting Facilities Used by the District in the Reference Year (2015)

Facility Name	Location (County)	Material Composted (tons)	Percent of all Material Composted
<i>In District</i>			
Maple Dale Farm Inc	Geauga	53.39	0%
Wilder MHP S	Geauga	19.67	0%
Abate Landscaping	Geauga	211.52	1%
Middlefield Village	Geauga	170	1%
Hauser Landscaping	Geauga	8,578.83	29%
Midwest Mulch	Geauga	978.33	3%
Green Vision Materials	Geauga	978.33	3%
DeMilta Sand & Gravel Inc	Geauga	121.09	0%
Sagamore Soils Twinsburg Rd Comp. Fac.	Geauga	726.58	2%
Hauser Landscaping	Trumbull	5,147.2	17%
Gaumer Landscape Inc	Trumbull	1100	4%
Delli Quadri Landscaping	Trumbull	2,766.5	9%
City of Warren Water Pollution Control Ctr.	Trumbull	557.83	2%
Heatherwood Landscape Material & Supply	Trumbull	594	2%
<i>Out-of-District</i>			
City of Wickliffe Composting Facility	Lake	7789.6	26%
Total		29,793	

Source:
Appendix B, Table B-5

4. Processing Facilities

Table 4-5 lists the processing facilities receiving materials from the District in the reference year.

Table 4-5 Processing Facilities Used by the District in the Reference Year (2015)

Name of Facility	Location		Facility Type	Recyclables Accepted from District (tons)
	County	State		
In-District				
Neo-Arc	Trumbull	OH	Dirty MRF	DNR
Out-of-District				
Kimble Transfer and Recycling Station	Summit	OH	SS, MRF	DNR
Republic Services - Akron Recycler	Summit	OH	SS, MS, MRF	DNR
Waste Management of Ohio	Cuyahoga	OH	SS, MS, Blue bag MRF	495
Waste Management – Greenstar Akron MRF	Summit	OH	SS, MS, Blue bag MRF	DNR
Portage County SWMD Recycling Center	Portage	OH	Recycling Transfer Facility	DNR
Out-of-State				
None				
Total				495

Source:
Appendix B, Table B-7

D. Use of Solid Waste Facilities During the Planning Period

The estimated quantity of municipal solid waste generation averages 316,788 tons per year through the planning period. An estimated net disposal of approximately 3.3 million tons is needed for the duration of the planning period.

E. Siting Strategy

As explained earlier, the solid waste management plan must demonstrate that the SWMD will have access to enough capacity at landfill facilities to accept all of the waste the SWMD will need to dispose of during the planning period. If existing facilities cannot provide that capacity, then the policy committee must develop a plan for obtaining additional disposal capacity.

Although unlikely, the policy committee can conclude that it is in the SWMD’s best interest to construct a new solid waste landfill facility to secure disposal capacity. In that situation, Ohio law requires the policy committee to develop a strategy for identifying a suitable location for the facility. That requirement is found in Ohio Revised Code Section 3734.53(A)(8). This strategy is referred to as a siting strategy. The policy committee must include its siting strategy in the solid waste management plan. The District does not plan to site any new facilities throughout this planning period so this plan does not include a siting strategy.

F. Designation

Ohio law gives each SWMD the ability to control where waste generated from within the SWMD can be taken. Such control is generally referred to as flow control. In Ohio, SWMDs establish flow control by designating facilities. SWMDs can designate any type of solid waste facility, including recycling, transfer, and landfill facilities.

Even though a SWMD has the legal right to designate, it cannot do so until the policy committee specifically conveys that authority to the board of directors. The policy committee does this through a solid waste management plan. If it wants the SWMD to have the ability to designate facilities, then the policy committee includes a clear statement in the solid waste management plan giving the designation authority to the board of directors. The policy committee can also prevent the board of directors from designating facilities by withholding that authority in the solid waste management plan.

Even if the policy committee grants the board of directors the authority to designate in a solid waste management plan, the board of directors decides whether or not to act on that authority. If it chooses to use its authority to designate facilities, then the board of directors must follow the process that is prescribed in ORC Section 343.014. If it chooses not to designate facilities, then the board of directors simply takes no action.

Once the board of directors designates facilities, only designated facilities can take the SWMD's waste. That means, no one can legally take waste from the SWMD to undesignated facilities and undesignated facilities cannot legally accept waste from the SWMD. The only exception is in a situation where, the board of directors grants a waiver to allow an undesignated facility to take the SWMD's waste. Ohio law prescribes the criteria that the board must consider when deciding whether to grant a waiver and how long the board has to make a decision on a waiver request.

1. Description of the SWMD's Designation Process

The Board of Directors of the Geauga-Trumbull Solid Waste Management District is authorized to establish facility designations and designates solid waste facilities. The District relies on revenue from fees paid pursuant to contract agreements with designated solid waste facilities that receive solid waste generated within the District. In June 2007, the Board of Directors designated solid waste facilities to assure adequate financing to implement approved solid waste plans. As part of the "Designation," contracts were signed with solid waste facilities that included a \$5.50 per ton contract fee.

Table 4-6 identifies the list of designated facilities.

Any person or applicant may request a waiver from the Board authorizing the delivery of all or any portion of the solid waste generated within the District to a solid waste facility other than a designated solid waste facility. The Board may grant a waiver from the obligation to deliver solid waste generated within the District to a designated solid waste facility if the Board finds issuance of a waiver for the solid waste, the subject of the waiver request:

- a) is not inconsistent with projections contained in the Plan;
- b) will not adversely affect the implementation and financing of the Plan pursuant to the implementation scheduled contained in the Plan; and
- c) assures the maximum feasible utilization of existing in-District designated solid waste facilities.

Any person or applicant who submits a waiver request pursuant to this rule shall submit documents and information for consideration by the Board that support the issuance of the requested waiver. Any waiver granted by the Board shall be the subject of a waiver agreement between the Board and the applicant setting forth the terms of such waiver and waiver fee, if any.

2. List of Designated Facilities

Table 4-6 Facilities Currently Designated

Facility Name	Location		Facility Type
	County	State	
<i>In-District</i>			
Environmental Transfer Systems	Trumbull	OH	Transfer Station
Universal Disposal Inc.	Geauga	OH	Transfer Station
A Ten C, Inc.	Trumbull	OH	Transfer Station
Ohio Valley Waste proposed Transfer Facility	Trumbull	OH	Transfer Station
<i>Out-of-District</i>			
Carbon Limestone Landfill	Mahoning	OH	Landfill
Central Waste Landfill	Mahoning	OH	Landfill
Mahoning Landfill	Mahoning	OH	Landfill
Lake County Landfill	Lake	OH	Landfill
Geneva Landfill	Ashtabula	OH	Landfill
Kimble Sanitary Landfill	Tuscarawas	OH	Landfill
Countywide Recycling & Disposal	Stark	OH	Landfill
American Landfill	Stark	OH	Landfill
Lorain County Landfill Inc.	Lorain	OH	Landfill
Coshocton Landfill	Coshocton	OH	Landfill
Suburban Landfill	Perry	OH	Landfill
Pine Grove Regional	Fairfield	OH	Landfill
Athens Hocking Reclamation Center	Athens	OH	Landfill
Apex Environmental, LLC	Belmont	OH	Landfill
Liberty Tire Monofill	Stark, Tuscarawas, Wayne	OH	Landfill
Richland County Transfer	Richland	OH	Transfer Station
Broadview Heights Transfer	Cuyahoga	OH	Transfer Station
Waste Management, Oakwood Transfer	Cuyahoga	OH	Transfer Station
Glenwillow Transfer Station	Cuyahoga	OH	Transfer Station
Harvard Road Transfer	Cuyahoga	OH	Transfer Station
Akron Transfer Station	Summit	OH	Transfer Station
Kimble Transfer & Recycling	Stark	OH	Transfer Station
Hancock County Landfill	Hancock	OH	Landfill
J and J Refuse Recycling	Carroll	OH	Transfer Station
Cambridge Transfer and Recycling	Guernsey	OH	Transfer Station
Noble Road Landfill	Richland	OH	Landfill
<i>Out-of-State</i>			
Seneca Landfill	Butler	PA	Landfill
Imperial Landfill	Allegheny	PA	Landfill
Tri-County Industries	Mercer	PA	Transfer Station
Valley Waste Services Transfer	Beaver	PA	Transfer Station
Short Creek Landfill	Ohio	WV	Landfill

Note: List represents facilities designated in 2017.

CHAPTER 5: WASTE REDUCTION AND RECYCLING

As was explained in Chapter 1, a SWMD must have programs and services to achieve reduction and recycling goals established in the state solid waste management plan. A SWMD also ensures that there are programs and services available to meet local needs. The SWMD may directly provide some of these programs and services, may rely on private companies and non-profit organizations to provide programs and services, and may act as an intermediary between the entity providing the program or service and the party receiving the program or service.

Between achieving the goals of the state plan and meeting local needs, the SWMD needs to ensure that a wide variety of stakeholders have access to reduction and recycling programs. These stakeholders include residents, businesses, institutions, schools, and community leaders. These programs and services collectively represent the SWMD's strategy for furthering reduction and recycling in its member counties.

Before deciding upon the programs and services that are necessary and will be provided, the policy committee performed a strategic, in-depth review of the SWMD's existing programs and services, recycling infrastructure, recovery efforts, finances, and overall expectations. This review consisted of a series of 14 analyses that allowed the policy committee to obtain a holistic understanding of the SWMD by answering questions such as:

- Is the SWMD adequately serving all waste generating sectors?
- Is the SWMD recovering high volume wastes such as yard waste and cardboard?
- How well is the SWMD's recycling infrastructure being used/how well is it performing?
- What is the SWMD's financial situation and ability to fund programs?

Using what it learned, the policy committee drew conclusions about the SWMD's abilities, strengths and weaknesses, operations, existing programs and services, outstanding needs, available resources, etc. The policy committee then compiled a list of actions the SWMD could take, programs the SWMD could implement, or other things the SWMD could do to address its conclusions. The policy committee used that list to make decisions about the programs and services that will be available in the SWMD during the upcoming planning period.

After deciding on programs and services, the policy committee projected the quantities of recyclable materials that would be collected through those programs and services. This in turn allowed the policy committee to project its waste reduction and recycling rates for both the residential/commercial sector and the industrial sector (See Appendix E for the residential/commercial sector and Appendix F for the industrial sector).

A. Solid Waste Management District Priorities

Preparing this 2019 Plan, District staff completed a strategic process of evaluating its reduction and recycling efforts. This evaluation was completed as a gap analysis, comparing actual performance with potential or desired program performance and is located in Appendix H and L. Appendix H and L use historical comparisons, performance, weaknesses, participation, impacts, costs, etc. where applicable and gives an in-depth look at each program and lists gaps and actions/suggestions for programs. These suggestions could help strengthen programs, improve performance, and/or increase effectiveness. A summary list of areas for improvement are included in Table 5-1.

Table 5-1 Program and Strategies Conclusions

Analysis	Strengths	Areas for Improvement/Specific Actions
Residential - curbside	There are 3 PAYT type programs within the District that encourage recycling. All residents of Geauga County have opportunity to some type of curbside recycling, either subscription or non-subscription.	District grants to support jurisdictions in expanding curbside infrastructure, non-subscription and opt-out type access, and adoption of best practices, particularly in larger cities within the SWMD such as City of Warren. Contract with haulers to provide community specific data on tonnages and types of collection systems in use. Develop consistent education messaging around the benefits of recycling. Build stronger PAYT models and expand.
Residential – drop-off	At least one drop-off located in most communities within the District, and the locations of the drop-offs has remained constant.	Communicate with haulers to provide community specific data on tonnages. Relocate drop-offs located in areas where non-subscription curbside is available for residents. Create consistent and clear educational material for drop-offs. Pilot separate mixed-metals bin at drop-offs. Enforcement of illegal dumping at drop-off sites.
Commercial/Institutional	The SWMD offers recycling containers to schools, government office, and churches. Majority of the schools in the District participate in an office paper-recycling program with Abitibi. The District offers source reduction information and waste audits to businesses that request it.	Strategize data collection by developing relationships with targeted smaller businesses through phone calls or site visits. Continue paper surveys for large businesses already in the habit of completing them. Improve commercial and institutional education outreach and conduct more waste audits. Develop dialogue with business owners to understand barriers to recycling, and offer small grants to help overcome barriers. Add web resources for business recycling to website.
Industrial	Industrial waste and reduction rate is strong.	Improve survey responses by developing relationships with top generators to maintain a contact within the business and encourage data reporting.
Waste Composition	Strong fiber (paper, cardboard, etc) infrastructure for processing.	Residential waste composition study shows fiber (paper, cardboard, etc.) is largest material in the waste stream. Plastics continuing to grow in waste stream and local viable markets for various plastics is a barrier. Food waste composting infrastructure is not within a reasonable distance.
Economic Incentive	District grants support recycling of difficult waste through scrap tire grants. The District offers grants to help local industries that are interested in manufacturing a product from materials in the waste stream.	Continue to offer grants for scrap tire collection. Offer grants to the commercial and institutional sector for recycling infrastructure, such as for carts, educational tools, and waste audits.
Restricted and Difficult to Manage Waste	District operates a seasonal HHW recycling facility in Trumbull County and provides residents with an HHW annual amnesty collection day event.	Semi-permanent or permanent drop-off for Geauga residents. Discontinue Latex Paint collection and provide educational material on proper disposal of Latex Paint. Targeted education material to residents on dates and times of HHW collection. Conduct an annual HHW collection program evaluation and streamline collection based on evaluation.
Diversion	Residential/commercial waste reduction rate is 26 percent.	The District is not meeting Goal 1 of 90% recycling access for residents. The industrial sector did not meet Goal 2 of 66% diversion in the reference year, but is projected to meet Goal 2 by the first year of the planning period.
Special Programs	HHW collection is offered semi-permanent. The District participates in the Great American Cleanup. Health Department successful in abatement.	Explore best management options for HHW in Geauga County. Rebuild enforcement program with clear role and responsibilities.
Financial	Not applicable.	The District is projected to see a decline in revenues. This is exacerbated by the change in ASR regulations that is projected to result in a \$122,789 annual loss in revenue for the District.

Analysis	Strengths	Areas for Improvement/Specific Actions
Regional	Unexplored	Consider partnering with other SWMDs for difficult to manage waste streams.
Data Collection	Capturing larger generators data from industrial sector.	Evaluate a lower cost method and more strategic approach to capturing data such as phone calls and online surveys to increase response rates.
Education/Outreach	The District has a full-time Public Relations Community Outreach Coordinator.	Advertise recycling options using combination of website, mailers, and social media. Add Waste Wizard widget to website to allow users to search for material outlets. Track visitors to website. Promote businesses that are recycling on the website. Develop an outreach and marketing plan with consistent message following best practices and targeted education messages. Migrate education/outreach to community based social marketing.
Recyclable Material Processing Capacity	Ample capacity provided by private sector MRFs.	Not a priority.

The exercise of performing the gap analysis helps the planning journey by providing a summary list of proposed changes, improvements, etc. To assess programs the District could implement, the Policy Committee conducted a 2-hour workshop to discuss program options and rank based on priority implementation. Ranking accounted for impacts on tons diverted, relative costs to the District, direct and immediate needs for their impact on a full range of generators and materials.

B. Program Descriptions

This section briefly describes major programs and services available during the planning period. Appendix I contains complete descriptions.

Curbside Recycling Services

Curbside recycling is a service provided to households. Recyclable materials are picked up at the curb and taken to a material recovery facility where they are reprocessed and sold to manufacturers to turn into new materials. Depending on the political jurisdiction, the resident either contracts directly with a hauler or the service is offered by the political jurisdiction (in Geauga and Trumbull Counties, service is provided by a contractor). Not all recyclable materials can be recycled at the curb. Material recovery facilities have sophisticated equipment. The District website maintains a list of materials acceptable for the curb pick up as well as a list of outlets for other recyclables.

Table 5-2 Curbside Recycling Services (as of 11/2017)

ID#	Name of Curbside Service/Community Served	Service Provider	When Service Was/Will be Available
NSC 1	Middlefield Village	Rumpke	throughout planning period
NSC2	Cortland City	Republic Services	throughout planning period
NSC3	Hubbard City	Republic Services	throughout planning period
NSC4	Lordstown Village	Republic Services	throughout planning period
NSC5	Newton Falls Village	Ohio Valley Waste	throughout planning period
NSC6	Liberty Township	Republic Services	throughout planning period
NSC7	Wethersfield Township	Republic Services	throughout planning period
SC1	Aquilla Village	Rumpke, Republic Services	throughout planning period
SC2	Burton Village	Rumpke, Republic Services	throughout planning period
SC3	Chardon City	Rumpke, Republic Services	throughout planning period
SC4	South Russell Village	Rumpke, Republic Services	throughout planning period
SC5	Auburn Township	Republic, Republic Services	throughout planning period
SC6	Bainbridge Township	Rumpke, Republic Services	throughout planning period
SC7	Burton Township	Rumpke, Republic Services	throughout planning period
SC8	Chardon Township	Rumpke, Republic Services	throughout planning period
SC9	Chester Township	Rumpke, Republic Services	throughout planning period

ID#	Name of Curbside Service/Community Served	Service Provider	When Service Was/Will be Available
SC10	Claridon Township	Rumpke, Republic Services	throughout planning period
SC11	Hambden Township	Rumpke, Republic Services	throughout planning period
SC12	Huntsburg Township	Rumpke, Republic Services	throughout planning period
SC13	Middlefield Township	Rumpke, Republic Services	throughout planning period
SC14	Montville Township	Rumpke, Republic Services	throughout planning period
SC15	Munson Township	Rumpke, Republic Services	throughout planning period
SC16	Newbury Township	Rumpke, Republic Services	throughout planning period
SC17	Parkman Township	Rumpke, Republic Services	throughout planning period
SC18	Russell Township	Rumpke, Republic Services	throughout planning period
SC19	Thompson Township	Rumpke, Republic Services	throughout planning period
SC20	Troy Township	Rumpke, Republic Services	throughout planning period
SC21	Howland	Republic Services	throughout planning period
SC22	Brookfield Township	Republic Services	throughout planning period

Notes:
NSC is non-subscription
SC is subscription

Non-subscription curbside is a type of curbside recycling program that is available to residents automatically. In subscription curbside service the individual homeowners and the hauler contract. Public-private contracts determine collection frequency, materials collected, size of containers, and type of collection. All curbside materials were collected single stream (commingled) with either a bin or cart-based system. Markets guide the materials collected. The standard recyclables collected were: paper, plastic bottles and jugs, metal, and glass.

Drop-off Recycling Locations

Drop-off recycling is a service provided to households by the District. The District contracts with a service provider to provide containers (see locations in Table 5-3) and transport the containers to a material recovery facility. The material recovery facility reprocesses and sells the recyclables to manufacturers to turn into new materials. Not all recyclable materials can be recycled at the drop-off. Material recovery facilities have sophisticated equipment. The District website maintains a list of materials acceptable for the drop-off as well as a list of outlets for other recyclables.

Table 5-3 Drop-off Recycling Locations

Name of Drop-off/Community Served	Service Provider	When Service was/will be Available
FTU1 - Bainbridge Township 17800 Haskins Road, Chagrin Falls, Ohio 44023	Ohio Valley Waste Service	throughout planning period
FTU2 - Chester Township 12535 Chillicothe Road, Chesterland, Ohio 44023	Ohio Valley Waste Service	throughout planning period
FTU 3 - Munson Township 12200 Auburn Road, Chardon, Ohio 44065	Ohio Valley Waste Service	throughout planning period
FTU4 - Newbury Township 11014 Kinsman Road, Newbury, Ohio 44065	Ohio Valley Waste Service	throughout planning period
FTU5 - Notre Dame – Cathedral Latin School 13000 Auburn Road, Chardon, Ohio 44024	Ohio Valley Waste Service	throughout planning period
FTU6 - Russell Township 14921 Chillicothe Road, Novelty, Ohio 44072	Ohio Valley Waste Service	throughout planning period
FTU7 - Bazetta Township 3372 State Route 5, Cortland, Ohio 44410	Ohio Valley Waste Service	throughout planning period
FTU8 - Brookfield Township 774 State Route 7 NE, Brookfield, Ohio 44403	Ohio Valley Waste Service	throughout planning period
FTU9 - Champion 5435 Kuszamaul St, Warren, Ohio 44483 ****Closing May 2018****	Ohio Valley Waste Service	throughout planning period
FTU10 - Girard City	Ohio Valley Waste Service	throughout planning period

Name of Drop-off/Community Served	Service Provider	When Service was/will be Available
100 Main Street, Girard, Ohio 44420		
FTU11 - Howland Township 3403 Ridge Rd SE, Warren, Ohio 44484	Ohio Valley Waste Service	throughout planning period
FTU12 - Howland Township Fire Station 169 Niles Courtland Rd, Warren, Ohio 44484	Ohio Valley Waste Service	throughout planning period
FTU13 - Howland Trumbull Recycling Center 3590 N River Rd NE, Warren, Ohio 44484 Site is not serviced by SWMD contract	Howland Trumbull Recycling	throughout planning period
FTU14 - Hubbard City 33 West Liberty St, Hubbard, Ohio 44425	Ohio Valley Waste Service	throughout planning period
FTU15 - Hubbard Township 2600 Elmwood Dr ext, Hubbard, Ohio 44427	Ohio Valley Waste Service	throughout planning period
FTU16 - Kinsman Township 6380 State Route 87, Kinsman, Ohio 44428	Ohio Valley Waste Service	throughout planning period
FTU17 - Niles City 15 East State St, Niles, Ohio 44446	Ohio Valley Waste Service	throughout planning period
FTU18 - Warren Township Sports Complex 4651 West Market St, Leavittsburg, Ohio 44430	Ohio Valley Waste Service	throughout planning period
FTU19 - Trumbull Career and Technical Center 528 Educational Hwy, Warren, Ohio 44483	Ohio Valley Waste Service	throughout planning period
FTU20 – Warren Christ Episcopal Church 2627 Atlantic St NE, Warren, Ohio 44483	Ohio Valley Waste Service	throughout planning period
FTU21 - Summit Academy 1461 Moncrest Dr NW, Warren, Ohio 44483	Ohio Valley Waste Service	throughout planning period
FTU22 – Admin Building 347 N Park Ave, Warren, Ohio 44481	Ohio Valley Waste Service	throughout planning period
FTU23 – Chardon City 470 Center St, Chardon, Ohio 44024	Ohio Valley Waste Service	throughout planning period
FTU24 – SWMD Admin building 5138 Enterprise, Warren, Ohio 44481	Ohio Valley Waste Service	throughout planning period
FTR1 - Burton Township 14588 Park Street, Burton, Ohio 44021	Ohio Valley Waste Service	throughout planning period
FTR2 - Chardon Township 9949 Mentor Road, Chardon, Ohio 44024	Ohio Valley Waste Service	throughout planning period
FTR3 - Claridon Township 14000 Mayfield Rd, East Claridon, Ohio 44033	Ohio Valley Waste Service	throughout planning period
FTR4 - Huntsburg Township 17085 Mayfield Rd, Huntsburg, Ohio 44046	Ohio Valley Waste Service	throughout planning period
FTR5 - Montville Township 9755 Madison Rd, Montville, Ohio 44064	Ohio Valley Waste Service	throughout planning period
FTR6 - Parkman Township 16295 Main Market Rd, Parkman, Ohio 44080	Ohio Valley Waste Service	throughout planning period
FTR7 - Thompson Township 6565 Madison Rd, Thompson, Ohio 44086	Ohio Valley Waste Service	throughout planning period
FTR8 - Troy Township 13950 Main Market Rd, Burton, Ohio 44021	Ohio Valley Waste Service	throughout planning period
FTR9 - Bloomfield Township 2063 Kinsman Road, North Bloomfield, Ohio 44450	Ohio Valley Waste Service	throughout planning period
FTR10 - Braceville Township 584 Braceville Robinson Rd, Netwon Falls, Ohio 44444	Ohio Valley Waste Service	throughout planning period
FTR11 - Bristol Township 254 Park Drive, Bristolville, Ohio 44402	Ohio Valley Waste Service	throughout planning period
FTR12 - Farmington Township State Route 534, W. Farmington, Ohio 44491	Ohio Valley Waste Service	throughout planning period
FTR13- Fowler Township	Ohio Valley Waste Service	throughout planning period

Name of Drop-off/Community Served	Service Provider	When Service was/will be Available
3364 Youngstown Kingsville, Fowler, Ohio 44418		
FTR14 - Gustavus Township 8750 Youngstown Kingsville, Farmdale, Ohio 44417	Ohio Valley Waste Service	throughout planning period
FTR15 - Hartford Township 6901 State Route 305, Hartford, Ohio 44404	Ohio Valley Waste Service	throughout planning period
FTR16 - Johnston Township 4424 Greenville, Farmdale, Ohio 44417	Ohio Valley Waste Service	throughout planning period
FTR17 - Lordstown Village 1491 Salt Springs Rd, Warren, Ohio 44481	Ohio Valley Waste Service	throughout planning period
FTR18 - McDonald Village 200 Second St, McDonald, Ohio 44437	Ohio Valley Waste Service	throughout planning period
FTR19 - Mecca Township Park 5333 St Rt 46, Cortland, Ohio 44483	Ohio Valley Waste Service	throughout planning period
FTR20 - Newton Falls Township 4410 Newton Bailey Rd, Newton Falls, Ohio 44444	Ohio Valley Waste Service	throughout planning period
FTR21 - Southington Township 3419 State Route 534, Southington, Ohio 44470	Ohio Valley Waste Service	throughout planning period
FTR22 - Vernon Township 5086 State Route 7, Kinsman, Ohio 44428	Ohio Valley Waste Service	throughout planning period
FTR23 - Vienna Township 833 Youngstown Kingsville, Vienna, Ohio 44473	Ohio Valley Waste Service	throughout planning period

Markets guide the materials collected. The standard recyclables collected were: paper, plastic bottles and jugs, metal, and glass. This program will continue through the planning period. Drop-off site locations are subject to change at any time for unforeseen reasons or to maintain performance. All options are open for operations and implementation of this program.

Other Drop-offs

Some private operations of drop-off for specific items are available throughout the District. These include special drop boxes for: paper, clothing, plastic film bags, batteries, scrap metal, etc. These drop-offs operate independently of District programs but are a valuable resource to help divert materials from the landfill.

Commercial/Institutional Source Reduction and Recycling Programs

Commercial Recycling & Source Reduction

Focus will be placed on the services available to this sector which includes: contract and technical assistance (educations, in-person meetings, presentations, etc.), waste audits (see separate program), and third-party resources. Technical assistance will be provided to businesses, industries, and institutions. The District will focus its efforts on providing technical assistance to set up recycling services in commercial and institutional businesses.

Waste Audits

Technical assistance to area businesses, institutions, non-profits and industries includes performing waste assessments, waste audits and assistance in establishing effective recycling programs will continue through the planning period.

Event Recycling

The District loans collection containers for special events for recycling beverage bottles and cans. The District is targeting to work with and implement 1 away from home diversion opportunity a year. The District will technically assist in providing best management recycling plan, suitable set up, and refer private haulers who have the capacity to set up recycling collection stations and remove recyclables for short-term events and programs.

Restricted/Difficult to Manage Waste Programs

Trumbull HHW Recycling Facility

The District operates a seasonal HHW waste recycling drop-off facility to properly dispose of HHW from May through October (extended operations). The facility is located in Warren, Ohio in the southern portion of Trumbull County. The seasonal facility accepts electronics, lead-acid batteries, florescent bulbs, oil, HHW and appliances. An acceptable material list is maintained on the District's website.

Geauga HHW Recycling Facility

The District will build and operate a seasonal HHW waste recycling drop-off facility to properly dispose of HHW from May through October (extended operations). The facility location is to be determined. The seasonal facility will accept electronics, lead-acid batteries, florescent bulbs, oil, HHW and appliances. An acceptable material list is maintained on the District's website.

Amnesty Day HHW Collection Event

In Geauga County, the District sponsors satellite single day HHW collection events in various political jurisdictions one or two times a year. The District contracts with a private service provider to operate and handle the materials at these satellite collection events. The single events accepted electronics, lead-acid batteries, florescent bulbs, oil, and HHW. An acceptable material list is maintained on the District's website. Amnesty day collections will continue until the HHW Geauga Recycling Facility is operational.

Geauga HHW Options Study

The purpose of the study is to explore options available for managing HHW, E-waste and appliances to determine the best management service to Geauga County while ensuring convenience and sustainability. The study will identify management options and weigh them against each other to determine the best management service for Geauga County. A multitude of options are being used across the nation to manage HHW and other hard to recycle materials. Typical HHW and other hard to recycle material management options seen nationally include:

- Alternatives and Proper In-Home Management
- Single Day Events
- Curbside Pickup
- Mobile Collections
- Fixed Site Multi-Day Collections
- Permanent Facilities
- Regional Solutions

The various management system options, variations/hybrids, and different approaches (stand alone or in combination) will be explored to find the optimal option for Geauga County.

The study is scheduled for January 2018 and will be complete by February 2018.

Document Destruction Day

Shred events, 1 day in Geauga and 1 day in Trumbull, are contracted to a third-party but the District manages the events and pays for the services. The District will continue this program through the planning period.

Monitoring/Tracking Yard Waste

The District will monitor yard waste being delivered to compost facilities, open dumped, or landfilled by using Ohio EPA compost facility reports. Ohio EPA requires these facilities to submit annual reports. Monitoring could include surveying compost facilities, waste haulers, landfills, residents and landscapers. This strategy can be used to help the District locate illegally disposed of or landfilled yard waste by waste haulers and generators.

YW Management Technical Assistance

Yard waste management is decentralized. The District does not fund or operate yard waste management collection or facilities. Haulers in the District do not offer curbside separate yard waste collection hauling. The District will provide

technical assistance to communities/political jurisdictions that are interested in the development or expansion of current yard waste management programs.

Organics Management

The District will continue to offer grants to support on-site management of organics. Costs to develop infrastructure to process food waste composting in-district is a responsibility the District is not able to address at this time. The District will increase support of infrastructure development by providing outreach and education.

Grant Programs

Scrap Tire Grant

The District offers yearly grants to political jurisdictions to assist in disposal of scrap tires. Grant funds may be used for one or more or a combination of programs; collection drives in conjunction with spring cleanups; curbside collection drives, and/or roadside cleanup of illegally dumped tires. Grant amounts are based on population percentage. No matching financial commitment is required.

Market Development Grant

The purpose of this activity is to encourage businesses within the District to develop manufacturing of products using recycled material. The District monitors State and Federal grant programs that become available to aide in the development of this type of funding. The Policy Committee reviews proposals from established businesses and awards funding for local match portions of grant applications.

Recycling Incentive Grant

Community, business and institutional grants will be available to businesses, government entities, non-profit organizations and education institutions interested in implementing a new recycling program or improving an existing program to support long-term recycling goals. Grants will be awarded on a competitive basis and will begin in 2018.

Other Programs

Data Collection

Commercial and industrial businesses are annually mailed survey packets which include cover letter, survey and postage-paid return envelope. Survey recipients are given the option to submit their completed surveys via email or fax. Priority is placed on obtaining responses from entities that have not provided data within the last two surveys that are known to generate a significant quantity of recycling and waste. The District relies heavily on Ohio EPA provided data for MRFs and large box store commercial enterprises.

Great American Litter Cleanup

The District participates in the Keep America Beautiful/Great American Clean Up Program. The cleanup is held in April and May before the weeds grow covering unsightly road litter in ditches parks, and along roadsides. Volunteers are given trash bags for their clean ups along with bottled water and flower seed packets for beautification projects within the community.

Health Department Enforcement

The District provides funding to the Ohio EPA approved Health Districts. Geauga County, Trumbull County, and Warren City. The Health District enforcement duties consist of:

- Inspections required by Ohio EPA for the health district to remain on the Director's approved list.
- Work with the District when solid waste issues arise.

Environmental Crimes Task Force

The District will develop a structure for an Environmental Crimes Task Force defining roles, duties, and responsibilities. The District will take the lead on organizing meetings with health districts, law enforcement, courts and judges to obtain partnerships and commitment for the program. An illegal dumping reporting procedure and monitoring system will be developed.

Outreach, Education, Awareness, and Technical Assistance

Minimum education requirements prescribed by Goal 3:

- The District maintains a website at www.startrecycling.com
- The Solid Waste Management Plan and website serve as a resource guide. However the District will develop a print version of the resource guide Reduce, Reuse and Recycle (R3) Directory.
- District staff is available for presentations.

Outreach and Marketing Plan

The District will be implementing a multi-layered, multi-faceted marketing and outreach strategy that targets audiences by identifying who they are, where they live, and events going on in their lives. Marketing focuses on each target audience and includes the following marketing efforts:

- Social media
- Website
- Radio Ads
- Flyers, poster, etc.
- Brochures
- Print advertisements
- District Annual Report
- Presentations/workshops
- Community events

Table 5-4 Target Audience Program Outreach

<i>Outreach Audience</i>	<i>Strategies/Programs</i>
<i>Residents</i>	Website and social media Resident Outreach – Outreach priority to address illegal dumping and wish-cycling
<i>Schools</i>	School Outreach <ul style="list-style-type: none"> ○ Students <ul style="list-style-type: none"> ▪ Make classroom resources available on website ▪ Develop campaign with prompts and commitments geared toward students to reduce lunch waste. ○ Teachers <ul style="list-style-type: none"> ▪ Workshops, seminars, etc. ○ Administrators <ul style="list-style-type: none"> ▪ Establish or expand recycling programs within school buildings.
<i>Industries</i>	Not an outreach priority
<i>Institutions and Commercial Businesses</i>	Landlord/property management and tenants <ul style="list-style-type: none"> ○ Target 4 buildings a year to establish recycling programs. Schools/institutions <ul style="list-style-type: none"> ○ Target 4 institutions a year to establish recycling programs. Other Businesses <ul style="list-style-type: none"> ○ Develop a recognition program for businesses ○ Assist businesses in applying for Ohio EPA’s Encouraging Environmental Excellence (E3) program
<i>Communities and Elected Officials</i>	Political Jurisdictions - Outreach priority to increase residential recycling rates Create a listerv or database of elected officials and community leaders Produce an annual report in print and online form Meet in person with 2-3 communities a year Produce bi-annual webinars

C. Waste Reduction and Recycling Rates

1. Residential/Commercial Recycling in the District

Table 5-5 Residential/Commercial Waste Reduction and Recycling Rate

Year	Projected Quantity Collected (tons)	Residential/ Commercial WRR¹ (%)

Year	Projected Quantity Collected (tons)	Residential/ Commercial WRR ¹ (%)
2019	89,777	28%
2020	90,291	28%
2021	90,809	28%
2022	91,331	29%
2023	91,856	29%
2024	92,384	29%

Notes: WRR = Waste Reduction Rate

Source:

Appendix K, Table K-1

Sample Calculation:

Waste Reduction Rate = Recycled / Total Generated

2. Industrial Recycling in the District

Table 5-6 Industrial Waste Reduction and Recycling Rate

Year	Projected Quantity Collected (tons)	Industrial WRR ¹ (%)
2019	158,195	70%
2020	157,546	70%
2021	156,900	70%
2022	156,257	70%
2023	155,616	70%
2024	154,978	70%

Notes: WRR = Waste Reduction Rate

Source:

Appendix K, Table K-2

Sample Calculation:

Waste Reduction Rate = Recycled / Total Generated

CHAPTER 6: BUDGET

Ohio Revised Code Section 3734.53(B) requires a solid waste management plan to present a budget. This budget accounts for how the SWMD will obtain money to pay for operating the SWMD and how the SWMD will spend that money. For revenue, the solid waste management plan identifies the sources of funding the SWMD will use to implement its approved solid waste management plan. The plan also provides estimates of how much revenue the SWMD expects to receive from each source. For expenses, the solid waste management plan identifies the programs the SWMD intends to fund during the planning period and estimates how much the SWMD will spend on each program. The plan must also demonstrate that planned expenses will be made in accordance with ten allowable uses that are prescribed in ORC Section 3734.57(G).

Ultimately, the solid waste management plan must demonstrate that the SWMD will have adequate money to implement the approved solid waste management plan. The plan does this by providing annual projections for revenues, expenses, and cash balances.

If projections show that the SWMD will not have enough money to pay for all planned expenses or if the SWMD has reason to believe that uncertain circumstances could change its future financial position, then the plan must demonstrate how the SWMD will balance its budget. This can be done by increasing revenues, decreasing expenses, or some combination of both.

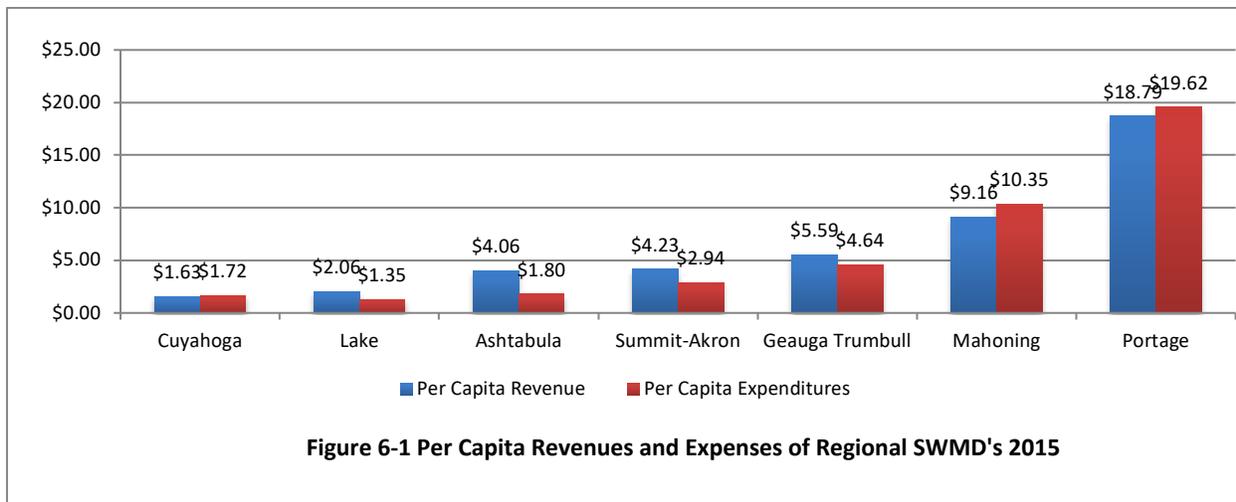
This chapter of the solid waste management plan provides an overview of the SWMD's budget. Detailed information about the budget is provided in Appendix O.

A. Overview of the SWMD's Budget

The activities and services described in Chapter 5 are supported through designation fees and sale of recycled materials. Through utilization of competitive bidding with the public and private sectors, the District continues to provide the highest level of solid waste management services available at the greatest value to our community.

The District estimates earning roughly \$1.68 million annually the first six years of the planning period and spending between \$1.7 to \$1.9 million annually over that same time period. At the estimated budget the District will be drawing down the fund balance to support programming. Changes in revenue sources are not anticipated during the first six years of the plan. However, Ohio HB 49 will now allow certain materials such as auto-shredder fluff that is used as alternative daily cover to be exempt from fees. As a result, the District is projected to lose \$122,789 annually in revenue.

Compared to neighboring solid waste management districts, the per capita revenue and expenses are third highest in the region. The amount of money spent on programs per resident in the SWMD is \$4.64 per year.



B. Revenue

There are a number of mechanisms SWMDs can use to raise the revenue necessary to finance their solid waste management plans. Two of the most commonly used mechanisms are disposal fees and generation fees. These fees are often referred to as “statutory” fees because SWMDs’ authority to levy the fees is established in Ohio law.

A SWMD’s policy committee (or board of trustees for a regional solid waste authority) has the authority to establish fees. Before a SWMD can collect a generation or disposal fee, the SWMD’s policy committee must first obtain approval from local communities through a ratification process. That process is detailed in ORC Section 3734.57. Ratification allows communities in the SWMD to vote on whether they support levying the proposed fee. If enough communities ratify (i.e. approve), the proposed fee, then the SWMD can collect the fee.

Types of Fees:

Disposal Fees (See Ohio Revised Code Section 3734.57(B))

Disposal fees are collected on each ton of solid waste that is disposed at landfills in the levying SWMD. There are three components, or tiers, to the fee. The tiers correspond to where waste was generated – in-district, out-of-district, and out-of-state. In-district waste is solid waste generated by counties within the levying SWMD and disposed at landfills in that SWMD. Out-of-district waste is solid waste generated in Ohio counties that are not part of the SWMD and disposed at landfills in the SWMD. Out-of-state waste is solid waste generated in other states and disposed at landfills in the SWMD.

Ohio’s law prescribes the following limits on disposal fees:

- The in-district fee must be \geq \$1.00 and \leq \$2.00;
- The out-of-district fee must be \geq \$2.00 and \leq \$4.00; and
- The out-of-state fee must be equal to the in-district fee.

Generation Fees (See Ohio Revised Code Section 3734.573)

Generation fees are collected on each ton of solid waste that is generated within the levying SWMD and accepted at either a transfer facility or landfill located in Ohio. The fee is collected at the first facility that accepts the SWMD’s waste. The statute does not set minimum or maximum limits on the per ton amount for generation fees.

Rates and Charges (See Ohio Revised Code Section 343.08)

The board of directors can collect money for a SWMD through what are called rates and charges. The board can require anyone that receives solid waste services from the SWMD to pay for those services. The board does this by establishing and collecting rates and charges on behalf of the SWMD. Rates and charges must be paid by anyone that

owns an improved lot or parcel that receives services from the SWMD. Qualifying services include solid waste collection, transfer, disposal, recycling, and processing services.

Rate and charges can be collected in two ways:

1. Through periodic billings made by the SWMD. The SWMD can bill for services through either a direct bill or through a utility bill issued by a county waste district, a county sewer district, or another political jurisdiction that provides a public utility service.
2. Through an improved parcel assessment (collected as a property tax).

Contracts (See Ohio Revised Code Sections 343.02 and 343.03)

The board of directors can enter into contracts with owners/operators of solid waste facilities or transporters of solid waste to collect generation or disposal fees on behalf of a SWMD.

Other Sources of Revenue

There are a variety of other sources that SWMDs can use to earn revenue. Some of these sources include:

- Revenue from the sale of recyclable materials
 - User fees (such as fees charged to participate in scrap tire and appliance collections)
 - County contributions (such as from the general revenue fund or revenues from publicly-operated solid waste facilities (i.e. landfills, transfer facilities)
 - Interest earned on cash balances
 - Grants
 - Loans
 - Bonds
1. Disposal Fees
There are no landfills located in the District, and the District does not collect any disposal fees.
 2. Generation Fees
The District does not collect generation fees.
 3. Fees Collected via Designation Agreements
In June 2007, in accordance with Ohio Revised Code 343.014, the Board of Directors adopted designation to assure adequate financing to implement the approved solid waste plan. As part of Designation contracts were signed with solid waste facilities accepting SWMD waste to remit a \$5.50 per ton contract fee to the District. The Policy Committee of the Geauga-Trumbull Solid Waste Management District has decided to continue to use/include facility designation fee of \$5.50 per ton to fund the solid waste plan. The contract fee is collected at the first point of disposal by the designated facilities, including landfills, transfer stations, incinerators, and material recovery facilities and remitted back to the District.
 4. Other Funding Mechanisms
Other sources as described below are typically 1 percent or less of contributing funding.

Interest

Interest earned.

Revenue from Selling Recyclable Materials

The District collects revenue from sale of recyclables (specifically computers, lead-acid batteries, appliances, and used oil). Recycling revenue fluctuates with the markets. The markets for these materials are not as deeply affected by the China ban of recycling imports.

5. Summary of Revenue

Table 6-3 shows the projected revenues for the first five years of the planning period. The per ton \$5.50 per ton designation fee projects the District’s revenue will hold constant. The projected designation fee revenues include the loss in revenue from ADC fee exempted materials. Other revenue contributes less than one percent of the District’s funding and is mainly sourced from interest earned.

Table 6-1 Summary of Revenue

Year	Designation Fees	Other Revenue		Total Revenue
		Interest	Recycling Revenue	
Reference Year				
2015	\$1,661,844	\$2,524	\$0	\$1,664,368
Planning Period				
2019	\$1,661,428	\$49,864	\$5,000	\$1,716,292
2020	\$1,661,428	\$47,950	\$5,000	\$1,714,377
2021	\$1,661,428	\$45,718	\$5,000	\$1,712,146
2022	\$1,661,428	\$43,733	\$5,000	\$1,710,161
2023	\$1,661,428	\$41,502	\$5,000	\$1,707,930
2024	\$1,661,428	\$38,833	\$5,000	\$1,705,260

Source:
Appendix O, Table O-5 and O-6

C. Expenses

Ohio’s law authorizes SWMDs to spend revenue on 10 specified purposes (often referred to as the 10 allowable uses). All of the uses are directly related to managing solid waste or for dealing with the effects of hosting a solid waste facility. The 10 uses are as follows:

1. Preparing, monitoring, and reviewing implementation of a solid waste management plan.
2. Implementing the approved solid waste management plan.
3. Financial assistance to approved boards of health to enforce Ohio’s solid waste laws and regulations.
4. Financial assistance to counties for the added costs of hosting a solid waste facility.
5. Sampling public or private wells on properties adjacent to a solid waste facility.
6. Inspecting solid wastes generated outside of Ohio and disposed within the SWMD.
7. Financial assistance to boards of health for enforcing open burning and open dumping laws, and to law enforcement agencies for enforcing anti-littering laws and ordinances.
8. Financial assistance to approved boards of health for operator certification training.
9. Financial assistance to municipal corporations and townships for the added costs of hosting a solid waste facility that is not a landfill.
10. Financial assistance to communities adjacent to and affected by a publicly-owned landfill when those communities are not located within the SWMD or do not host the landfill.

In most cases, the majority of a SWMD’s budget is used to implement the approved solid waste management plan (allowable use 2). Allowable use 2 authorizes SWMDs to spend money for a wide range of purposes. Furthermore, there are many types of expenses that a solid waste management district incurs to implement a solid waste management plan. Examples include: salaries and benefits; purchasing and operating equipment (such as collection vehicles and drop-off containers); operating facilities (such as recycling centers, solid waste transfer facilities, and composting facilities); offering collection programs (such as yard waste and scrap tires); providing outreach and education; providing services (such as curbside recycling services); and paying for community clean-up programs.

Conversely, Ohio’s law provides narrow definitions for how a SWMD can spend money in accordance with the other nine uses. For example, allowable use 4 authorizes a SWMD to give a county money to compensate the county for

costs it incurs because it hosts a solid waste facility. The SWMD can give the county money for maintaining roads and public facilities impacted by the solid waste facility and for providing emergency and other public services. Those are the only ways a SWMD can spend money under allowable use 4.

Table 6-2 summarizes the types of expenses the District expects for implementation of this Plan Update. Detailed information regarding expenses is provided in Appendix O.

Table 6-2 Summary of Expenses

Expense Category	Year						
	Reference	Planning Period					
	2015	2019	2020	2021	2022	2023	2024
Administration, overhead, legal, plan monitoring	\$429,238	\$537,000	\$549,015	\$561,390	\$574,137	\$614,766	\$604,800
Drop-off Collection	\$388,247	\$526,320	\$536,846	\$529,071	\$530,127	\$540,729	\$551,544
Other Recycling Collection	\$15,532	\$46,000	\$46,000	\$19,000	\$19,000	\$19,000	\$1,000
Tire Collection	\$71,079	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000
HHW Collection	\$147,512	\$278,875	\$281,664	\$284,481	\$287,326	\$290,199	\$293,101
Electronics Collection	\$0	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000
Appliance Collection	\$9,211	\$16,000	\$16,000	\$16,000	\$16,000	\$16,000	\$16,000
Other Collection Drives	\$3,140	\$3,000	\$3,000	\$3,000	\$3,000	\$3,000	\$3,000
Organics	\$26,044	\$0	\$18,000	\$18,000	\$18,000	\$18,000	\$18,000
Education and Awareness	\$101,418	\$135,989	\$139,423	\$142,948	\$146,567	\$150,282	\$150,900
Other – Recycling Incentive Grant	\$0	\$78,000	\$78,000	\$78,000	\$78,000	\$60,000	\$60,000
Health Department	\$35,250	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$50,000
Open Dump Enforcement	\$154,176	\$35,000	\$110,000	\$102,500	\$104,500	\$106,540	\$106,500
Total Expenses	\$1,380,847	\$1,881,185	\$2,002,949	\$1,979,391	\$2,001,656	\$2,043,516	\$2,004,845

Source:
Appendix O, Table O-7

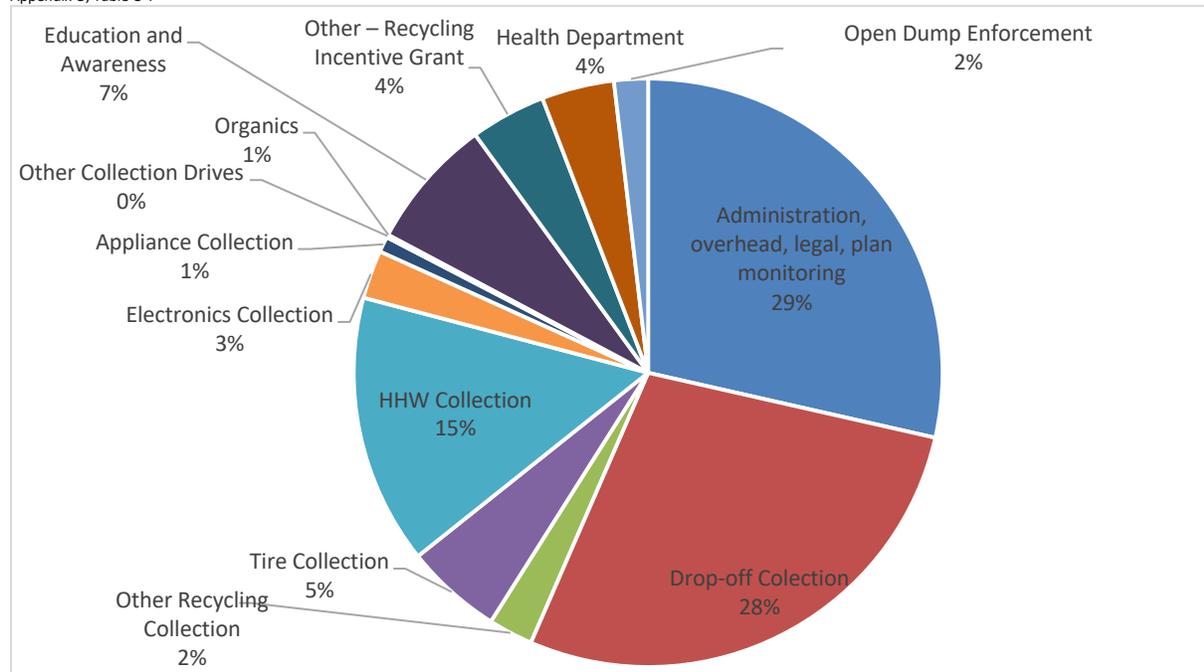


Figure 6-2 Plan Expenses in 2019

D. Budget Summary

Table 6-3 Budget Summary

Year	Revenue	Expenses	Net Difference	Ending Balance
Reference Year				
2015	\$1,664,368	\$1,380,847	\$283,521	\$2,698,067
Planning Period				
2019	\$1,714,547	\$1,881,185	(\$166,638)	\$4,283,405
2020	\$1,712,745	\$2,002,949	(\$290,204)	\$3,993,201
2021	\$1,709,607	\$1,979,391	(\$269,784)	\$3,723,417
2022	\$1,706,690	\$2,001,656	(\$294,966)	\$3,428,451
2023	\$1,703,500	\$2,043,516	(\$340,016)	\$3,088,435
2024	\$1,699,824	\$2,004,845	(\$305,021)	\$2,783,414

Source
Appendix O, table O-8

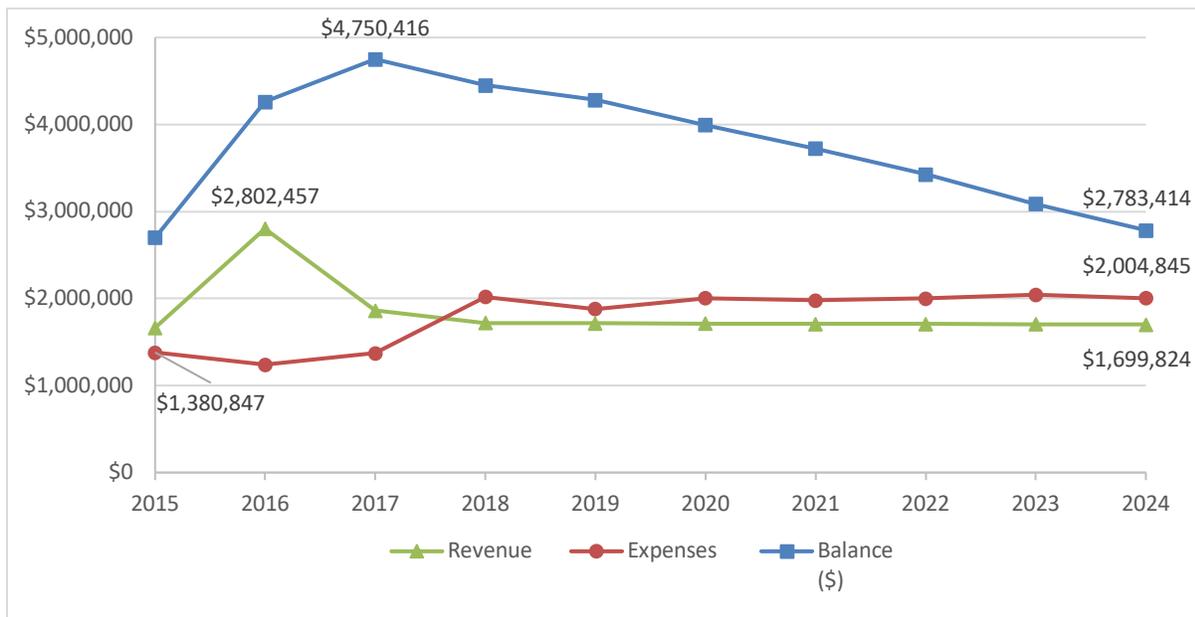


Figure 6-3 Planning Period Fund Balance

APPENDIX A: MISCELLANEOUS INFORMATION

Appendix A establishes the reference year used for this plan update, planning period, goal statement, material change in circumstances and explanations of differences in data.

A. Reference Year

The reference year for this solid waste management plan is: 2015

B. Planning Period

The planning period for this solid waste management plan is: 2019 to 2033.

C. Goal Statement

The SWMD will achieve the following Goal(s):

Goal 2: Waste Reduction and Recycling Rates states the SWMD shall reduce and recycle at least 25 percent of the solid waste generated by the residential/commercial sector and at least 66 percent of the solid waste generated by the industrial sector.

D. Explanations of differences between data previously reported and data used in the solid waste management plan

- a. Differences in quantities of materials recovered between the annual district report and the solid waste management plan.

The data provided in the 2015 ADR differs slightly from the data used in this Plan Update. Yard waste data taken from Ohio EPA’s Compost Report (updated 6/6/16) identified slightly more compost. Household Hazardous Waste data is roughly 23 tons lower than reported in the 2015 ADR. Adjustments were made after all invoices were finalized. Table A-1 shows material tonnage differences.

Table A-1 Material Quantity Differences

Material	2015 Data used in this Plan Update (tons)	2015 Data from ADR (tons)
Appliances / “White Goods”	24	24
Household Hazardous Waste	125	148
Used Motor Oil	13	13
Electronics	64	64
Scrap Tires	3,735	3,735
Dry Cell Batteries	2	2
Lead-Acid Batteries	137	137
Food	1,011	1,011
Glass	1	1
Ferrous Metals	9,355	9,355
Non-Ferrous Metals	1,055	1,055
Corrugated Cardboard	16,559	16,559
All Other Paper	3,164	3,162
Plastics	270	270
Textiles	668	668
Wood	242	242
Rubber	-	0

Material	2015 Data used in this Plan Update (tons)	2015 Data from ADR (tons)
Commingled Recyclables	15,216	15,216
Yard Waste	29,793	29,730
Reuseables	-	
Books	-	
Other	439	439
TOTAL	81,872	81,832

b. Differences in financial information reported in quarterly fee reports and the financial data used in the solid waste management plan.

See Appendix O, page Appendix O-14.

E. Material Change in Circumstances/Contingencies

In accordance with ORC 3734.56(D), the District’s Solid Waste Management Plan (*Plan Update*) must be revised if the Board of Directors (Board) has determined that “circumstances materially changed from those addressed in the approved initial or amended plan of the district.” A material change in circumstances shall be defined as a change that adversely affects the ability of the Board of Directors to: (1) assure waste disposal capacity during the planning period; (2) maintain compliance with applicable waste reduction strategies or access goals; (3) adequately finance the implementation of the Plan.

The Board of Directors shall make the determination of whether a material change in circumstances has occurred as follows:

1. Assurance of Waste Disposal Capacity

a. Decrease in Waste Generation

A material change in circumstances may occur if the temporary or permanent closure of a designated facility reduces the available landfill disposal capacity below the projected disposal requirements for solid waste generated within the District. The Board of Directors may conclude that a material change in circumstances has not occurred if the Board of Directors are able to secure commitments to landfill the waste previously received at a temporarily or permanently closed facility.

The Chairperson of the Board of Directors will determine whether it is necessary to convene a special meeting of the Board of Directors in the event a designated facility is temporarily or permanently closed to determine whether disposal capacity is available to the District from other designated landfills or whether a material change in circumstances has occurred.

b. Increase in Waste Generation

Future capacity needs of the District as outlined in this Plan are based on waste generation estimates. A significant increase in solid waste generation within the District may affect the demand for solid waste disposal capacity at designated solid waste facilities. A material change in circumstances may occur if waste generation increases and the increase consumes more solid waste disposal capacity and reduces the available disposal capacity below the projected disposal requirements for solid waste generated within the District. The Board of Directors may conclude that a material change in circumstances has not occurred if the Board of Directors is able to secure commitments to landfill the increased waste volume.

District staff shall review waste generation figures and report to the Board of Directors any significant increase or decrease in solid waste generation within the District.

c. Compliance with Applicable Waste Reduction or Access Goals Delay in Program Implementation or Discontinuance of Essential Waste Reduction or Recycling Activities

Pursuant to the Ohio Revised Code, the Ohio Administrative Code, and the State Plan, the Geauga-Trumbull Solid Waste District has established specific goals regarding waste reduction and recycling within the District. As established in the Plan, the District will utilize the access goal. The District Director will prepare an annual District report. The annual District report will identify any significant delays in program implementation, changes to waste reduction strategies, recycling strategies, or changes to the implementation schedule of the District Plan for the following year. If the Board of Directors is able to implement new programs or modify existing programs to meet the access goal, the Board of Directors may determine that a material change has not occurred.

d. Financing of Plan Implementation: Decrease in Waste Generation

The District relies on revenue from fees paid pursuant to contract agreements with designated solid waste facilities that receive solid waste generated within the District. A significant reduction in the generation of solid waste within the District could result in a decrease in revenue and adversely affect the ability to finance implementation of the Plan. The Director will monitor the revenue and inform the Board of Directors if a significant decrease in revenue has occurred. A financial assessment report will identify programs and budgeted expenditures that may be adversely affected by the reduction in revenue.

e. Procedures where Material Change in Circumstances has Occurred

If at any time the Board of Directors determines that a material change has occurred and a revision to the Plan is necessary, the Board shall direct the Policy Committee to prepare a Draft Amended Plan. The Board of Directors shall proceed to adopt and obtain approval of the Amended Plan in accordance with the Ohio Revised Code 3734.55 (A) through (C). The Board of Directors shall notify the Ohio EPA of a material change in circumstances within thirty (30) days of making such determination.

The Director shall notify the Chairperson of the Board of Directors within sixty (60) days of the:

- a) receipt of notice from a designated landfill owner or operator that there is a decrease in solid waste disposal capacity at that solid waste landfill. This would reduce the solid waste disposal that is required for the solid waste generated within the District;
- b) the Director determines that solid waste disposal capacity that provided a basis for he 3734.53(A) certification is no longer available;
- c) there is a decrease in solid waste generation within the District that reduces the revenue to fund implementation of the District Plan; or
- d) solid waste facilities with designation agreements with the District do not pay the required contract fee in an amount sufficient to fund implementation of the District Plan.

Within sixty (60) days of the receipt of the Director's notice that a material change in circumstances may exist, the Chairperson of the Board of Directors shall review the Director's notice with the Board of Directors to determine whether a material change in circumstances has occurred. If the Board of Directors determines that a material change in circumstances has occurred, the Board of Directors will notify the Chairperson of the District Policy Committee and request the Committee prepare an amendment of the District Solid Waste Management Plan as required by 3734.56(D) of the Ohio Revised Code.

The Board of Directors will determine whether there is sufficient solid waste disposal capacity at landfills within a reasonable distance of the District through a review of solid waste landfill disposal capacity records maintained by the Ohio EPA. A material change in circumstances has not occurred if the Board of Directors is able to secure solid waste landfill disposal capacity commitments from landfills within a reasonable distance of the District that replace the solid waste disposal capacity that is otherwise unavailable to the District.

No material change in circumstances exists if the Board of Directors increases the amount of the contract fee, as provided in the designation agreements by and between the District and solid waste facilities, in an amount sufficient to fund implementation of the District Plan.

APPENDIX B: RECYCLING INFRASTRUCTURE INVENTORY

Appendix B provides an inventory of the recycling infrastructure that existed in the reference year. This inventory covers residential curbside collection services, drop-off recycling sites, mixed waste materials recovery facilities, waste companies providing recycling collection and trash collection services and composting facilities and yard waste management programs.

A. Curbside Recycling Services, Drop-Off Recycling Locations, and Mixed Solid Waste Materials Recovery Facilities

1. Curbside Recycling Services

Geauga County has one city, 4 villages, and 16 townships. Only one village in Geauga County, Middlefield Village, has a non-subscription curbside recycling program. The remaining townships, villages, and city of Chardon have access to curbside recycling on a subscription basis. There are 3 private haulers providing curbside recycling services in Geauga County, and no municipal haulers providing this service. All private haulers collect recyclables in a single stream (all together). Method of collection, bin or cart, varies per community.

Trumbull is much larger with 5 cities, 6 villages, and 24 townships. Two cities, two villages, and two townships have non-subscription curbside recycling. Howland Township is the only township in Trumbull County with a subscription curbside recycling program. Two private haulers operate curbside recycling programs in select areas of Trumbull County. Like Geauga County, curbside recycling service in Trumbull County is provided as single stream collection in bins or carts.

The weight of materials in Table B-1a and Table B-1b is 2015 data, however, the service and collection data is 2017. The SWMD outreached to the political jurisdictions via phone calls to obtain recent service data for planning purposes.

Table B-1a: Inventory of Non-Subscription Curbside Recycling Services Available in the Reference Year

ID #	Name of Curbside Service	Service Provider	County	How Service is Provided	Collection Frequency	Materials Collected ⁽¹⁾	Type of Collection	PAYT (Y/N)	Weight of Materials Collected from SWMD (tons) ²	Service will Continue Throughout Planning Period (Y/N)
NCS1	Middlefield Village	Rumpke	Geauga	Contracted Hauler	Weekly	Paper, metals, plastic bottles and jugs, glass, cartons	single-stream cart	Y	Unknown	Y
NCS2	Cortland City	Republic Services	Trumbull	Contracted Hauler	Weekly	Paper, metals, plastic bottles and jugs, glass	bin	Y	Unknown	Y
NCS3	Hubbard City	Republic Services	Trumbull	Contracted Hauler	DNR	Paper, metals, plastic bottles and jugs, glass	DNR	N	Unknown	Y
NCS4	Lordstown Village	Republic Services	Trumbull	Contracted Hauler	Bi-Weekly	Paper, metals, plastic bottles and jugs, glass	single-stream cart	N	Unknown	Y
NCS5	Newton Falls Village	Unknown	Trumbull	Contracted Hauler	Bi-Weekly	Paper, metals, plastic bottles and jugs, glass	DNR	N	Unknown	Y
NCS6	Liberty Township	Republic Services	Trumbull	Contracted Hauler	Bi-Weekly	Paper, metals, plastic bottles and jugs, glass	single-stream cart	Y	Unknown	Y
NCS7	Weathersfield Township	Republic Services	Trumbull	Contracted Hauler	DNR	Paper, metals, plastic bottles and jugs, glass	DNR	N	Unknown	Y
Total non-subscription and subscription									2,837	

¹Paper includes: Newspaper, Cardboard, Other Paper, Paper, & Junk Mail; Plastic includes: any plastic container shaped like a bottle or jug; Metals includes: Aluminum containers, Steel Cans, & Tin Cans; Glass includes: Brown Glass, Clear Glass, & Green Glass

²Data is 2015.

Source: Internet research and Phone inquiry to political jurisdictions conducted in 2017.

Seven political jurisdictions in the District have non-subscription curbside recycling services. Six of those programs are in Trumbull County, and one is in Geauga County. All non-subscription curbside services are provided by private haulers. Privatized municipalities/villages/townships (those contracting with a hauler on behalf of the households) take proposals/quotes from private sector service providers to deliver the specified services. Some contracting approaches still leave the billing of customers up to the service providers while others do their own billing and pay the hauler independently. Public-private contracts determine collection frequency, materials collected, size of containers, and type of collection.

Table B-1b: Inventory of Subscription Curbside Recycling Services Available in the Reference Year

ID #	Name of Curbside Service	County	How Service is Provided	Collection Frequency	Materials Collected ¹	Type of Collection	PAYT (Y/N)	Weight of Materials Collected from SWMD ² (tons)	Service will Continue Throughout Planning Period (Y/N)
SC1	Aquilla Village	Geauga	Subscription		Paper, metals, plastic bottles and jugs, glass, cartons	Single-stream Carts, bins	N	Unknown	Y
SC2	Burton Village	Geauga	Subscription		Paper, metals, plastic bottles and jugs, glass, cartons	Single-stream Carts, bins	N	Unknown	Y
SC3	Chardon City	Geauga	Subscription		Paper, metals, plastic bottles and jugs, glass, cartons	Single-stream Carts, bins	N	Unknown	Y
SC4	South Russell Village	Geauga	Subscription		Paper, metals, plastic bottles and jugs, glass, cartons	Single-stream Carts, bins	N	Unknown	Y
SC5	Auburn Township	Geauga	Subscription		Paper, metals, plastic bottles and jugs, glass, cartons	Single-stream Carts, bins	N	Unknown	Y
SC6	Bainbridge Township	Geauga	Subscription		Paper, metals, plastic bottles and jugs, glass, cartons	Single-stream Carts, bins	N	Unknown	Y
SC7	Burton Township	Geauga	Subscription		Paper, metals, plastic bottles and jugs, glass, cartons	Single-stream Carts, bins	N	Unknown	Y
SC8	Chardon Township	Geauga	Subscription		Paper, metals, plastic bottles and jugs, glass, cartons	Single-stream Carts, bins	N	Unknown	Y
SC9	Chester Township	Geauga	Subscription		Paper, metals, plastic bottles and jugs, glass, cartons	Single-stream Carts, bins	N	Unknown	Y
SC10	Claridon Township	Geauga	Subscription		Paper, metals, plastic bottles and jugs, glass, cartons	Single-stream Carts, bins	N	Unknown	Y
SC11	Hambden Township	Geauga	Subscription		Paper, metals, plastic bottles and jugs, glass, cartons	Single-stream Carts, bins	N	Unknown	Y
SC12	Huntsburg Township	Geauga	Subscription		Paper, metals, plastic bottles and jugs, glass, cartons	Single-stream Carts, bins	N	Unknown	Y
SC13	Middlefield Township	Geauga	Subscription		Paper, metals, plastic bottles and jugs, glass, cartons	Single-stream Carts, bins	N	Unknown	Y
SC14	Montville Township	Geauga	Subscription		Paper, metals, plastic bottles and jugs, glass, cartons	Single-stream Carts, bins	N	Unknown	Y
SC15	Munson Township	Geauga	Subscription		Paper, metals, plastic bottles and jugs, glass, cartons	Single-stream Carts, bins	N	Unknown	Y
SC16	Newbury Township	Geauga	Subscription		Paper, metals, plastic bottles and jugs, glass, cartons	Single-stream Carts, bins	N	Unknown	Y
SC17	Parkman Township	Geauga	Subscription		Paper, metals, plastic bottles and jugs, glass, cartons	Single-stream Carts, bins	N	Unknown	Y
SC18	Russell Township	Geauga	Subscription		Paper, metals, plastic bottles and jugs, glass, cartons	Single-stream Carts, bins	N	Unknown	Y
SC19	Thompson Township	Geauga	Subscription		Paper, metals, plastic bottles and jugs, glass, cartons	Single-stream Carts, bins	N	Unknown	Y
SC20	Troy Township	Geauga	Subscription		Paper, metals, plastic bottles and jugs, glass	Single-stream Carts, bins	N	Unknown	Y

ID #	Name of Curbside Service	County	How Service is Provided	Collection Frequency	Materials Collected ¹	Type of Collection	PAYT (Y/N)	Weight of Materials Collected from SWMD ² (tons)	Service will Continue Throughout Planning Period (Y/N)
SC21	Howland	Trumbull	Subscription		Paper, metals, plastic bottles and jugs, glass	Single-stream Carts, bins	N	Unknown	Y
SC22	Brookfield Township	Trumbull	Subscription		Paper, metals, plastic bottles and jugs, glass	Single-stream Carts, bins	N	Unknown	Y
Total (see non-subscription total)								0	

¹Paper includes: Newspaper, Cardboard, Other Paper, Paper, & Junk Mail; Plastic includes: any plastic container shaped like a bottle or jug; Metals includes: Aluminum containers, Steel Cans, & Tin Cans; Glass includes: Brown Glass, Clear Glass, & Green Glass

²Data is 2015.

Source: Internet research and phone inquiry to political jurisdictions in 2017.

Twenty-two townships have subscription curbside recycling. In subscription-based service residents must take a voluntary action to sign up for and agree to pay for their curbside recycling service with a hauler. All of Geauga County has curbside recycling services available either non-subscription or subscription based.

2. Drop-Off Recycling Locations

Table B-2a: Inventory of Full Time, Urban Drop-off Sites Available in the Reference Year

ID#	Name of Drop-off Site	Service Provider	County	How Service is Provided	Days and Hours Available to the Public	Materials Collected ⁽¹⁾	Drop-off Meets All Minimum Standards (Y/N)	Weight of Materials Collected from the SWMD (tons)	Service will Continue Throughout Planning Period (Y/N)
FTU1	Newbury Township Garage	Ohio Valley Waste Service	Geauga	Hauler Contract With The SWMD	84hrs/week	Glass, Metal, Plastics #1 & #2, Paper	Y		Y
FTU2	Bainbridge Township	Ohio Valley Waste Service	Geauga	Hauler Contract With The SWMD	84hrs/week	Glass, Metal, Plastics #1 & #2, Paper	Y		Y
FTU3	Chester Township Hall	Ohio Valley Waste Service	Geauga	Hauler Contract With The SWMD	84hrs/week	Glass, Metal, Plastics #1 & #2, Paper	Y		Y
FTU4	Munson Township Vetter Baseball Field	Ohio Valley Waste Service	Geauga	Hauler Contract With The SWMD	84hrs/week	Glass, Metal, Plastics #1 & #2, Paper	Y		Y
FTU5	Russell Township Administration Building	Ohio Valley Waste Service	Geauga	Hauler Contract With The SWMD	84hrs/week	Glass, Metal, Plastics #1 & #2, Paper	Y		Y
FTU6	Chardon City, Notre Dame School	Ohio Valley Waste Service	Geauga	Hauler Contract With The SWMD	84hrs/week	Glass, Metal, Plastics #1 & #2, Paper	Y		Y
FTU7	Bazetta Township Road Department	Ohio Valley Waste Service	Trumbull	Hauler Contract With The SWMD	84hrs/week	Glass, Metal, Plastics #1 & #2, Paper	Y		Y

ID#	Name of Drop-off Site	Service Provider	County	How Service is Provided	Days and Hours Available to the Public	Materials Collected ⁽¹⁾	Drop-off Meets All Minimum Standards (Y/N)	Weight of Materials Collected from the SWMD (tons)	Service will Continue Throughout Planning Period (Y/N)
FTU8	Brookfield Township Fire Department	Ohio Valley Waste Service	Trumbull	Hauler Contract With The SWMD	84hrs/week	Glass, Metal, Plastics #1 & #2, Paper	Y		Y
FTU9	Champion Middle School	Ohio Valley Waste Service	Trumbull	Hauler Contract With The SWMD	84hrs/week	Glass, Metal, Plastics #1 & #2, Paper	Y		Y
FTU10	Girard City Street Department	Ohio Valley Waste Service	Trumbull	Hauler Contract With The SWMD	84hrs/week	Glass, Metal, Plastics #1 & #2, Paper	Y		Y
FTU11	Howland Township Fire Department	Ohio Valley Waste Service	Trumbull	Hauler Contract With The SWMD	84hrs/week	Glass, Metal, Plastics #1 & #2, Paper	Y		Y
FTU12	Howland/Trumbull Recycling Center	Howland/Trumbull Recycling Center	Trumbull	Hauler Contract With The SWMD	Tu, Th, Sa 9am-4pm	Glass, Metal, Plastics #1 & #2, Paper	Y		Y
FTU13	Hubbard City Fire Department	Ohio Valley Waste Service	Trumbull	Hauler Contract With The SWMD	84hrs/week	Glass, Metal, Plastics #1 & #2, Paper	Y		Y
FTU14	Hubbard Township Administration Building	Ohio Valley Waste Service	Trumbull	Hauler Contract With The SWMD	84hrs/week	Glass, Metal, Plastics #1 & #2, Paper	Y		Y
FTU15	Kinsman Township Garage	Ohio Valley Waste Service	Trumbull	Hauler Contract With The SWMD	84hrs/week	Glass, Metal, Plastics #1 & #2, Paper	Y		Y
FTU16	Niles City Water Department	Ohio Valley Waste Service	Trumbull	Hauler Contract With The SWMD	84hrs/week	Glass, Metal, Plastics #1 & #2, Paper	Y		Y
FTU17	Warren Township Administration Building	Ohio Valley Waste Service	Trumbull	Hauler Contract With The SWMD	84hrs/week	Glass, Metal, Plastics #1 & #2, Paper	Y		Y
FTU18	Trumbull County Career and Technical Center	Ohio Valley Waste Service	Trumbull	Hauler Contract With The SWMD	84hrs/week	Glass, Metal, Plastics #1 & #2, Paper	Y		Y
FTU19	Howland Township Administrative Building	Ohio Valley Waste Service	Trumbull	Hauler Contract With The SWMD	84hrs/week	Glass, Metal, Plastics #1 & #2, Paper	Y		Y
FTU20	Trumbull County Administration Building	Ohio Valley Waste Service	Trumbull	Hauler Contract With The SWMD	84hrs/week	Glass, Metal, Plastics #1 & #2, Paper	Y		Y
FTU21	Christ Episcopal Church	Ohio Valley Waste Service	Trumbull	Hauler Contract With The SWMD	84hrs/week	Glass, Metal, Plastics #1 & #2, Paper	Y		Y
FTU22	Summit Academy	Ohio Valley Waste Service	Trumbull	Hauler Contract With The SWMD	84hrs/week	Glass, Metal, Plastics #1 & #2, Paper	Y		Y
FTU23	Warren Harding High School	Ohio Valley Waste Service	Trumbull	Hauler Contract With The SWMD	84hrs/week	Glass, Metal, Plastics #1 & #2, Paper	Y		Y
Total of all drop-offs								5,271	

¹Paper includes: Newspaper, Cardboard, Other Paper, Paper, & Junk Mail; Plastic includes: any plastic container shaped like a bottle or jug; Metals includes: Aluminum containers, Steel Cans, & Tin Cans; Glass includes: Brown Glass, Clear Glass, & Green Glass

Source: 2015 Annual District Report Implementation Schedule

Table B-2b: Inventory of Part-Time, Urban Drop-off Sites Available in the Reference Year

ID#	Name of Drop-off Site	Service Provider	County	How Service is Provided	Days and Hours Available to the Public	Materials Collected	Drop-off Meets All Minimum Standards? (Y/N)	Weight of Materials Collected from the SWMD (tons)	Service will Continue Throughout Planning Period (Y/N)
	NONE								
Total								0	

Table B-2c: Inventory Full-Time, Rural Drop-off Sites Available in the Reference Year

ID#	Name of Drop-off Site	Service Provider	County	How Service is Provided	Days and Hours Available to the Public	Materials Collected ⁽¹⁾	Drop-off Meets All Minimum Standards? (Y/N)	Weight of Materials Collected from the SWMD (tons)	Service will Continue Throughout Planning Period (Y/N)
FTR1	Burton Township Sheriff Post #2	Ohio Valley Waste Service	Geauga	Hauler Contract With The SWMD	84hrs/week	Glass, Metal, Plastics #1 & #2, Paper	Y		Y
FTR2	Chardon Township Hall	Ohio Valley Waste Service	Geauga	Hauler Contract With The SWMD	84hrs/week	Glass, Metal, Plastics #1 & #2, Paper	Y		Y
FTR3	Claridon Town Hall	Ohio Valley Waste Service	Geauga	Hauler Contract With The SWMD	84hrs/week	Glass, Metal, Plastics #1 & #2, Paper	Y		Y
FTR4	Hambden Town Hall	Ohio Valley Waste Service	Geauga	Hauler Contract With The SWMD	84hrs/week	Glass, Metal, Plastics #1 & #2, Paper	Y		Y
FTR5	Huntsburg Township Park	Ohio Valley Waste Service	Geauga	Hauler Contract With The SWMD	84hrs/week	Glass, Metal, Plastics #1 & #2, Paper	Y		Y
FTR6	Middlefield Village Maintenance Garage	Ohio Valley Waste Service	Geauga	Hauler Contract With The SWMD	84hrs/week	Glass, Metal, Plastics #1 & #2, Paper	Y		Y
FTR7	Montville Township Community Center	Ohio Valley Waste Service	Geauga	Hauler Contract With The SWMD	84hrs/week	Glass, Metal, Plastics #1 & #2, Paper	Y		Y
FTR8	Parkman Township Maintenance Garage	Ohio Valley Waste Service	Geauga	Hauler Contract With The SWMD	84hrs/week	Glass, Metal, Plastics #1 & #2, Paper	Y		Y
FTR9	Thompson Township Road Department	Ohio Valley Waste Service	Geauga	Hauler Contract With The SWMD	84hrs/week	Glass, Metal, Plastics #1 & #2, Paper	Y		Y

ID#	Name of Drop-off Site	Service Provider	County	How Service is Provided	Days and Hours Available to the Public	Materials Collected ⁽¹⁾	Drop-off Meets All Minimum Standards? (Y/N)	Weight of Materials Collected from the SWMD (tons)	Service will Continue Throughout Planning Period (Y/N)
FTR10	Troy Township Community Center	Ohio Valley Waste Service	Geauga	Hauler Contract With The SWMD	84hrs/week	Glass, Metal, Plastics #1 & #2, Paper	Y		Y
FTR11	Bloomfield Township Garage	Ohio Valley Waste Service	Trumbull	Hauler Contract With The SWMD	84hrs/week	Glass, Metal, Plastics #1 & #2, Paper	Y		Y
FTR12	Braceville Township Road Department	Ohio Valley Waste Service	Trumbull	Hauler Contract With The SWMD	84hrs/week	Glass, Metal, Plastics #1 & #2, Paper	Y		Y
FTR13	Bristol Township Garage	Ohio Valley Waste Service	Trumbull	Hauler Contract With The SWMD	84hrs/week	Glass, Metal, Plastics #1 & #2, Paper	Y		Y
FTR14	Farmington Township Hall	Ohio Valley Waste Service	Trumbull	Hauler Contract With The SWMD	84hrs/week	Glass, Metal, Plastics #1 & #2, Paper	Y		Y
FTR15	Gustavus Township Fire Department	Ohio Valley Waste Service	Trumbull	Hauler Contract With The SWMD	84hrs/week	Glass, Metal, Plastics #1 & #2, Paper	Y		Y
FTR16	Hartford Township Administration Building	Ohio Valley Waste Service	Trumbull	Hauler Contract With The SWMD	84hrs/week	Glass, Metal, Plastics #1 & #2, Paper	Y		Y
FTR17	Johnston Township Fire Station	Ohio Valley Waste Service	Trumbull	Hauler Contract With The SWMD	84hrs/week	Glass, Metal, Plastics #1 & #2, Paper	Y		Y
FTR18	Lordstown Village Administration Building	Ohio Valley Waste Service	Trumbull	Hauler Contract With The SWMD	84hrs/week	Glass, Metal, Plastics #1 & #2, Paper	Y		Y
FTR19	McDonald Village Maintenance Garage	Ohio Valley Waste Service	Trumbull	Hauler Contract With The SWMD	84hrs/week	Glass, Metal, Plastics #1 & #2, Paper	Y		Y
FTR20	Southington Township Hall	Ohio Valley Waste Service	Trumbull	Hauler Contract With The SWMD	84hrs/week	Glass, Metal, Plastics #1 & #2, Paper	Y		Y
FTR21	Vernon Township Hall	Ohio Valley Waste Service	Trumbull	Hauler Contract With The SWMD	84hrs/week	Glass, Metal, Plastics #1 & #2, Paper	Y		Y
FTR22	Vienna Township Fire Department	Ohio Valley Waste Service	Trumbull	Hauler Contract With The SWMD	84hrs/week	Glass, Metal, Plastics #1 & #2, Paper	Y		Y
FTR23	Fowler Township Garage	Ohio Valley Waste Service	Trumbull	Hauler Contract With The SWMD	84hrs/week	Glass, Metal, Plastics #1 & #2, Paper	Y		Y
FTR24	Shepard of the Valley	Ohio Valley Waste Service	Trumbull	Hauler Contract With The SWMD	Not open to public	Glass, Metal, Plastics #1 & #2, Paper	Y		Y
Totals included in Table B-2a								0	

¹Paper includes: Newspaper, Cardboard, Other Paper, Paper, & Junk Mail; Plastic includes: any plastic container shaped like a bottle or jug; Metals includes: Aluminum containers, Steel Cans, & Tin Cans; Glass includes: Brown Glass, Clear Glass, & Green Glass

Source: 2015 Annual District Report Implementation Schedule

Table B-2d: Inventory Part-Time, Rural Drop-off Sites Available in the Reference Year

ID#	Name of Drop-off Site	Service Provider	County	How Service is Provided	Days and Hours Available to the Public	Materials Collected ⁽¹⁾	Drop-off Meets All Minimum Standards? (Y/N)	Weight of Materials Collected from the SWMD (tons)	Service will Continue Throughout Planning Period (Y/N)
	NONE								
Total								0	

3. Mixed Solid Waste Material Recovery Facility

Table B-3: Mixed Municipal Solid Waste Material Recovery Facility

Name of Material Recovery Facility	Location (County, City)	Communities Served	Types of Materials Recovered ⁽¹⁾	Weight of Materials Recovered (tons)	Waste Processed (tons)	Bypass Waste (tons)	Total Waste (tons)	Recovery Rate in Reference Year (percent)
NONE							0	

A mixed solid waste materials recovery facility provides residents with access to recycling opportunities by removing recyclables from the trash for the residents. The District does not use a mixed waste material recovery facility (aka dirty MRF) to separate recyclables from trash.

B. Curbside Recycling and Trash Collection Service Providers

Table B-4: Inventory Curbside Recycling and Trash Collection Service Providers in the Reference Year

Name of Provider	Counties Served	Trash Collection Services				Curbside Recycling Services		
		PAYT (Y/N)	Residential	Commercial	Industrial	Residential	Commercial	Industrial
Warren City Environmental Services	Trumbull	N	X	X				
Champion Disposal	Trumbull	N	X	X	X			
Sunburst Environmental	Trumbull	N	X	X			X	
Waste Management of Ohio Chardon	Geauga	N	X	X	X	X	X	
Republic Services of Cleveland	Geauga	N	X	X	X	X	X	X
Ohio Valley Waste Services	Trumbull and Geauga	N		X	X		X	
Major Waste Disposal	Geauga	N	X	X			X	
Huth Rubbish Services, Inc.	Trumbull	N	X	X				
Erie Vu Maintenance, Inc.	Geauga	N	X	X				
Jim Doherty Trucking, Inc.	Geauga	N	X	X				
American Waste Management Services	Geauga and Trumbull	N	X		X			
A & G Trucking	Geauga	N	X	X				
Rumpke	Geauga and Trumbull	Y	X	X		X	X	
Republic Waste	Trumbull	Y	X	X	X	X	X	X
Waste Management Youngstown Hauling	Trumbull	N	X	X				
Kimble	Geauga and Trumbull	N	X	X			X	

C. Composting Facilities

Table B-5: Inventory of Composting Facilities Used in the Reference Year

Facility Name	Compost Facility Classification	Publicly Accessible (Y/N)	Location	Food Waste (tons)	Yard Waste (tons)	Total
Mapledale Farm Inc	III	Y	Geauga	0	53	53
Wilder MHP S	IV	Y	Geauga	0	20	20
Abate Landscaping	IV	Y	Geauga	0	212	212
Middlefield Village	IV		Geauga	0	170	170
Hauser Landscaping	IV	Y	Geauga	0	8,579	8,579
Midwest Mulch	IV	N	Geauga	0	978	978
Green Vision Materials	IV	Y	Geauga	0	978	978
City of Wicklife Composting Facility	IV	Y	Lake	0	7,790	7,790
DeMilta Sand & Gravel Inc	IV	Y	Geauga	0	121	121
Sagamore Soils Twinsburg Rd Comp. Fac.	IV	Y	Geauga	0	727	727
Hauser Landscaping	IV	Y	Trumbull	0	5,147	5,147
Gaumer Landscape Inc	IV	N	Trumbull	0	1,100	1,100
Delli Quadri Landscaping	IV	Y	Trumbull	0	2,767	2,767
City of Warren Water Pollution Control Ctr.	IV	N	Trumbull	0	558	558
Heatherwood Landscape Material & Supply	IV		Trumbull	0	594	594
Total				0	29,793	29,793

Source: Ohio EPA 2015 Compost Facility Planning Report. Compost facilities (all classes) track material volumes delivered and reported to Ohio EPA.

Yard waste is a valuable organic material and when diverted from the landfill has beneficial use such as soil conditioners, erosion control, etc. There are several yard waste collection programs available to residents through the SWMD. A brief description of programs in the District that divert yard waste debris from the landfill is described below:

- City of Warren, Trumbull County– Provides curbside leaf collection from late October to early December. Residents must bag leaves in paper bags. Residents may also drop yard waste off at the Water Pollution Control Department, which is also where the composting facility is located. The drop off hours are Monday through Friday 7:30 AM to 2:30 PM. Bags of leaves placed at the curb outside of the fall curbside program timeframe will not be collected. Leaves collected at the curb are land applied.
- Howland Township, Trumbull County – Residents can place leaves at the curb in compostable paper bags for composting during the fall leaf season. The city also provides residents with a bi-annual limb and branch pick-up program. The dates for fall leaf collection and branch pick-up are posted on the Township’s main webpage. The township contracts with a private contractor to provide the yard waste collection service.
- City of Cortland, Trumbull County From April through October, the City of Cortland picks up branches and limbs for chipping. In 2017, the city performed the collection on the 4th Monday of each month of the collection period. The city collects trimmed branches and limbs no longer than 6 feet in length and 6 inches in diameter. Collected materials are chipped and delivered to a local landscaper for incorporation into their mulch process.
- City of Chardon, Geauga County – The City’s Street Department collects fall leaves from the curb from late October until December 1st. Additionally through the summer until September, the City hires a contractor to collect brush from residents for mulching. Brush collection occurs the last Monday of every month. Residents can put out loose branches that are no more than 5 feet long and 5 inches in diameter. The chipping occurs at the curb.
- Village of Middlefield, Geauga County– The City Service Department provides residents with fall leaf pick-up and brush chipping once per month from April through November. Chipping occurs at the curb leaves are delivered to a local landscaper.

D. Other Food Waste and Yard Waste Management Programs

Table B-6 Inventory of Other Food and Yard Waste Management Activities in the Reference Year

Facility or Activity Name	Activity Type	Location	Food Waste (tons)	Yard Waste (tons)
Hauler and Walmart food waste data	Commercial Food Waste	Geauga	419	
Hauler and Walmart food waste data	Commercial Food Waste	Trumbull	563	
Total			982	0

Source: Ohio EPA 2015 Compost Facility Planning Report

E. Material Handling Facilities Used by the SWMD in the Reference Year

Table B-7: Inventory of Material Handling Facilities Used in the Reference Year

Facility Name	County	State	Type of Facility	Weight of Material Accepted from SWMD (tons)
Waste Management of Ohio – Cleveland MRF	Cuyahoga	Ohio	SS, MS, Blue bag MRF	495
Rumpke Recycling - Dayton	Montgomery	Ohio	SS, MRF	4
Total				499

Source: Ohio EPA 2015 MRF Report

Note: SS = single stream, MS = multi stream, MRF = material recovery facility

Rumpke’s Recycling MRF located in Dayton, Ohio is a Category III facility that pre-sorts, compacts and transfers recyclables. This facility sorts out inbound materials, screening glass to send to a processor, and sending the other materials to the Rumpke Center City Recycling located in neighboring Hamilton County (approximately 60 miles). Rumpke processes a large range of materials, including glass bottles & jars, aluminum & steel cans, plastic bottles & jugs, mixed paper, and cartons. Rumpke’s Center City facility processes 27 tons per hour.

APPENDIX C: POPULATION DATA

A. Reference Year Population

Table C-1a Reference Year Population Adjustments

	Geauga	Trumbull
Before Adjustment	94,102	203,751
<i>Additions</i>		
NONE		
<i>Subtractions</i>		
Hunting Valley Village	122	
Youngstown City		11
After Adjustment	93,980	203,740

Table C-1B Total Reference Year Population

Unadjusted Population	Adjusted Population
297,853	297,720

Reference year population is taken from Ohio Development Services Agency Office of Statistical Research (ODSA, OSR). OSR provided estimate populations for 2015 based on the 2015 census data by governmental unit. Note: Ohio law requires that the entire population of a municipality located in more than one solid waste management district be added to the solid waste management district containing the largest portion of the jurisdiction’s population. The District has 2 communities that are located in more than one solid waste management District: Hunting Valley Village in Geauga County and the City of Youngstown in Trumbull County. The majority of the population of both Hunting Valley Village and Youngstown reside outside of Geauga and Trumbull Counties respectively and are therefore subtracted from the total District population. No additions were made to the District population.

B. Population Projections

Table C-2 Population Projections

Year	Geauga	Trumbull	Total District Population
2015	93,980	203,740	297,720
2016	94,118	202,429	296,547
2017	94,257	201,118	295,374
2018	94,395	199,806	294,202
2019	94,534	198,495	293,029
2020	94,672	197,184	291,856
2021	94,810	195,873	290,683
2022	94,949	194,562	289,510

Year	Geauga	Trumbull	Total District Population
2023	95,087	193,250	288,338
2024	95,226	191,939	287,165
2025	95,364	190,628	285,992
2026	95,502	189,317	284,819
2027	95,641	188,006	283,646
2028	95,779	186,694	282,474
2029	95,918	185,383	281,301
2030	96,056	184,072	280,128
2031	96,194	182,761	278,955
2032	96,333	181,450	277,782
2033	96,471	180,138	276,610

Source: Office of Research, Ohio Development Services Agency, "2015 Population Estimates by County, City, Village and Township", May 2016
Sample Calculations for Trumbull County:

Projected population in 2015 = 203,740
Projected population in 2020 = 197,184
Annual population change = $(197,184 - 203,740) / 5 = -1,311$
Projected population in 2016 = 2015 population - 1,311 = 202,429

Projections of population through the planning period are based on the latest population projections from the Ohio Development Services Agency (ODSA), Office of Statistical Research. The ODSA Planning Research and Strategic Planning Office provided year 2014 census data and projected estimates for 2015, 2020, 2025, 2030, and 2035. To determine population estimates between these years, straight-line interpolation was used.

Population projections gauge future demand for services, but in projection calculations there are room for errors because of the difficulty associated with forecasting. As projected by ODSA, population is expected to increase in Geauga County and decrease in Trumbull County. The decrease in population in Trumbull County is greater than the growth projected in Geauga County so that overall the District population is projected to shrink. Over the fifteen-year planning period, population in Geauga County is expected to increase by 3 percent, and population in Trumbull County is expected to decrease by 12 percent. The overall population of the District is expected to decrease by 6 percent.

APPENDIX D: DISPOSAL DATA

Appendix D provides an inventory of where waste was managed in the reference year (2015), calculates the total waste disposed in the reference year, analyze historical waste disposal quantities, and projects waste to be disposed.

A. Reference Year Waste Disposed

A wide variety of wastes are disposed in municipal solid waste landfills and includes waste generated from households, commercial businesses, institutions, and industrial plants. In addition, asbestos (if permitted to do so), construction and demolition debris, dewatered sludge, contaminated soil, and incinerator ash may also be disposed in municipal solid waste landfills.

Public, private haulers, or self-haul provide waste collection service in the SWMD. Waste flows to landfills either by direct haul or through a transfer facility. The SWMD has two active transfer stations (publicly owned), and one medical incineration facility.

Transfer facilities are conveniently located facilities where solid waste, delivered by collection companies and residents, is consolidated, temporarily stored, and loaded into semi-trailers for transport. Solid waste is then delivered to a processing facility or disposal site. In cases where waste is hauled from a transfer facility to a landfill, the county of origin is not recorded at the landfill. This means a load of trash disposed in a landfill from a transfer facility could have waste mixed from several counties. When a transfer facility hauls to more than one landfill, it becomes difficult to track which landfill received a county's waste.

For planning purposes the waste hauled through transfer facilities is listed separately.

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)
Lake County Solid Waste Facility	Lake	OH	15,228	0	0	15,228
Lorain County Landfill LLC	Lorain	OH	0	1,695	0	1,695
Carbon Limestone Landfill LLC	Mahoning	OH	59,984	50,943	5,699	116,626
Mahoning Landfill, Inc.	Mahoning	OH	4,698	7,934	9,019	21,652
Countywide Recycling & Disposal Facility	Stark	OH	18	0	18	36
Kimble Sanitary Landfill	Tuscarawas	OH	9	349	2	361
Geneva Landfill	Ashtabula	OH	7,732	3,718	233	11,683
American Landfill, Inc.	Stark	OH	113	4,245	310	4,667
Total			87,782	68,884	15,282	171,948

¹ The facilities listed in Table D-1a and identified as able to accept waste from the SWMD (in Appendix M) will constitute those identified for purposes of Ohio Revised Code Section 3734.53(13)(a).

Source(s) of Information: Ohio EPA ADR Review Form for 2015

Sample Calculations:

Residential/Commercial + Industrial + Excluded = Total

15,228 + 0 + 0 = 15,228 tons disposed at Lake County Solid Waste Facility

Table D-1b: Waste Disposed in Reference Year – Captive Landfills

Facility Name	Location		Waste Accepted from the District		
	County	State	Industrial (tons)	Excluded (tons)	Total (tons)
NONE					0
Total			0	0	0

¹ The facilities listed in Table D-1a and identified as able to accept waste from the SWMD (in Appendix M) will constitute those identified for purposes of Ohio Revised Code Section 3734.53(13)(a).

Source(s) of Information: Ohio EPA ADR Review Form for 2015

Captive landfills are landfills used to dispose of waste generated exclusively by the manufacturing company that owns the landfill. District waste was not disposed in a captive landfill in the reference year.

Table D-1c: Total Waste Disposed in Landfills (Direct Haul)

Residential/Commercial (tons)	Industrial (tons)	Excluded (tons)	Total
87,782	68,884	15,282	171,948

Source(s) of Information: Ohio EPA ADR Review Form for 2015

Sample Calculations:

Residential/Commercial + Industrial + Excluded = Total

87,782 + 68,884 + 15,282 = 171,948 tons disposed

Table D-2: Waste Transferred in Reference Year

Facility Name	Location		Waste Received from the SWMD			
	County	State	Residential/Commercial (tons)	Industrial (tons)	Excluded (tons)	Total (tons)
Kimble Transfer & Recycling Facility - Canton	Stark	OH	28	0	0	28
PennOhio Coal Co, dba Kimble Transfer & Recycling	Tuscarawas	OH	865	0	2	867
Republic Waste Recovery (Akron Recyclery)	Summit	OH	12	0	0	12
Environmental Transfer Systems Inc.	Trumbull	OH	95,908	0	0	95,908
Harvard Road Transfer Station	Cuyahoga	OH	320	0	139	459
BFI Glenwillow Transfer Station	Cuyahoga	OH	8,461	747	0	9,208
Cleveland Transfer/Recycling Station	Cuyahoga	OH	14,114	48	0	14,162
Universal Disposal Inc.	Geauga	OH	12,384	711	0	13,096
Broadview Heights Recycling Center	Cuyahoga	OH	5,628	0	31	5,659
Tri-County Transfer	Mercer	PA	8,091			8,091
Valley Waste	Beaver	PA	495			495
Total			143,306	1,507	172	147,985

¹ The facilities listed in Table D-2 and identified as able to accept waste from the SWMD (in Appendix M) will constitute those identified for purposes of Ohio Revised Code Section 3734.53(13)(a).

Source(s) of Information: Ohio EPA ADR Review Form for 2015.

Sample Calculations:

Residential/Commercial + Industrial + Excluded = Total

28 + 0 + 0 = 28 transferred by Kimble Transfer & Recycling Facility - Canton

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

Facility Name	Facility Type	Location		Waste Accepted from the SWMD			
		County	State	Residential/Commercial (tons)	Industrial (tons)	Excluded (tons)	Total (tons)
NONE							0
Total				0	0	0	0

¹The facilities listed in Table D-3 and identified as able to accept waste from the SWMD (in Appendix M) will constitute those identified for purposes of Ohio Revised Code Section 3734.53(13)(a).
 Source(s) of Information: Ohio EPA ADR Review Form for 2015
 0.1 tons of District's waste went to Stericycle incineration in the District, not included in this plan.
 A small amount of waste, 0.10 tons was sent to a medical incineration facility, Stericycle. Format 4.0 allows SWMD's to exclude infectious waste burned at incinerators. The 0.10 tons incinerated is omitted from waste disposal calculations.
 Source(s) of Information: Ohio EPA ADR Review Form for 2015

Table D-4: Total Waste Disposed in Reference Year

	Residential/ Commercial (tons)	Industrial (tons)	Excluded (tons)	Total (tons)	% of Total Waste Disposed
Direct Hauled	87,782	68,884	0	156,666	51%
Transferred	146,306	1,507	0	147,813	49%
Incinerated	0	0	0	0	0%
Total	234,088	70,391	0	304,479	100%

Percent of Total	77%	23%	0%	100%
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Source(s) of Information: Ohio EPA ADR Review Form for 2015
 Sample Calculations:
 $\% \text{ of Total Waste Disposed} = \text{Total Direct Hauled} / \text{Total Disposed} * 100\%$
 $= 156,666 / 304,479 * 100\%$
 $= 51\% \text{ Direct Hauled Waste}$

Supplement to Table D-4: Incinerated and Excluded Wastes as Percentages of Total Waste Disposed

	Residential/ Commercial (tons)	Industrial (tons)	Excluded (tons)	Total (tons)	% of Total Waste Disposed
Direct Hauled	87,782	68,884	15,282	171,948	54%
Transferred	146,306	1,507	172	147,985	46%
Incinerated	0	0	0	0	0%
Total	234,088	70,391	15,454	319,933	100%

Percent of Total	73%	22%	5%	100%
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Source(s) of Information: Ohio EPA ADR Review Form for 2015
 Sample Calculations:
 $\% \text{ of Total Waste Disposed} = \text{Total Direct Hauled} / \text{Total Disposed} * 100\%$
 $= 171,948 / 319,933 * 100\%$
 $= 54\% \text{ Direct Hauled Waste}$

Approximately 54 percent of the waste was direct hauled, meaning a refuse truck picked up waste from clients and directly hauled that waste to a landfill for disposal. Direct hauled waste is disposed in in-state and out-of-state landfill facilities. Nearly two-thirds of the District's waste is direct hauled to the Carbon Limestone Landfill in Mahoning County, Ohio.

Approximately 46 percent of the waste was transferred.

Transferred waste is disposed in in-state landfill facilities. In 2015, transfer facilities managing SWMD waste identified using the following disposal facilities:

- Kimble Transfer & Recycling Facility – Canton and PennOhio Coal Company (dba Kimble Transfer)
 - Kimble Sanitary Landfill
- Republic Waste Recovery (Akron Recyclerly)
 - Countywide Recycling & Disposal Facility
- Environmental Transfer Systems Inc.
 - Carbon Limestone Landfill LLC
 - Mahoning Landfill Inc.
- Harvard Road Transfer Station and Broadview Heights Recycling Center

- Noble Road Landfill
- BFI Glenwillow Transfer Station
 - Lorain County Landfill LLC
 - Countywide Recycling & Disposal Facility
- Cleveland Transfer/Recycling Station
 - American Landfill Inc.
- Universal Disposal Inc.
 - Lorain County Landfill LLC
 - Kimble Sanitary Landfill

Total disposal refers to the sum of waste direct hauled and transferred. According to Ohio EPA Format 4.0, if excluded waste is 10 percent or less of total disposal in the reference year, then SWMD's are not required to account for excluded waste in the solid waste management plan. For Geauga and Trumbull Counties, excluded waste accounts for 5 percent of total disposal in 2015, and therefore the SWMD has not included excluded waste totals. Waste disposal shown in Table D-4 is used in this plan.

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)
2010	303,701	4.21	233,388	213,830	8,349	455,567
2011	307,706	4.12	231,223	201,574	5,715	438,512
2012	305,636	3.71	206,848	78,476	7,425	292,749
2013	300,414	3.86	211,778	130,452	8,046	350,276
2014	302,392	4.04	223,082	123,618	22,670	369,370
2015	297,720	4.31	234,088	70,391	0	304,479

Source(s) of information: Ohio EPA ADR Review Forms for 2010, 2011, 2012, 2013, 2014, and 2015 for population and waste disposal data.

Sample Calculation:

Residential/Commercial + Industrial + Excluded = Total Waste

233,388 + 213,830 + 8,349 = 455,567 tons disposed in 2010

$((\text{Residential/Commercial tons} * 2,000 \text{ pounds per ton}) / 365 \text{ days}) / \text{Population} = \text{Residential/Commercial disposal rate}$

$((233,388 \text{ tons} * 2,000 \text{ pounds per ton}) / 365 \text{ days}) / 303,701 \text{ persons} = 4.21 \text{ pound per person per day}$

START HERE

Total waste disposal declined over 30 percent the past 6 years. Both residential/commercial and the industrial sectors exhibited decline yet the industrial sector documents the greatest disposal decreases. Figure D-1 demonstrates population does not show a direct correlation to landfilled waste.

As shown in Figure D-2 the percentage of residential/commercial waste disposed in the District has increased from just above 50 percent in 2010 to near 80 percent in 2015. Residential/commercial waste tonnages have not increased but because industrial

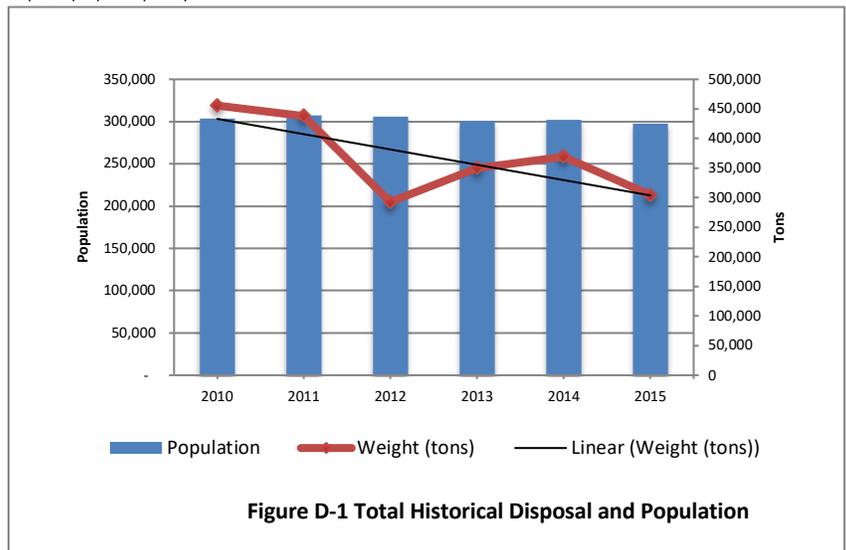
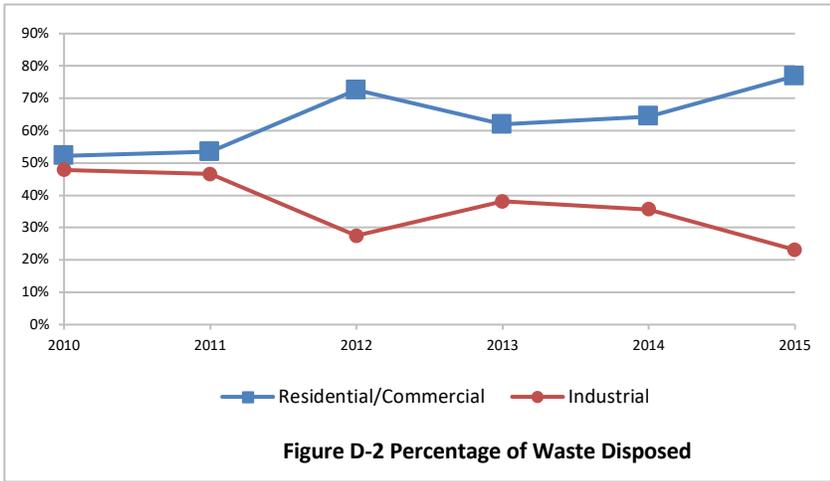


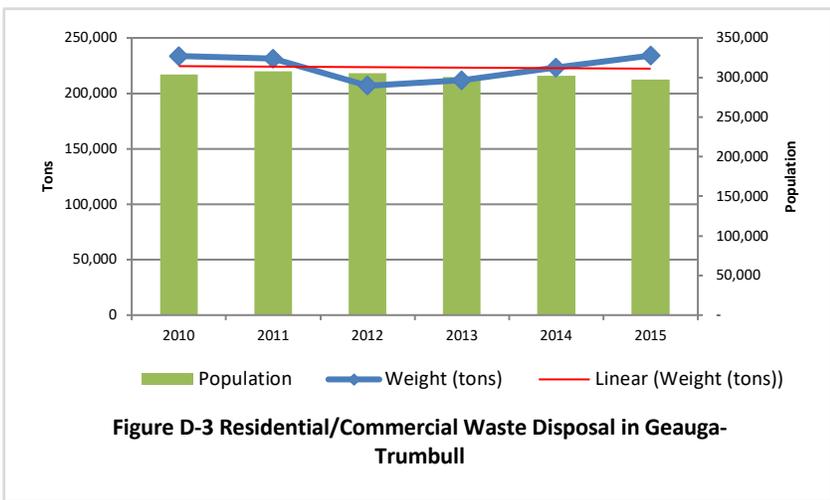
Figure D-1 Total Historical Disposal and Population



waste tonnages decreased percentages change.

1. Residential/Commercial Waste

Figure D-3 shows the total residential and commercial tons of waste disposed in the District from 2010 through 2015. As shown waste tonnages have minimal fluctuation. A drop in 2012 and 2013 is believed to be a result of waste mischaracterization at the landfills. During this time the District was investigating haulers. It was found that mischaracterization was happening and most likely a result that Geauga Trumbull fees are higher than most fees in the region. Only Portage County SWMD (\$9.60 generation fee per ton) has higher waste disposal fees. Figure D-3 also depicts disposal not directly following population. Disposal increased from 2012 to 2015 despite an overall drop in population in the District.

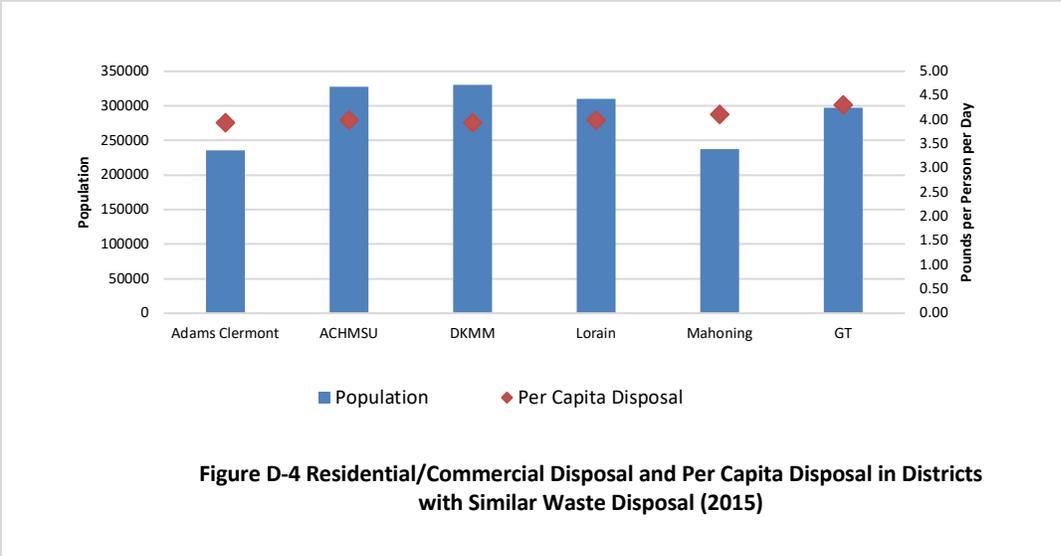


Projections made in the 2009 Plan for years 2010 through 2015 are within 10 percent of actual waste as seen in Table D-6.

Table D-6: Actual Residential/Commercial Disposal Compared to 2009 Plan Projections

Year	Actual Disposal (tons)	2009 Plan Projected Disposal (tons)	% change
2010	233,388	211,455	10%
2011	231,223	211,455	9%
2012	206,848	215,306	-4%
2013	211,778	215,102	-1.5%
2014	223,082	214,890	3.8%
2015	234,088	214,503	9%

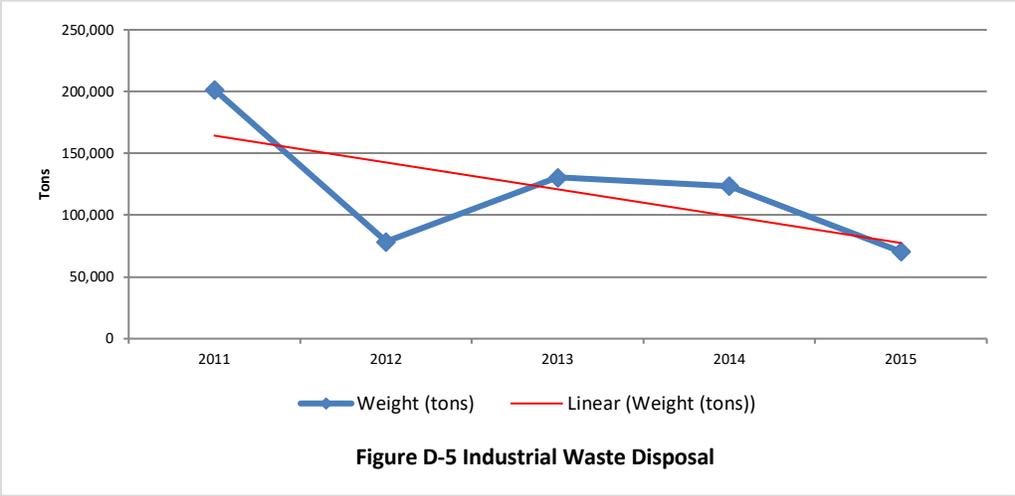
Excluding years 2012 and 2013 waste disposal in the residential/commercial sector is flat. Compared to other solid waste districts with similar residential/commercial populations the Geauga Trumbull per capita waste disposal is one of the highest (Figure D-4). Geauga Trumbull's per capita disposal is lower than Ohio's statewide average of 4.68 pounds per person per day.



2. Industrial Waste

Industrial waste has declined from more than 200,000 tons in 2010 to around 70,000 tons in 2015. In 2010, industrial waste made up nearly half of the waste disposed in the District, and in 2015 industrial waste made up less than a quarter. This is attributable to large manufacturing base and yearly fluctuations in operations. Since 2000, Ohio experienced a decline in manufacturing (goods-producing) employment resulting in declining industrial waste generation. The 2008 and 2009 recession plummeted manufacturing employment. In manufacturing rich counties like Trumbull County, the job market was devastated. Industries not only downsized they closed.

The increase in 2011 is a result of WCI Steel cleaning up sediment in the Mahoning River and larger volumes of disposal of auto fluff due to increased operations of auto fluff from the national “Cash for Clunkers” program. While not as dramatic, waste disposal increases were seen in 2013 and 2014. Fracking came to Ohio in 2011 and into Trumbull County in 2013. Fracking is a drilling technology that uses sand, water and chemicals injected at high pressures to blast open shale rock releasing the trapped gas. Solid waste generated throughout hydro-fracking process is sent to municipal landfills. Waste from fracking is likely attributed to the increase in disposal for 2013 and 2014. Because of lack of production in wells in Trumbull County, in 2014, some companies decided not to proceed with development plans for more well drilling. A return to industrial waste tons seen in 2014 is unlikely.



3. Excluded Waste

Excluded waste has historically made up less than 10 percent of Geauga-Trumbull’s waste disposal. As such that waste is not included in this plan’s analysis.

C. Disposal Projections

There are several methods that could be used for projecting waste disposal through the planning period, such as historical per capita, historical averages, and historical trends. After conducting the historical analysis and considering factors that could change historical disposal trends, waste disposal for the planning period is projected in Table D-6.

Transfer projections is a constant percentage of total waste disposed. The percentage used is the percentage of total waste disposed in the reference year that was routed through transfer facilities prior to being taken to a landfill.

Table D-6: Waste Disposal Projections

Year	Residential/ Commercial Solid Waste	Industrial Solid Waste	Total Waste	Waste Transferred (as part of Total Disposal)	Waste Transferred (as part of Total Disposal)
	Weight	Weight	Weight	Weight	Percent
	(tons)	(tons)	(tons)	(tons)	45%
2015	234,088	70,391	304,479	105,340	
2016	233,166	70,102	303,231	104,925	
2017	232,244	69,815	301,987	104,510	
2018	231,322	69,529	300,749	104,095	
2019	230,400	69,244	299,516	103,680	
2020	229,478	68,960	298,288	103,265	
2021	228,556	68,677	297,065	102,850	
2022	227,633	68,395	295,847	102,435	
2023	226,711	68,115	294,634	102,020	
2024	225,789	67,836	293,426	101,605	
2025	224,867	67,557	292,223	101,190	
2026	223,945	67,280	291,025	100,775	
2027	223,023	67,005	289,832	100,360	
2028	222,101	66,730	288,643	99,945	
2029	221,178	66,456	287,460	99,530	
2030	220,256	66,184	286,281	99,115	
2031	219,334	65,913	285,108	98,700	
2032	218,412	65,642	283,939	98,285	
2033	217,490	65,373	282,775	97,870	

Source(s) of Information: Population retrieved from Annual District Reports.
 Sample Calculation: Residential/Commercial Solid Waste = (365 days * population * 4.31 lbs/person/day) / 2000 lb/ton
 Industrial Solid Waste = 2015 tonnage – (2015 tonnage * 0.041) = 2016 tonnage
 Total Waste = Residential/Commercial Solid Waste + Industrial Solid Waste

1. Residential/Commercial Waste

Residential and commercial waste disposal in the County was in the 220,000 to 235,000 tons per year in the last 5 years except for the years 2012 and 2013. In 2012, residential and commercial disposal dropped significantly (approximately 24,000 tons). Tonnage from residential and commercial disposal in 2015 was nearly identical to disposal in 2010, despite a population decline of 6,000 from 2010 to 2015. The five-year

average per capita residential and commercial disposal, excluding the particularly low disposal years of 2012 and 2013, is 4.17.

While the SWMD is striving to move the per capita disposal rate lower, it historically hovers above 4 pounds per person per day. Reducing waste, recycling, and composting will lower waste disposal. However, the SWMD is facing many challenges to be able to achieve this. The biggest is the changing waste stream. To be recyclable a material needs to be collected, processed and marketed. Markets are critical for sustainable recycling. In July 2017, China regulation stipulated 0.5 percent of materials in a given bale of recyclables imported to China can be contaminated. This has affected the value of certain materials – most notably mixed paper and plastics. Reports indicate plastic volumes in the waste stream are increasing. The use of single serve container and plastic packaging are up. Plastic bottles have light weighted. All of these represent materials where markets have been greatly impacted lowering value. In addition, 2017 displayed an overall better economy and gross domestic product. Both of which contribute to higher landfill volumes. Given the variability in markets, limitations of materials collected at the curb and in drop-off programs, and improved economy waste disposal is expected to decline slightly. The 2015 per capita disposal, 4.31 pounds per person per day, is held constant to project waste disposal.

Using this rate, disposal is expected to decline to 217,490 tons per year by the end of the planning period as projected population declines.

2. Industrial Waste

Industrial waste disposal is projected to decrease by 0.4 percent throughout the planning period. The 2024 Ohio Job Outlook report for the region projects a 4 percent decline in manufacturing jobs for both counties. Also, analysis shows industrial waste disposal following a declining trend.

Waste Transferred as Part of Total Disposal

In 2015, approximately 45 percent of the waste was routed through transfer facilities. In Table D-6 the column “Waste Transferred as part of Total Disposal” projects waste to be transferred as a constant percentage of total waste to be disposed. The percentage used is the percentage of total waste disposed in the reference year that was routed through transfer facilities prior to being taken to a landfill. Based on analysis of available capacity for disposing of the District’s waste, the District did not identify any reasons to suspect that the amount of waste that will be routed through transfer facilities will change during the planning period.

APPENDIX E: RESIDENTIAL/COMMERCIAL REDUCTION AND RECYCLING DATA

Appendix E provides an inventory of materials recovered from the residential/commercial sector in the reference year, adjusted quantities for double counting, total adjusted quantities of material recovered in the reference year, historical quantities recovered, and projected quantities to be recovered.

A. Reference Year Recovery Data

Tables E-1 through E-4 accounts for all material being credited to the waste reduction and recycling rate for the residential/commercial sector. Each of the tables inventories data from various sources. Surveying various sources means recyclable materials could be counted more than once or double counted. Double counting occurs when the same material is reported by more than one survey respondent, typically both the generator of the material and the processor that receives the material from the generator. This could happen if a community reported the quantity of material collected through its curbside recycling program and the processor that received the material from the community returned a survey that also accounts for the material. Material is double counted if the quantities from both respondents are credited to total recovery. In those instances, the total quantity recovered was adjusted to subtract the quantity reported by one source or the other to avoid crediting the material twice.

Table E-1: Commercial Survey Results

NAICS	Appliances/ "White Goods"	Electronics	Lead-Acid Batteries	Food	Glass	Ferrous Metals	Non-Ferrous Metals	Corrugated Cardboard	All Other Paper	Plastics	Textiles	Wood	Rubber	Commingled Recyclables (Mixed)	Yard Waste	Used Motor Oil	Other: Non- Hazardous Chemicals	Scrap Tires	Dry Cell Batteries	Other: Acrylic	
42																					
44								180	2	6											
45																					
48																					
49																					
51																					
52																					
53																					
54																					
55																					
56																					
61																					
62																					
71																					
72																					
81																					
92																					
Other				30		3	1	736	501	392	668	24								2	
Unadjusted Total	0	0	0	30	0	3	1	916	503	398	668	24	0	0	0	0	0	0	0	2	2,545
Adjustments										398										2	-400
Adjusted Total	0	0	0	30	0	3	1	916	503	0	668	24	0	0	0	0	0	0	6	0	2,145

Source(s) of information: District surveys conducted to gather 2015 recycling data.
 Sample Calculation:
 Unadjusted Total – Adjustments = Total
 398 – 398 = 0 tons recycled
 Assumptions:

Table E-1 is reserved for commercial data obtained from SWMD survey efforts. The SWMD issued a waste and recycling survey to capture 2015 diversion data for the commercial sector. In some cases, generator data from a survey conducted prior to 2015 was used. The SWMD verified the current status of the generator(s) during the report year with follow-up phone calls. Calendar year 2014 and 2013 data was used for some businesses.

Table E-2: Data from Other Recycling Facilities

Program and/or Source of Materials/Data	Appliances/"White Goods"	Electronics	Lead-Acid Batteries	Food	Glass	Ferrous Metals	Non-Ferrous Metals	Corrugated Cardboard	All Other Paper	Plastics	Textiles	Wood	Rubber	Commingled Recyclables (Mixed)	Yard Waste	Other	Other
Buybacks																	
11 Reported						72	5	17,593	2					14,291			
Scrap Yards																	
NONE																	
Brokers																	
13 Reported	12		133		20	12,381	1,102	1,210	2,348	196							
Processors/MRF's																	
Rumpke Recycling - Dayton (Residential)					1			1		2							
Waste Management - Cleveland MRF (Residential)								205	290								
Unadjusted Totals	12		133		21	12,452	1,107	19,009	2,642	196				14,921			49,862
Adjustments					20	3,224	53	7,569	6					7,182			18,054
Adjusted Totals	12		133		1	9,228	1,054	11,440	2,636	196				7,109			31,808

Source(s) of Information: 2015 Ohio EPA Material Recovery Facility and Commercial Recycling Data. SWMD surveys to gather 2015 data for Buybacks, Scrap Yards, and Brokers. Individual businesses are not identified because the SWMD stipulated data shared would remain anonymous.

*Hauler reports include commercial clients. This is not all residential.

Sample Calculation:

Unadjusted Total – Adjustments = Total

12 – 0 = 12 tons recycled

Assumptions:

Quantities reported in Table E-2 were obtained from buyback surveys and Ohio EPA reports on processors. In some cases, generator data from a survey conducted prior to 2015 was used. The SWMD verified the current status of the generator(s) during the report year with follow-up phone calls. Calendar year 2014 and 2013 data was used for some businesses. Processors capture the recyclables and process them to get them ready to be recycled. These are typically buybacks, processors and MRFs.

Table E-3: Data Reported to Ohio EPA by Commercial Businesses

Ohio EPA Data Source	Glass	Plastic	Newspaper	Cardboard	Mixed Paper	Nonferrous	Ferrous	Wood	Food: Compost	Food: Other	Commingled	Other	
Walmart		44		2,417	11	0	2						437
Home Depot		1		130			14	218					
Target Corporation		9		516	3		8						3
Dollar General Corporation				785	1								
Big Lots Corporation				121									
Lowe's Companies Inc		2		97			99	23					
Kohls Corporate Office		10		82									
JC Penny Distribution Center		7		55	2								
Unadjusted Total	0	73	0	4,203	17	0	123	241	0	0	0	440	5,097
Adjustments								23					23
Adjusted Total	0	73	0	4,203	17	0	123	218	0	0	0	440	5,074

Source(s) of Information: 2015 Ohio EPA Material Recovery Facility and Commercial Recycling Data
 Sample Calculation:
 Unadjusted Total – Adjustments = Total
 Unadjusted Total – Adjustments = Total
 73 – 0 = 73 tons recycled

Ohio EPA surveys big box commercial stores. Quantities reported in Table E-3 were obtained from these Ohio EPA surveys.

Table E-4: Other Recycling Programs/Other Sources of Data

Other Programs or Sources of Data	Appliances/"White Goods"	HHW	Used Motor Oil	Electronics	Scrap Tires	Dry Cell Batteries	Lead-Acid Batteries	Food	Glass	Ferrous Metals	Non-Ferrous Metals	Corrugated Cardboard	All Other Paper	Plastics	Textiles	Wood	Rubber	Commingled Recyclables (Mixed)	Yard Waste	Other: Ash	Other:	Unadjusted Total	Adjustments	Adjusted Total
Curbside Recycling Services																		2,837				2,837		2,837
Drop-off Recycling Programs																		5,271				5,271		5,271
Ohio EPA Scrap Tire Data					3,735																	3,735		3,735
HHW Amnesty Day		21	3				1															25		25
HHW Seasonal Facility		103	10	64		2	3															182		182
Appliance Collection	12																					12		12
Document Destruction Day													6									6		6
Ohio EPA Composting Data								982											29,793			30,775		30,775
Unadjusted Total	12	124	13	64	3,735	2	4	982	0	0	0	0	6	0	0	0	0	8,108	29,793			42,843		42,843
Adjustments																								
Adjusted Total	12	124	13	64	3,735	2	4	982	0	0	0	0	6	0	0	0	0	8,108	29,793			42,843		42,843

Source(s) of Information: Ohio EPA 2015 Compost Facility Data Report. District program data for 2015.
 Sample Calculation:
 Unadjusted Total – Adjustments = Total
 12 – 0 = 12 tons recycled
 Assumptions:

Table E-4 presents quantities diverted through programs and services in the reference year. This table includes all residential/commercial programs and services through which materials being credited to total diversion were recovered. Adjustments exclude recycling that was reported from processors shown on Table E-2 and other data collected. Most materials collected from programs are recycled to a processor listed on Table E-2 where possible the materials were attributed to programs and removed from the processor data to avoid double counting recycling quantities. Scrap tires collected from the scrap tire collection events are reported with Ohio EPA Scrap Tire data.

Table E-5: Residential/Commercial Material Recovered in Reference Year

Material	Quantity (tons)
Appliances/ "White Goods"	24
Household Hazardous Waste	124
Used Motor Oil	13
Electronics	64
Scrap Tires	3,735
Dry Cell Batteries	2
Lead-Acid Batteries	137
Food	1,102
Glass	1
Ferrous Metals	9,355
Non-Ferrous Metals	1,054
Corrugated Cardboard	16,559
All Other Paper	3,162
Plastics	270
Textiles	668
Wood	242
Rubber	0
Commingled Recyclables (Mixed)	15,217
Yard Waste	29,793
Other (Aggregated)	440
Total	81,870

Source(s) of Information: Tables E-1, E-2, E-3, and E-4
 Sample Calculation:
 Assumptions:

The District diverted 81,870 tons from the residential/commercial sector. Table E-5 reports quantities of each material diverted. Cardboard, paper and yard waste are the three largest material categories recycled in the reference year.

Table E-6: Quantities Recovered by Program/Source

Program/Source of R/C Recycling Data	Quantities (Tons)
Commercial Survey	2,145
Data from Buybacks, Brokers, Haulers, & Processors/MRFs	31,808
Ohio EPA Commercial Retail Data	5,074
Curbside Recycling Services	2,837
Drop-off Recycling Programs	5,271
Ohio EPA Scrap Tire Data	3,735
HHW Amnesty Day	25
HHW Facility	182
Appliance Collection	12
Document Destruction Day	6
Ohio EPA Composting Data	30,775
Total	81,870

Source(s) of Information: Tables E-1, E-2, E-3, and E-4

Sample Calculation:
Assumptions:

Table E-6 reports quantities diverted for each program/source. Recyclable materials are typically collected through a program and directed to a processor. These programs can be set up by the District or may happen with little to no District involvement. Processors capture the recyclables and process them to get them ready to be recycled. These are typically buybacks, processors, or MRFs.

Recycling quantities reported in Table E-6 will be used throughout the plan as reference year data.

B. Historical Recovery

Table E-7: Historical Residential/Commercial Recovery by Program/Source

Year	Commercial Survey	Other Recycling Facilities	Ohio EPA Commercial Retail Data	Curbside Recycling Services	Drop-off Recycling Programs	Ohio EPA Scrap Tire Data	HHW Amnesty Day	HHW Seasonal Facility	Appliance Collection	Document Destruction Day	Ohio EPA Composting Data	Totals
2011			4,900		6,582	3,279	42	170	710	6	31,122	46,810
2012			4,930		6,639	4,011	38	283	700		46,610	63,211
2013			3,541			2,910	40	274	691	5	23,520	30,980
2014			5,236			3,840	39	228	21	2	18,210	27,575
2015	2,145	31,808	5,074	2,837	5,271	3,735	25	182	12	6	30,775	81,870

Table E-7a1: Annual Percent Change in Tons Recovered

2011												
2012			1%		1%	22%	-8%	67%	-1%	-100%	50%	35%
2013			-28%		-100%	-27%	4%	-3%	-1%		-50%	-51%
2014			48%			32%	-2%	-17%	-97%	-66%	-23%	-11%
2015			-3%			-3%	-36%	-20%	-43%	253%	69%	197%

Table E-7a2: Average Percentage Change in Tons Recovered

			4%			6%	-11%	7%	-36%		12%	42%
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Table E-7a3: Annual Change in Tons Recovered

2011												
2012	0	0	30	0	57	732	-4	114	-10	-6	15,488	16,401
2013	0	0	-1,389	0	-6,639	-1,101	2	-10	-9	5	-23,090	-32,231
2014	0	0	1,695	0	0	930	-1	-46	-670	-3	-5,310	-3,405
2015	2,145	31,808	-162	2,837	5,271	-105	-14	-46	-9	4	12,565	54,295

Table E-7a4: Annual Per Capita Recovery Rate (pounds/person/day)

Population	Year	Commercial Survey	Other Recycling Facilities	Ohio EPA Commercial Retail Data	Curbside Recycling Services	Drop-off Recycling Programs	Ohio EPA Scrap Tire Data	HHW Amnesty Day	HHW Seasonal Facility	Appliance Collection	Document Destruction Day	Ohio EPA Composting Data	Totals
307,706	2011	0.00	0.00	0.09	0.00	0.12	0.06	0.00	0.00	0.01	0.00	0.55	0.83
305,636	2012	0.00	0.00	0.09	0.00	0.12	0.07	0.00	0.01	0.01	0.00	0.84	1.13
300,414	2013	0.00	0.00	0.06	0.00	0.00	0.05	0.00	0.00	0.01	0.00	0.43	0.57
302,392	2014	0.00	0.00	0.09	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.33	0.50
297,720	2015	0.04	0.59	0.09	0.05	0.10	0.07	0.00	0.00	0.00	0.00	0.57	1.51

Table E-7a5: Average Per Capita Recovery Rate (pounds/person/day)

0.01	0.12	0.09	0.01	0.07	0.06	0.00	0.00	0.01	0.00	0.54	0.91
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Table E-7a6: Average Tons of Material Recovered

2,145	31,808	4,736	2,837	6,164	3,555	37	227	427	5	30,047	50,089
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Sources:

Commercial Survey from District survey efforts
 Data from other recycling facilities from Ohio EPA MRF report
 Ohio EPA commercial retail data from Ohio EPA MRF report
 Yard Waste composted from Annual District Report
 Food waste hauled reported from Annual District Report
 Ohio EPA scrap tire data from Ohio EPA reports
 Specific program data from historical Annual District Reports

Throughout the state and nation many have seen a decline in recycling tonnages because of evolving materials. The collection of some materials has changed dramatically especially in curbside single stream collection systems. Societal and lifestyle trends have fundamentally changed the composition and type of materials in the waste stream such as aseptic/cartons, bulky rigid HDPE plastics, tubs and lids (Nos. 2, 4 and 5 plastics). These materials are becoming more prevalent in the waste stream. This lighter feedstock is taking the place of denser printed materials and consumer packaging. The volume of a ton has increased with the loss of ton density. There may be more volume but it weighs less. Plus, as manufacturers seek to use less energy and materials for greater savings along the production and distribution chains, the weight of lighter feedstock is also decreasing. Essentially recycling programs will need to collect more volume in order to maintain tonnages.

Tables E-7 through E-7a6 are meant to show correlations and benchmark the SWMD's programs. In most cases historical data was not recorded per program, thus it becomes challenging to benchmark programs. The SWMD developed Table E-7a7 comparing material quantities recovered hoping to show correlations and direct future programming.

Table E-7a7: Residential/Commercial Historical Materials Recovered

Materials	2010	2011	2012	2013	2014	2015	Correlations
Standard Recyclables							
Corrugated Cardboard	25,388	31,915	24,329	27,120	10,036	16,559	Changing waste stream, but uptick in 2015 is most likely attributable to Amazon effect.
Ferrous Metals	13,375	13,845	10,128	10,336	13,055	9,355	
All Other Paper	13,792	19,088	14,109	13,944	5,425	3,162	Change waste stream, less paper (50% reduction in newspaper readership over last 10 years ⁵)
Plastics	232	667	297	273	345	270	Changing waste stream, materials are lighter, markets are not established for all varieties of plastics.
Glass	87	1,434	5	16	22	1	Recovery issues with broken glass may be resulting in more residue and less recovery. In 2013, the SWMD converted to single stream recycling.
Wood	-	496	239	428	874	242	Mostly commercial, depends on survey responses.
Non-Ferrous Metals	2,558	2,680	2,391	2,399	1,414	1,054	
Commingled Recyclables (Mixed)							Notable increases as SWMD switched to single stream collection. However, with conversion the contamination increased. The tonnages shown do not reflect the contamination or residual tonnages. It is also suspected some of this may be Lake County material.
<i>Subtotal</i>	58,856	73,673	56,116	61,776	39,579	45,859	
Organics							
Food	-	53	355	176	1,489	1,012	Infrastructure is growing slowly for diversion.
Yard Waste	29,423	28,992	46,315	30,839	17,961	29,793	Fluctuates, weather/storm dependent.
<i>Subtotal</i>	29,423	29,045	46,670	31,015	19,451	30,805	
Hard to Recycle Materials							
Scrap Tires	2,752	3,279	4,011	2,910	3,840	3,735	
Appliances/ "White Goods"	714	710	700	691	21	24	Change in processor reporting. Appliances tracked with ferrous metals instead of separately.
Other (Aggregated)	-	631	549	133	439	440	
Textiles	181	679	655	656	668	668	
Used Motor Oil	24	17	17	17	15	13	
Lead-Acid Batteries	34	32	54	59	141	137	HHW varies.
Household Hazardous Waste	111	85	130	115	149	124	E-waste is another factor in the changing waste stream.
Electronics	32	91	147	120	73	64	
Dry Cell Batteries	-	-	-	-	-	2	
Rubber	-	-	-	-	-	-	
<i>Subtotal</i>	3,850	5,524	6,262	4,701	5,345	5,207	
Total Tons	92,129	108,241	109,047	97,492	64,375	81,870	

⁵ Waste Management. The Changing Waste Stream. EPA Webinar Series. November 13, 2014. Susan Robinson.

It can be concluded that cardboard is on the rise. The SWMD will need to account for this volume in the curbside and drop-off programs. Ferrous and nonferrous are heavily dependent on commercial survey responses. The SWMD is planning outreach to this sector which should increase data collection as well as recycling programs. Commingled recycling expected to decline as contamination issues are addressed. Also, will collaborate with haulers to ensure Geauga and Trumbull only data. E-waste and HHW should increase when the HHW facility in Geauga County becomes available (scheduled 2019).

C. Residential/Commercial Recovery Projections

Table E-8: Residential/Commercial Recovery Projections by Programs/Source

Year	Commercial Survey	Other Recycling Facilities	Ohio EPA Commercial Retail Data	Curbside Recycling Services	Drop-off Recycling Programs	Ohio EPA Scrap Tire Data	HHW Amnesty Day	HHW Trumbull Facility	HHW Geauga Facility	Appliance Collection	Document Destruction Day	Ohio EPA Composting Data	Totals
2015	2,145	31,808	5,074	2,837	5,271	3,735	25	182		12	6	30,775	81,870
2016	2,629	22,841	5,719	2,385	5,617	3,693	23	228		12	7	45,101	88,255
2017	2,629	22,841	10,246	2,400	5,700	3,423	25	251		12	9	37,918	85,468
2018	2,629	22,841	10,246	2,415	5,685	3,445	0	250	56	12	9	37,918	85,512
2019	2,629	22,841	10,246	2,811	5,662	3,467	0	249	56	11	9	37,918	85,906
2020	2,629	22,841	10,246	2,829	5,640	3,489	0	248	56	11	9	37,918	85,923
2021	2,629	22,841	10,246	2,847	5,618	3,511	0	247	56	11	9	37,918	85,940
2022	2,629	22,841	10,246	2,865	5,595	3,534	0	246	56	11	9	37,918	85,957
2023	2,629	22,841	10,246	2,883	5,573	3,556	0	245	56	11	9	37,918	85,975
2024	2,629	22,841	10,246	2,902	5,551	3,579	0	244	56	11	9	37,918	85,994
2025	2,629	22,841	10,246	2,920	5,530	3,602	0	243	56	11	9	37,918	86,012
2026	2,629	22,841	10,246	2,939	5,508	3,625	0	242	56	11	9	37,918	86,031
2027	2,629	22,841	10,246	2,958	5,486	3,648	0	241	56	11	9	37,918	86,050
2028	2,629	22,841	10,246	2,977	5,465	3,672	0	240	56	11	9	37,918	86,070
2029	2,629	22,841	10,246	2,996	5,443	3,695	0	239	56	11	9	37,918	86,090
2030	2,629	22,841	10,246	3,015	5,422	3,719	0	238	56	11	9	37,918	86,110
2031	2,629	22,841	10,246	3,034	5,400	3,743	0	238	56	11	9	37,918	86,131
2032	2,629	22,841	10,246	3,054	5,379	3,767	0	237	56	11	9	37,918	86,152
2033	2,629	22,841	10,246	3,073	5,358	3,791	0	236	56	11	9	37,918	86,174

Sources:

Years 2015, 2016, and 2017 data sources: Commercial Survey from District survey efforts, Data from other recycling facilities from Ohio EPA MRF report, Ohio EPA commercial retail data from Ohio EPA MRF report, Ohio EPA compost data from Ohio EPA Compost report (includes food waste), Ohio EPA scrap tire data from Ohio EPA reports, Specific program data from historical Annual District Reports

Recovery projections estimated in this 2019 Plan were estimated as follows:

- Capturing data from commercial businesses has challenges, two of which are District time and expenses. Unfortunately, historical data recorded as commercial surveys was challenging to categorize due to past record keeping. For guidance in estimating future projections, Ohio Job's Outlook Cleveland and Youngstown areas was consulted. It predicts service industries employment to increase 0.64 percent annually in this area. However, with very minimal data to perform historical benchmarking analysis the District chose to hold the 2017 data constant through the planning period.
- Data from Other Recycling Facilities is challenging to categorize due to past record keeping providing little historical data for use in benchmarking. In 2015, an increase in commingled and cardboard was documented. Commingled is believed to have some misreporting of Lake County recycling. Thus, a decrease is documented in 2016 data. With very minimal data to perform historical benchmarking analysis the District chose to hold the 2017 data constant through the planning period.
- Ohio EPA Commercial Retail Data is compiled from reports provided to Ohio EPA for participating commercial retail stores and is dependent on data collection from Ohio EPA. The District chose to hold the 2017 data constant through the planning period.
- Historical curbside recycling reports are difficult to quantify. Recovery in 2015 at 2,837 tons is about 19 pounds per person per year. Expecting 1 community (Warren, as an example) to begin a curbside recycling program equates to 380 additional tons (19 pound per person per year x 40,025 persons / 2000 pounds) in 2019. Modest increases beyond 2019 at 15 tons per year is expected growth in non-subscription recycling (~1,580 persons additional a year).
- Drop-off recycling increased in 2015 and 2016 but the SWMD's contamination also increased. It is documented at 30 percent in 2017. The SWMD's efforts will encourage curbside through this planning period so decreases are expected. Approximately 22 tons annually are projected to decline.
- Ohio EPA Scrap Tire Data is compiled from processor reports provided to Ohio EPA. Historical data fluctuates from increases to decreases. Projections were predicted by using the calculated five-year average per capita recovery rate, 0.06 pounds per person per day. Applying the 0.06 pounds per person per day demonstrates an increase in scrap tires recycled.
- The HHW Trumbull Facility accepts used motor oil, lead-acid batteries, HHW, appliances and electronics. Historical data in Table E-7 includes all of these materials except appliances. The SWMD expects to pilot a HHW facility in Geauga County in 2018. A decline of approximately 1-ton year is projected.
- The HHW Geauga Facility will accept used motor oil, lead-acid batteries, HHW, appliances and electronics. Recovery projections were estimated assuming 3 pounds per household. 3 pounds per household x 37,000 households = 111,000 pounds. Projections are held constant through the planning period.
- Appliance Collection is expected to remain flat through the planning period.
- Document Destruction is expected to remain flat through the planning period.
- Yard waste and food waste composted fluctuates annually dependent on seasonal conditions. The District chose to hold the 2017 data constant through the planning period. (Note: this is slightly more than the calculated 5-year average annual (2011-2015) tons of material recovered 36,246 tons.)

APPENDIX F: INDUSTRIAL WASTE REDUCTION AND RECYCLING DATA

Appendix F contains an inventory of materials recovered from the industrial sector in the reference year, adjusts quantities for double counting, calculates total adjusted quantities of material recovered, analyzes historical quantities recovered and projects quantities to be recovered.

A. Reference Year Recovery Data

Tables F-1 through F-4 account for all material being credited to the waste reduction and recycling rate for the industrial sector.

Table F-1: Industrial Survey Results

<u>NAICS</u>	Food	Glass	Ferrous Metals	Non-Ferrous Metals	Corrugated Cardboard	All Other Paper	Plastics	Textiles	Wood	Rubber	Commingled Recyclables (Mixed)	Ash	Non-Excluded Foundry Sand	Flue Gas Disulfurization	Other:	Other:	Other	Other	Other:	Other:	
22																					
31																					
32		668	134	15	302	7	31		338						170						704
33			57,541	406	800	56	135		12,604		109							1	3		1
42																					
44					20	2	1														
53																					
54																					
blank			1,242		75		552		1,916		40										
Other:			36		7,124	3	8		132		5										3,946
Unadjusted Total	0	668	58,953	421	8,321	68	727	0	14,990	0	154	0	0	0	0	170	0	1	3	4,651	89,127
Adjustments					303						117										420
Adjusted Total	0	668	58,953	421	8,018	68	727	0	14,990	0	37	0	0	0	0	170	0	1	3	4,651	88,707

Source(s) of Information: Calendar year 2015 survey data as reported by industrial businesses.

Table F-1 accounts for material credited for waste reduction and recycling as reported by industrial businesses. In some instances an industrial business did not respond to the reference year survey but did respond to a previous survey. Supplemental data from calendar years 2013 and 2014 was used in this table when the business was verified as operating in the reference year, the nature of the business did not significantly change, and the business still produced the same type of recyclables. Some materials reported as recycled are considered non-creditable. These materials include: train boxcars, construction and demolition debris, metals from vehicles, liquid industrial waste, and hazardous waste. Adjustments were made on Table F-1 to exclude these materials.

Data on Table F-1 is organized by North American Industry Classification System (NAICS). Manufacturing industries are classified under sectors 31-33. Table F-1 aggregates the quantities from all returned surveys for an NAICS code. The SWMD mailed 467 surveys and received a 6 percent response rate.

Table F-2: Data from Other Recycling Facilities

Program and/or Source of Materials/Data	Food	Glass	Ferrous Metals	Non-Ferrous Metals	Corrugated Cardboard	All Other Paper	Plastics	Textiles	Wood	Rubber	Commingled Recyclables (Mixed)	Ash	Non-Excluded Foundry Sand	Flue-Gas Desulfurization Waste	Other:
Buybacks															
none															
Scrap Yards															
5 responding businesses			93	39											
Brokers															
4 responding businesses		230	3	1	558	998	1								
Processors/MRF's															
none															
Unadjusted Totals		230	97	40	558	999	1								1,925
Adjustments		80				496									575
Adjusted Totals		150	97	40	558	503	1								1,349

Source(s) of Information:
 Calendar year 2015 survey data as reported by industrial businesses.
 Ohio EPA Material Recovery Facility data 2015

Table F-3: Other Recycling Programs/Other Sources of Data

Other Recycling Programs or Other Sources of Data	Food	Glass	Ferrous Metals	Non-Ferrous Metals	Corrugated Cardboard	All Other Paper	Plastics	Textiles	Wood	Rubber	Commingled Recyclables	Ash	Non-Excluded Foundry Sand	Flue Gas Desulfurization	Other:	Unadjusted Total	Adjustments	Adjusted Total
none																0		0
Unadjusted Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Adjustments																0		
Adjusted Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Source(s) of Information:
 Calendar year 2015 survey data as reported by industrial businesses.
 Ohio EPA Material Recovery Facility data 2015

Table F-4: Industrial Material Recovered in Reference Year

Material	Quantity (tons)
Food	0
Glass	818
Ferrous Metals	59,050
Non-Ferrous Metals	461
Corrugated Cardboard	8,576
All Other Paper	571
Plastics	728
Textiles	0
Wood	14,990
Rubber	0
Commingled Recyclables (Mixed)	37
Ash	0
Non-Excluded Foundry Sand	0
Flue Gas Disulfurization	0
Other (Aggregated)	4,825
Total	90,056

Source(s) of Information:
Calendar year 2015 survey data as reported by industrial businesses.
Ohio EPA Material Recovery Facility data 2015

The SWMD diverted 90,056 tons from the industrial sector. Table F-4 reports quantities of each material diverted.

Table F-5: Quantities Recovered by Program/Source

Program/Source of Industrial Recycling Data	Quantity (Tons)
Industrial survey	88,707
Scrap Yards	1,349
Other Recycling Programs or Other Sources of Data	0
Total	90,056

Source(s) of Information:
Calendar year 2015 survey data as reported by industrial businesses.
Ohio EPA Material Recovery Facility data 2015

Table F-5 reports quantities diverted for each program/source.

B. Historical Recovery

Table F-6: Historical Industrial Recovery by Program/Source

Year	Industrial survey	Data from other recycling facilities
2010	168,000	
2011	151,645	
2012	150,460	
2013	159,485	
2014	66,303	
2015	88,707	1,349

Source(s) of Information: Annual District Reports for 2011- 2015

Data from the industrial sector is obtained from surveys and Ohio EPA MRF data, as seen from Table F-6. An industrial survey was conducted to obtain 2015 data. From 2011 to 2013, industrial recycling hovered in the 150,000 ton range. A large drop occurred in 2014 with only 66,303 tons reported as recycled by the industrial sector. This large drop is attributed to a loss of industry that occurred in the region. Additionally, survey response rates were low in 2014 with less than 10 percent of industries responding. The low response rate means that any change in industries reporting can have a huge impact on the recycling tonnages. For example, if a large industrial recycler reports intermittently, reported recycling tonnages may swing up and down. On average, the District collected 131,041 tons of material between 2010 and 2015.

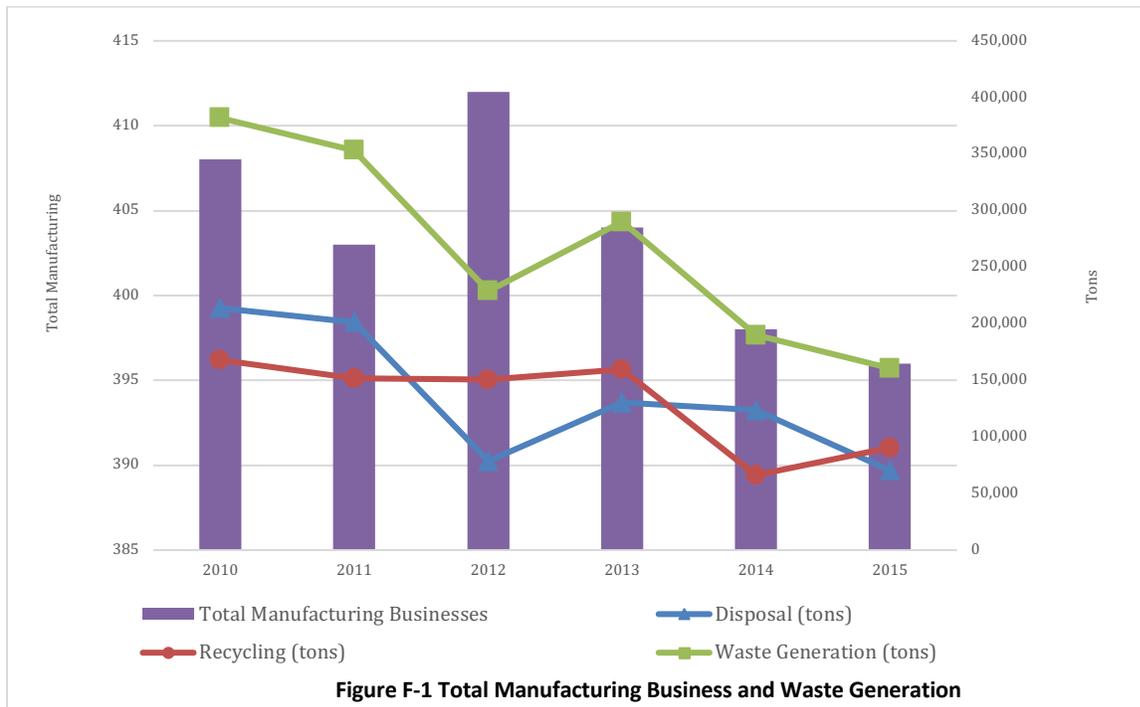


Table F-6a1: Annual Percentage Change in Tons Recovered

Year	Industrial survey	Data from other recycling facilities	Totals
2011			
2012	-1%		-1%
2013	6%		6%
2014	-58%		-58%
2015	34%	1,439	36%

Table F-6a2: Average Annual Percentage Change in Tons Recovered

-5%		-4%
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Table F-6a3: Tonnage Change/Year

Year	Industrial survey	Data from other recycling facilities	Totals
2011			
2012	-1,185	0	-1,185
2013	9,025	0	9,025
2014	-93,182	0	-93,182
2015	22,404	1,349	23,753

Table F-6a4: Average Tonnage Change/Year

Industrial survey	Data from other recycling facilities	Totals

-15,735	337	-15,397
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Table F-6a5: Average Tons of Material Over 5 Years

123,320	1,349	123,590
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C. Industrial Recovery Projections

Table F-7: Industrial Recovery Projections by Program/Source

Year	Industrial survey	Data from other recycling facilities	Totals
2015	88,707	1,349	90,056
2016	160,156	0	160,156
2017	159,500	0	159,500
2018	158,846	0	158,846
2019	158,195	0	158,195
2020	157,546	0	157,546
2021	156,900	0	156,900
2022	156,257	0	156,257
2023	155,616	0	155,616
2024	154,978	0	154,978
2025	154,343	0	154,343
2026	153,710	0	153,710
2027	153,080	0	153,080
2028	152,452	0	152,452
2029	151,827	0	151,827
2030	151,205	0	151,205
2031	150,585	0	150,585
2032	149,967	0	149,967
2033	149,352	0	149,352

Source(s) of Information: Table F-6

Sample Calculations:

Industrial survey annual decreases of 0.41%.

Industrial Survey annual projection: 160,156 tons * 0.0041 - 160,156 tons = 159,500 tons projected recycled in 2017

A survey was conducted to obtain 2016 data from industries, haulers and brokers. Four hundred sixty-two surveys were mailed, follow up phone calls were made to the largest industries in both counties (38 in Trumbull and 27 in Geauga). A 5 percent response rate was achieved. Survey efforts to the brokers and haulers elicited better response rates, 25 percent and 54 percent. Data and double counting adjustments are shown in Table F-8 below.

Table F-8: Industrial Recovery in 2016

Material	Industrial Survey	Broker	Hauler	Totals	Adjustments for Double Counting	Adjusted Total
Appliances / "White Goods"		0	0	0		0
Household Hazardous Waste				0		0
Used Motor Oil		0		0		0
Electronics	12	0	0	12		12
Scrap Tires		0	90	90	(90)	0
Dry Cell Batteries	0	0		0		0
Lead-Acid Batteries		12	0	12	(12)	0
Food	0	0	0	0		0
Glass	669	0	2	671		671
Ferrous Metals	43,908	120,235	0	164,143	(40,387)	123,757
Non-Ferrous Metals	3,478	326	2	3,806	(83)	3,723
Corrugated Cardboard	11,344	840	113	12,296	(846)	11,451
All Other Paper	75	1,000	34	1,109	(75)	1,034
Plastics	575	0	2	578		578
Textiles	0	0	0	0		0
Wood	17,605	0	2	17,607		17,607
Rubber	26	0	0	26		26
Commingled Recyclables	543	0	0	543		543
Yard Waste		0		0		0
Ash	0			0		0
Non-Excluded Foundry Sand	0			0		0
Flue Gas Desulfurization Waste	0			0		0
Other	822	0		822	(68)	754
Total	79,058	122,414	245	201,717	-41,560	160,156

In order to estimate recovery projections through the planning period, the SWMD consulted research conducted by Ohio Department of Job and Family Services, Bureau of Labor Market Information (BLMI) for employment projections. BLMI updates employment projections every two years for use in long-range economic and employment forecasts. Trumbull County projections referenced the Youngstown-Warren-Boardman Metropolitan Statistical Area. "2024 Job Outlook, Youngstown-Warren-Boardman Metropolitan Statistical Area", published June 2017, indicates manufacturing employment is expected to decrease 4.1% from 2014 – 2024. Geauga County projections referenced the Cleveland-Elyria-Mentor Metropolitan Statistical Area. "2024 Job Outlook, Cleveland-Elyria-Mentor Metropolitan Statistical Area", published June 2017, indicates manufacturing employment is expected to decrease 4.1% from 2014 – 2024. The industries surveyed fall within the manufacturing categories that are expected to decrease.

Taking into account the projected increase predicted by the BLMI, industrial recovery is projected to decrease 0.041% annually through the planning period. Scrap yard data is held constant through the planning period. The SWMD's industrial recovery projections are presented in Table F-7.

APPENDIX G: WASTE GENERATION

Table G-1 provides historic generation data, including the reference year and the four preceding years for residential/commercial waste, industrial waste, and excluded waste (if excluded waste disposed in reference year is greater than 10 percent of total waste).

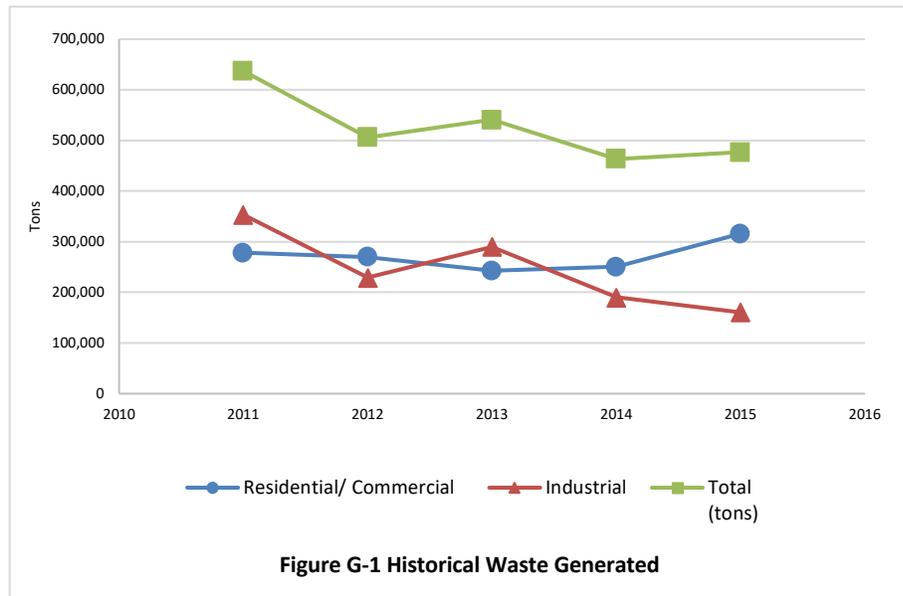
Waste generation is calculated by adding the quantities of waste disposed from Appendix D and quantities of recycled from Appendices E and F. Quantities resulting from the disposal and recycling as presented in Table G-1 accurately represent waste generation for the District.

Waste generation is a function of population growth, lifestyles, economic activity, and production practices.

A fundamental change occurring in the waste stream is lighter weight product materials and product packaging today. A shift from glass to plastic packaging, downsizing packaging, and switching from metal to plastic product components are occurring across industries. These changes impact the waste stream composition.

National per capita waste generation has decreased by 8 percent since 2000⁶. Part of this change is due to the evolving waste stream. Since the 1990s, heavy glass packaging such as bottles and jars have increasingly been replaced with lighter HDPE, PET, and flexible plastic packaging. The decline in newspaper subscriptions and increase in online shopping means that newsprint has decreased in the waste stream while corrugated containers have increased. The use of steel and aluminum containers has remained fairly constant over the past several decades. This lighter feedstock is taking the place of denser printed materials and consumer packaging. Plus, as manufacturers seek to use less energy and materials for greater savings along the production and distribution chains, the weight of lighter feedstock is also decreasing.

Because of these changes the volume is increasing but the weight is not. Also, the material restrictions to foreign markets results in tighter recyclable bales (recyclables collected at the curb and in drop-offs are processed into bales at a MRF to be marketed for use in end products = closing the loop in recycling.) How both of these factors affect waste generation is tough to predict. This Plan Update must make projections on waste generation, thus a historical analysis and comparison to neighboring SWMDs was conducted.



⁶ US EPA numbers

Table G-1: Reference Year and Historical Waste Generated

Year	Population	Residential/ Commercial		Industrial		Excluded (tons)	Total (tons)	Per Capita Generation (ppd)	Annual % Change (tons)
		Disposed (tons)	Recycled (tons)	Disposed (tons)	Recycled (tons)				
2010	303,701	233,388	92,129	213,830	168,000	8,349	715,696	12.91	
2011	307,706	231,223	46,810	201,574	151,645	5,715	636,967	11.34	-11%
2012	305,636	206,848	63,211	78,476	150,460	7,425	506,420	9.07	-21%
2013	300,414	211,778	30,980	130,452	159,485	8,046	540,741	9.86	7%
2014	302,392	223,082	27,575	123,618	66,303	22,670	463,248	8.39	-14%
2015	297,720	234,088	81,870	70,391	90,056	-	476,406	8.77	3%

Source(s) of Information:
 Disposal from Appendix D
 Recycled from Appendices E and F
 Sample Calculations:
 2015 waste generation = 234,088 + 81,870 + 70,391 + 90,056 = 476,406 tons
 2015 Per Capita Generation = ((476,405 * 2,000)/365) / 297,720 = 8.77 pounds per person per day

Waste generation is calculated by adding the quantities of waste disposed from Appendix D and quantities recycled from Appendices E and F. Quantities resulting from the disposal and recycling as presented in Table G-1 accurately represent waste generation for the SWMD. Per capita waste generation shows an annual decline from year 2010.

1. Residential/Commercial Waste

Table G-2 Residential and Commercial Historical Waste Generation

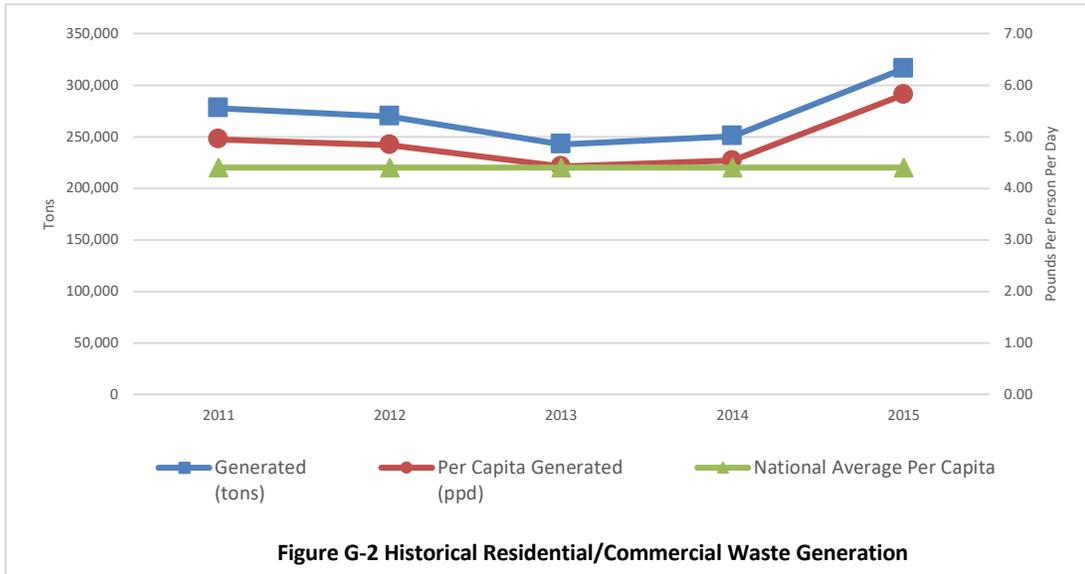
Year	Population	Residential/ Commercial			
		Disposed (tons)	Recycled (tons)	Generated (tons)	Per Capita Generated (ppd)
2011	307,706	231,223	46,810	278,033	4.95
2012	305,636	206,848	63,211	279,059	4.84
2013	300,414	211,778	30,980	242,758	4.42
2014	302,392	223,082	27,575	250,657	4.54
2015	297,720	234,088	81,870	315,959	5.82
			Average	271,493	4.91

Source(s) of Information:
 ADRs
 Sample Calculation:
 2015 waste generation = 234,088 + 81,870

Generation declined until year 2014 when a modest increase was measured as a result of increased waste disposal. Waste disposal in years 2012 and 2013 are lower and correspond to SWMD investigations of waste mischaracterization. The recycling increase in 2015 is documented in Appendix E and is reflective of cardboard, yard waste and commingled increases.

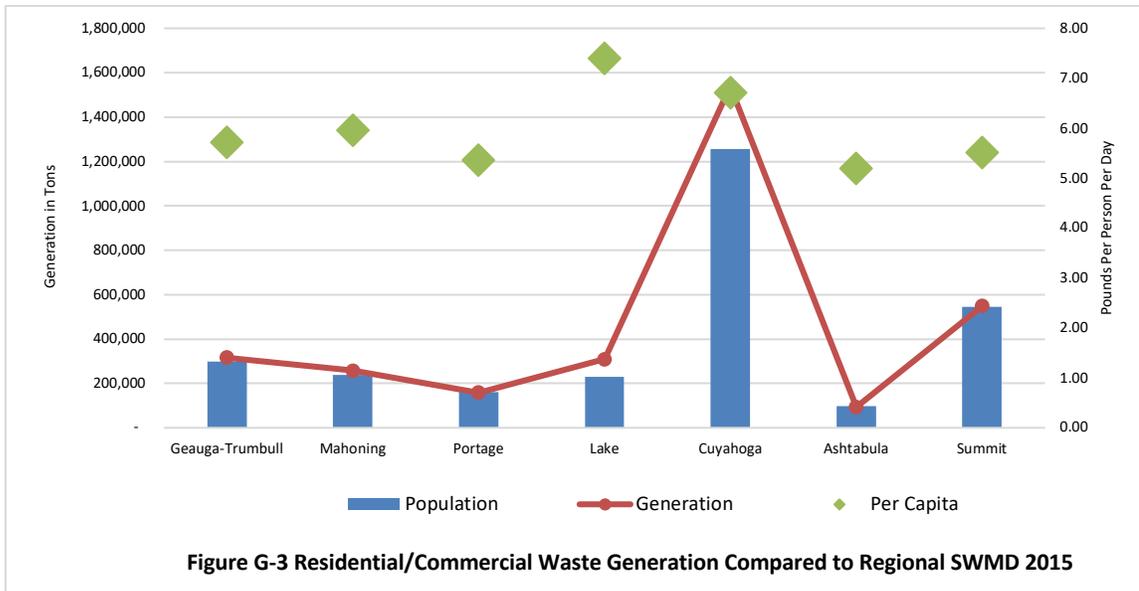
Historically, the residential/commercial generation has remained between 240,000 and 316,000 tons, averaging 271,000 tons. This demonstrates a negative correlation between disposal and recycling, as one rises the other

falls. The generation rate remained relatively flat at a 5-year average of 4.91 pounds per person per day. The District historical residential/commercial generation rate is similar to the national generation rate⁷.



The SWMD’s residential and commercial generation rate is similar to the regional counties with the exception of Cuyahoga and Lake Counties. While the District’s per capita generation was similar to the surrounding region, there are challenges with direct comparisons between the counties that make up Northeast Ohio due to differences in population density, urban versus rural areas, and commercial development. Cuyahoga County contains Cleveland and has the highest population in the region. The County is also a major source of economic opportunity in the area. Western Geauga County is a bedroom community for the Cleveland metro area. Trumbull County has historically been an industrial and manufacturing County, similar to Mahoning. However, manufacturing decline and industrial loss in the region has played a major role in waste generation.

⁷ US EPA’s Table 30 Generation, Materials Recovery, Composting, Combustion, and Discards of Municipal Solid Waste 1960 to 2013.



The District’s residential/commercial generation rate falls in the middle within the region. Limitations of available data and indicators introduce an element of uncertainty when comparing across other Districts.

2. Industrial Waste

Table G-3 Industrial Historical Waste Generation

Year	Disposed (tons)	Recycled (tons)	Generated (tons)	Per Capita
2010	213,830	168,000	381,830	6.89
2011	201,574	151,645	353,219	6.29
2012	78,476	150,460	228,936	4.10
2013	130,452	159,485	289,937	5.29
2014	123,618	66,303	189,921	3.44
2015	70,391	90,056	160,447	2.95
		Average	263,382	4.83

Total industrial waste generation has declined over time, but not continuously. In 2010 and 2011, industrial generation was over 350,000 tons per year. In the reference year industrial generation declined to just above 160,000 tons per year.

3. Excluded Waste

Excluded waste disposed in reference year is less than 10 percent of total waste so is not analyzed here.



D. Generation Projections

Table G-2: Generation Projections

Year	Population	Residential/ Commercial				Industrial			Total (tons)	Annual Percentage Change		
		Disposal (tons)	Recycle (tons)	Generation (tons)	Per Capita Generation (ppd)	Disposal (tons)	Recycle (tons)	Generation (tons)		Residential/Commercial	Industrial	Total
2015	297,720	234,088	81,870	315,959	5.82	70,391	90,056	160,447	476,406	-----	-----	-----
2016	296,547	233,166	88,255	321,421	5.94	70,102	160,156	230,259	551,679	0.017287023	0.435110006	15.8%
2017	295,374	232,244	85,468	317,712	5.89	69,815	159,500	229,315	547,026	-	-0.0041	-0.8%
2018	294,202	231,322	85,512	316,834	5.90	69,529	158,846	228,374	545,208	0.002763258	-0.0041	-0.3%
2019	293,029	230,400	85,906	316,306	5.91	69,244	158,195	227,438	543,744	-	-0.0041	-0.3%
2020	291,856	229,477	85,923	315,400	5.92	68,960	157,546	226,506	541,906	-0.00286218	-0.0041	-0.3%
2021	290,683	228,555	85,940	314,495	5.93	68,677	156,900	225,577	540,072	0.002869288	-0.0041	-0.3%
2022	289,510	227,633	85,957	313,591	5.94	68,395	156,257	224,652	538,243	-0.00287643	-0.0041	-0.3%
2023	288,338	226,711	85,975	312,687	5.94	68,115	155,616	223,731	536,418	-	-0.0041	-0.3%
2024	287,165	225,789	85,994	311,783	5.95	67,836	154,978	222,814	534,596	0.002890817	-0.0041	-0.3%
2025	285,992	224,867	86,012	310,879	5.96	67,557	154,343	221,900	532,779	-	-0.0041	-0.3%
2026	284,819	223,945	86,031	309,976	5.96	67,280	153,710	220,990	530,966	-0.00290534	-0.0041	-0.3%
2027	283,646	223,022	86,050	309,073	5.97	67,005	153,080	220,084	529,157	-	-0.0041	-0.3%
2028	282,474	222,100	86,070	308,171	5.98	66,730	152,452	219,182	527,353	0.002920002	-0.0041	-0.3%
2029	281,301	221,178	86,090	307,268	5.99	66,456	151,827	218,283	525,552	-	-0.0041	-0.3%
2030	280,128	220,256	86,110	306,367	5.99	66,184	151,205	217,388	523,755	0.002934806	-0.0041	-0.3%
2031	278,955	219,334	86,131	305,465	6.00	65,913	150,585	216,497	521,962	-	-0.0041	-0.3%
2032	277,782	218,412	86,152	304,564	6.01	65,642	149,967	215,609	520,174	0.002949752	-0.0041	-0.3%
2033	276,610	217,490	86,174	303,663	6.02	65,373	149,352	214,725	518,389	-	-0.0041	-0.3%

Sample Calculations:

Per capita generation = ((Generation x 2000) / 365) / population

APPENDIX H: STRATEGIC EVALUATION

In this Appendix, the Policy Committee completed a strategic process of evaluating its reduction and recycling efforts. To do this, the status of the reduction and recycling efforts were evaluated in the context of factors presented in the 14 analyses described in Format 4.0. This strategic program evaluation was performed on the following:

- Residential Recycling Infrastructure Analysis
- Commercial Sector Analysis
- Industrial Sector Analysis
- Waste Composition Analysis
- Economic Incentive Analysis
- Restricted and Difficult to Manage Waste Analysis
- Diversion Analysis
- Special Program Needs Analysis
- Financial Analysis
- Regional Analysis
- Population Analysis
- Data Collection Analysis
- Education and Outreach Analysis (see Appendix L)
- Processing Capacity Analysis

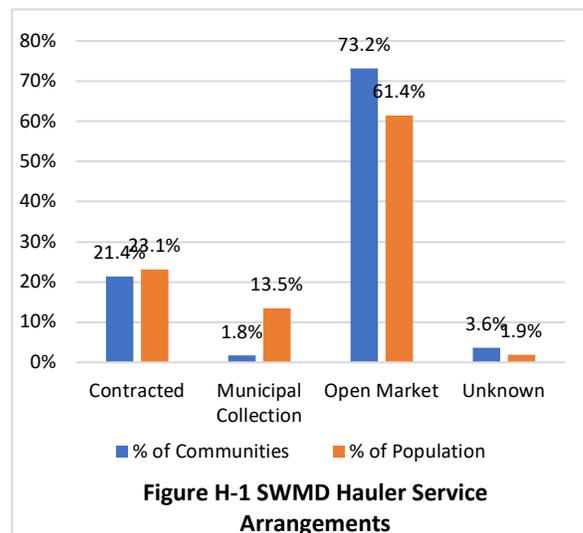
A. Residential Recycling Infrastructure Analysis

This evaluation of the SWMD’s existing residential recycling infrastructure determines whether the needs of the residential sector are being met and if the infrastructure is adequately performing. The residential recycling infrastructure consists of curbside programs, drop-off recycling programs, special event drop-offs, take-back retailers, reuse centers, thrift stores, network of food banks, and compost facilities. The analysis for the plan is dictated by the availability of data. Detailed residential tonnage data by location is not available for the SWMD, thus, the analysis includes an evaluation of hauler services and drop-offs by locations, combined with performance data for the overall SWMD. The SWMD’s role instituting this network of available opportunities varies.

A. Analysis

In conducting this analysis research determined proximity, distance, and low volume of recyclables generated in lower populated areas is a barrier for curbside recycling infrastructure. In these areas, residents do not have curbside recycling (unless contracted) because of lack of service or greater costs resulting in service voids. Haulers stated no efficiencies of scale in these areas.

In addition, research also found in some areas, stakeholders hold firm to natural competition amongst haulers and the freedom for customers to conveniently change providers. This dynamic contributes to the larger percentage of residents in an open market system. Majority of the SWMD’s population, 61 percent, live in communities with open market for haulers. This means the residents choose collection service provider by contracting



with the hauler directly. Less than one-quarter of the population live in areas with contracted haulers and only 14 percent are municipal collection. This includes recycling and trash hauling.

Open market system gives the customer a choice in who provides the service. An open market system should not be interpreted as lack of services. Both Geauga and Trumbull counties have a considerable percentage of population served in an open market system.

Separating the two counties, Geauga County has 92 percent of the population with open market and Trumbull County has 48 percent as shown in Figure H-2. Geauga County, a bedroom community of Cleveland, experiences large hauling companies (Rumpke, Waste Management, Republic) having presence in the northern and western portion of the county. Trumbull County, closer to Youngstown and Pennsylvania, experiences large hauling companies (Republic, Ohio Valley Waste Services) having presence everywhere except for pockets in the northwest of the County.

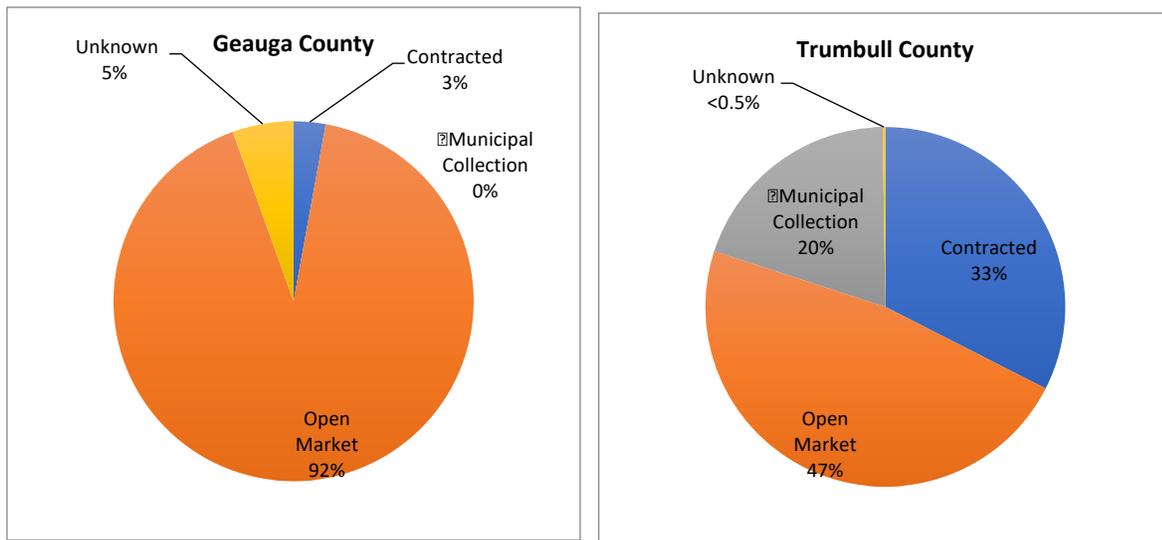


Figure H-2 Hauler Service Arrangements by County

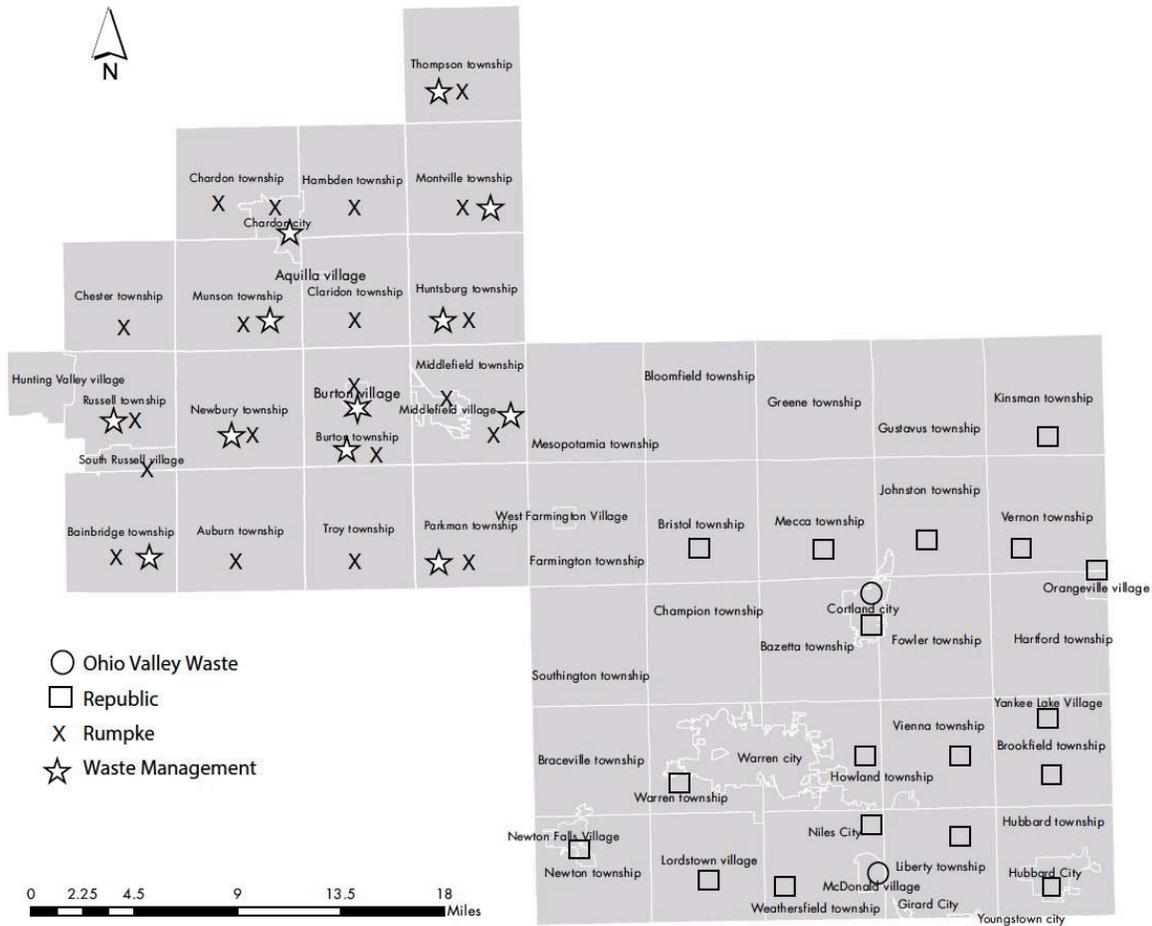


Figure H-3 Residential Curbside Recycling Haulers in the Market

Note: This map does not reflect contracted or open market locations.

Municipal Collection – One community has municipal collection where the political jurisdiction hauls trash.

Table H-1 Municipal Collection Programs

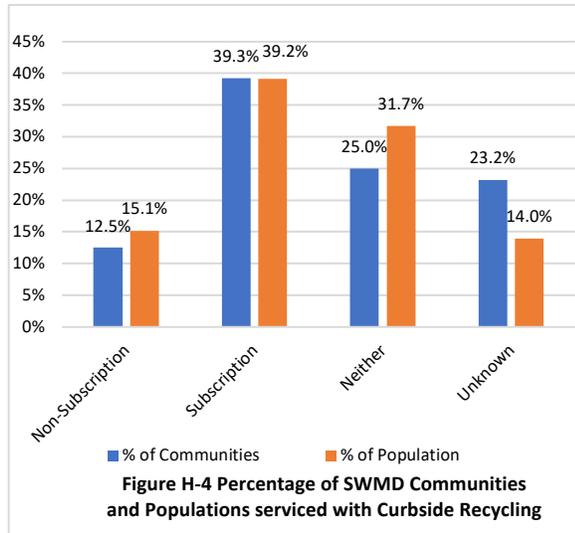
Location	County	Population	Hauler Arrangement	Recycling Subscription	Recycling Non-Subscription	Non-Subscription
Warren City	Trumbull	40,125	Muni collection refuse	No	No	No

Note: Warren is the largest City in the SWMD. Municipal collection service does not include curbside recycling – there is a significant opportunity to work with Warren to encourage curbside recycling programs – if the City had curbside, and they recycled the same amount as is estimated for other curbside communities in the SWMD, it could mean an additional 2,500 tons per year of recyclables. Such programs in Warren need to consider approximately 35% of residents live in poverty.

Curbside Programs

In Geauga and Trumbull, curbside recycling service is becoming more common. In 2009, only seven political jurisdictions had curbside recycling service available compared to 29 in 2015. While curbside has expanded the District continues to be confronted with several challenging barriers for further expansion. These include:

- Geographic location and rural setting. Curbside collection service voids exist in the northeast corner of Trumbull County.
- Franchise and/or contract service opposition. Elected officials and/or residents oppose contracts to one service hauler for non-subscription service.
- Resident opt-in for subscription service. Residents may not be aware curbside recycling service is available and if they do they may not be willing or unable to afford the service.



Tracking tonnage data per program and per community allows the District to benchmark types of curbside programs. Unfortunately, tonnage data is not available for individual communities to compare non-subscription programs to subscription programs. Figure H-3 compares percentages of population and communities served. In compiling this figure, the District contacted communities and researched websites to identify recycling hauler status. Some communities are ‘unknown’ as they either did not have website, contacts, or return phone inquiries.

Non-subscription Details:

In 2015, the District’s Annual District Report did not identify non-subscription curbside recycling services. Research for this Plan Update conducted in 2017, found a total population of 45,032 or 15 percent of population is served with non-subscription curbside. Identified in Table H-2, the political

jurisdictions have non-subscription curbside achieved through contracts between the municipality and the hauler.

Table H-2 Non-Subscription Curbside Community

Location	County	Population	Hauler Arrangement	Company	Non-Subscription	Notes
Middlefield Village	GEAUGA	2,693	Contracted hauler	Rumpke	Yes	Cart-based, no fee
Cortland City	TRUMBULL	6,927	Contracted	Republic Services	Yes	Recycling in 18-gallon bins
Hubbard City	TRUMBULL	7,650	Contracted	Republic Services	Yes	
Lordstown Village	TRUMBULL	3,300	Contracted hauler	Republic Services	Yes	Every other week recycling – B week
Newton Falls Village	TRUMBULL	4,654	Contracted hauler	Ohio Valley Waste	Yes	Every other week
Liberty Township	TRUMBULL	11,718	Contracted	Republic Services	Yes	
Weathersfield Township	TRUMBULL	8,090	Contracted hauler	Republic Services	Yes	

Source: June 2017 phone inquiries and web searches.

Subscription Details:

Subscription curbside service achieved through contracts between the individual homeowners and the haulers and was verified by contacting the hauler and/or political jurisdiction. A total of 21 political jurisdictions in Geauga have subscription available and 1 in Trumbull, covers 116,613 residents, 39.2 percent population. When contacted, one service provider reported offering subscription curbside in all of Geauga County. The District knows other service providers offer subscription service in limited areas of Geauga County, however, some hauler service areas could not be specifically identified, as they did not return phone inquiries. In Trumbull County, Howland Township is the only

political jurisdiction recorded with subscription curbside service available. Excluding the non-subscription communities, of the 28 political jurisdictions (total political jurisdictions for Trumbull County is 35) 13 are unknown and 14 do not have subscription curbside available.

All curbside programs collect single stream but method of collection, carts/bins or manual/automated/semi-automated, varies. Collection frequency also varies.

Neither or Unknown:

Out of the 56 political jurisdictions, 14 are ‘no’ and 13 are unknown as to whether curbside recycling services are provided or available. A population of 94,467, 31.7 percent of the SWMD population do not have services and 41,608, 14 percent could potentially not have curbside service available.

The 2013 Plan Update developed a strategy for the SWMD to work with the City of Warren in piloting curbside recycling. To date the SWMD continues to reach out to the City on an annual basis although no programs have been developed

Tonnage Analysis:

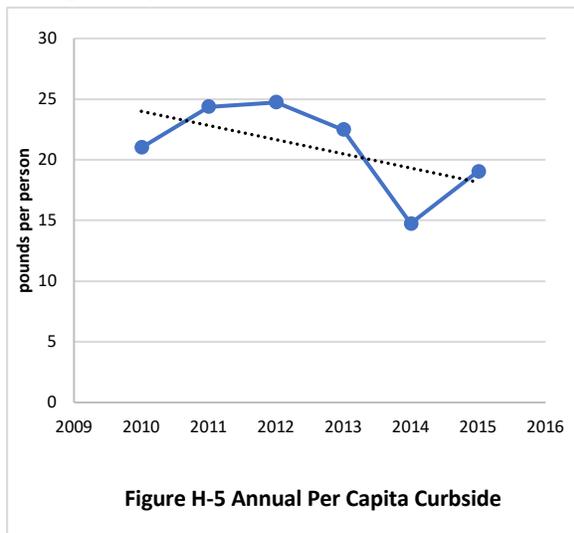


Figure H-5 Annual Per Capita Curbside

Hauler provided data estimates 2,837 tons of recyclables were collected at the curb in 2015. This is about 19 pounds per person per year.

Looking at the pounds per *eligible person* (excluding the 94K population identified as not having curbside recycling) the recovery increases to 28 pounds per person per year in 2015.

Curbside data over time is not available. The historical trend in Figure H-4 was calculated using total diverted tons, population, and actual curbside data from 2015 to estimate changes over time.

In general many of the area haulers accept plastic bottles and jugs, aluminum and steel cans, paper, newsprint, and glass. Rumpke also accepts cartons. However, the

messaging around what is and is not accepted for recycling is inconsistent or difficult to find. Many of the villages and townships do not have information on their webpages about trash or recycling. Calling the municipality may not provide residents with more information. Some municipalities do not have a contact phone number for residents to call, do not know any information regarding recycling, or do not return phone calls regarding recycling. Residents then must rely on contacting the haulers directly, which can also be difficult. The haulers have provided inconsistent information regarding the availability of recycling and materials accepted.

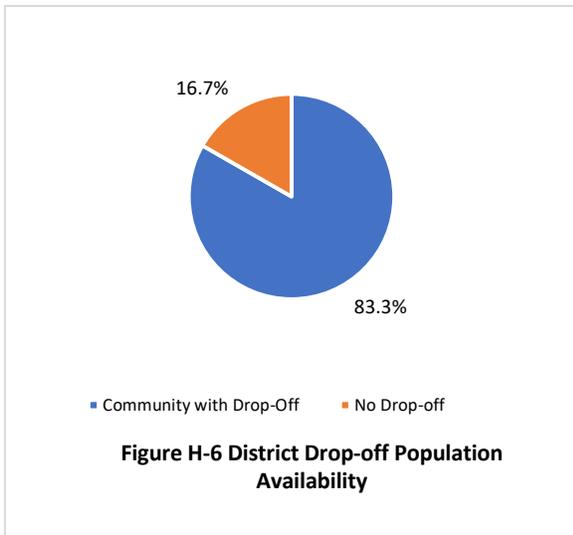
Challenges/Barriers

- Lack of community specific recycling data.
- Inconsistent messaging from haulers regarding recyclable materials.
- Reporting from communities and haulers.
- Voluntary programs (subscription curbside) reduce participation.
- Lack of direct jurisdiction over municipal residential curbside collection systems.
- Availability of curbside services (geographic and rural barriers).
- Lack of District-wide curbside infrastructure.
- Low number of residents participating.
- Low number of population with service opportunities.
- Lack of data regarding bin or cart use for recycling collection.

- Largest political jurisdiction does not have curbside.
- Lack of recycling information on political jurisdiction websites.

Drop-off Programs

Not all of the political jurisdictions within Geauga and Trumbull counties have curbside recycling collection programs. To provide residents with recycling opportunities and access to recycle the SWMD sponsors and relies heavily on the drop-off program. Drop-off locations offer collection containers where people place their recyclable materials. People who use drop-offs voluntarily transport recyclable materials to the drop-off location. Materials collected are subject to change when the SWMD bids for services. Common materials accepted include: glass, aluminum and steel cans, foil trays, plastic bottles and jugs, plastic #1 and #2 food containers, paper and cardboard. For many years the SWMD's contracted hauler accepted plastics #1 through #7. This changed to only #1 and #2 (collected during 2015) and in 2017 will change back to plastics #1 through #7. The SWMD website is updated with current material lists whenever there is a change. The SWMD also works with the contracted hauler to update the container signage. However, frequent changes in the types of plastics accepted in the program can be confusing to the homeowner recycling.



The SWMD sponsors all drop-off sites. In January 2017 the SWMD signed a contract with Ohio Valley Waste Service to service (provide containers, transportation, and processing) drop-off recycling containers in Geauga and Trumbull counties. Prior to 2017, another hauler serviced the contract. Ohio Valley hauls the recyclables to North East Ohio Automated Recycling Center (Neo-Arc), which is located in Trumbull County. (Processing facilities utilized are not dictated by the contract.) The District has considered and may consider separating the service contract by county. Per the last contract economies of scale was best combining the counties but this may not continue to be the case.

The SWMD has had minimal location/site changes. Factors contributing to changes reflect recyclable contamination and/or private property ownership arrangements. In terms of drop-off recycling infrastructure programs are available full-time (at least 40 hours a week) in 23 urban and 25 rural

locations. Drop-offs are located in 43 of the 56 communities in the SWMD providing drop-off availability in 76.7 percent of political jurisdictions.

Figure H-5 compares the number of residents living in communities with drop-offs versus those without (A spatial analysis was not performed. Thus, some residents could live close to a drop-off even if they do not have one located in the borders of their community.) (Analysis is based on number of communities not Ohio EPA creditable access population).



Figure H-7 Map of Residential Recycling Infrastructure (2017 data)

Geauga County’s program provides drop-off locations in 17 of the 21 communities (1 village, 1 city and 15 townships). The majority of residential customers serviced by curbside in Geauga County opt-in through subscription. Drop-off locations provide recycling outlets for those not willing to pay or not able to afford curbside recycling. The program has an average drop-off per every 20 square miles. Drop off tonnages for each county are not available thus the District is not able to determine the per capita recycling rate for each county.

Table H-3 Geauga County Drop Off Location (CY 2015)

Location	Square Miles	Number of Collection Sites	Square Miles per Collection Site	Population Density
Burton Village	1.0	1	1.1	1,162
Chardon City	4.6	1	4.6	1,134
Bainbridge Township	25.7	1	25.7	449
Burton Township	23.2	1	23.2	186
Chardon Township	22.9	1	22.9	204
Chester Township	23.5	1	23.5	441
Claridon Township	22.6	1	22.6	144
Hambden Township	22.5	1	22.5	210
Huntsburg Township	23.4	1	23.4	155
Middlefield Township	23.1	1	23.1	197
Montville Township	24.4	1	24.4	539
Munson Township	25.6	1	25.6	265
Newbury Township	28.2	1	28.2	202
Parkman Township	27.2	1	27.2	155
Russell Township	19.2	1	19.2	273
Thompson Township	25.7	1	25.7	90

Location	Square Miles	Number of Collection Sites	Square Miles per Collection Site	Population Density
Troy Township	25.3	1	25.3	112
Total	343	17	20	

Chester Township’s recycling committee conducted a traffic study at the Chester Township Drop-off location (located in Geauga County). The study was conducted over two-week time period and indicated peak traffic flows were observed between 10am and 4pm. Sunday, Tuesday, and Saturday were the most frequented days. Over the two-week period a total of 2,305 cars visited the drop-off location. The traffic study did not identify repeat users but assuming they were unique users, then approximately 22 percent of the population (Chester Township’s population is 10,352) visit the site. While there is not specific tonnage data for this location the participation data is low compared to non-subscription curbside recycling programs in the state.

One of the biggest challenges with the Geauga County drop-off locations is wish-cycling, which is the practice of tossing items that can be recycled but are not processed at a MRF in the containers, hoping that they can somehow be recycled. Geauga County also has some trash in the containers. In 2018, the District conducted site monitoring visits at the drop-off sites. Observations identified plastic bags as the top item problematic item in the containers. Site locations where the District has had the most issues with items overflowing and left outside the containers include: Bainbridge Township, Claridon Township, Huntsburg Township, Montville Township, and Munson Township.

Trumbull County’s program provides drop-off locations in 26 of the 35 communities (2 villages, 4 cities and 20 townships). Trumbull County is unique because the population is almost equally distributed between cities and unincorporated townships. The program has an average drop-off per every 16 square miles. Drop off tonnages for each county are not available thus the District is not able to determine the per capita recycling rate for each county.

Table H-4 Trumbull County Drop Off Location (CY 2015)

Location	Square Miles	Number of Collection Sites	Square Miles per Collection Site	Population Density (persons per square mile)
Girard City	6.4	1	6.4	1,693
Hubbard City	3.9	1	3.9	2,402
Lordstown Village	23.1	1	23.1	150
McDonald Village	1.7	1	1.7	1,931
Niles City	8.6	1	8.6	2,447
Warren City	16.2	8	2.0	3,899
Bazetta Township	24.5	1	24.5	272
Bloomfield Township	25.4	1	25.4	49
Braceville Township	23.3	1	23.3	117
Bristol Township	26.0	1	26.0	121
Brookfield Township	24.7	1	24.7	163
Champion Township	25.8	1	25.8	362
Farmington Township	27.5	1	27.5	97
Fowler Township	25.1	1	25.1	98
Gustavus Township	25.0	1	25.0	41
Hartford Township	26.5	1	26.5	722
Howland Township	17.7	1	17.7	1,080
Hubbard Township	24.6	2	12.3	2,019
Johnstown Township	24.7	1	24.7	1,643
Kinsman Township	26.8	1	26.8	84
Mecca Township	26.7	1	26.7	129
Newton Township	23.5	1	23.5	2,193
Southington Township	26.0	1	26.0	136
Vernon Township	26.3	1	26.3	111
Vienna Township	23.5	1	23.5	235
Warren Township	14.5	1	25.8	169

Location	Square Miles	Number of Collection Sites	Square Miles per Collection Site	Population Density (persons per square mile)
Total	548	34	16.1	

One of the biggest challenges with the Trumbull County drop-off locations is trash contamination and abuse. In 2018, the District conducted site monitoring visits at the drop-off sites. Plastic bags, cake pans, decorative vases, laptop, and wire basket are a few of the materials placed in the drop-off container. Site locations where the District has had the most issues include: Bazetta Township, Braceville Township, Farmington Township, Niles city, and Warren Township.



A news report on the local channel WKBN27 First News reported that in 2017 the City of Warren was dealing with an increase of contamination at the recycling drop-offs from 5 to 10 percent in 2015 to 30 percent in 2017. The reason for the increase in trash dumping at the recycling drop-offs is not clear⁸.

Steps the District has taken to eliminate these problems including personal monitoring, signs, education and media information. Benchmarking the drop-off program to other solid waste district programs, as shown in Table H-4, shows solid waste districts within the region are also dealing with higher levels of contamination (shown 2018 contamination rates). MRFs are being held to more stringent standards for marketing the recyclables processed at their facilities.

Table H-4 Drop-off Contamination in Surrounding SWMD's

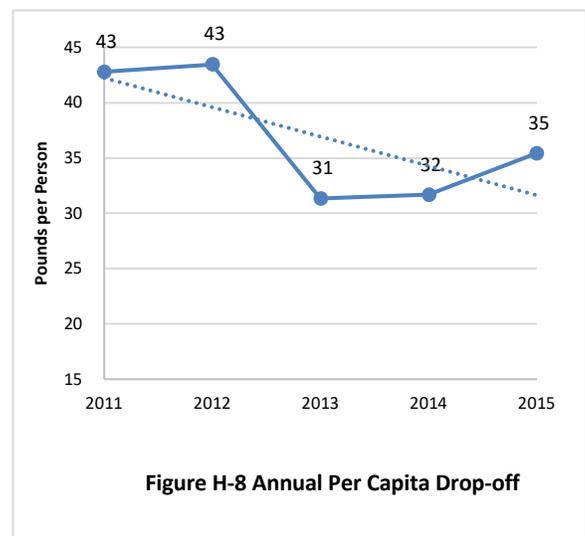
SWMD	Contamination %
Geauga Trumbull	30%
Mahoning	25% *
Portage	20%

* Contamination % is overall contamination for all recycling programs collected.

It is important to point out the MRFs definition of contamination is loosely implied as materials they do not want, which includes materials that can be technically recycled but lacks markets or the economics are not viable. To help combat contamination, the definition of contamination needs to be clearly defined. If a material is recyclable elsewhere, from a resident perspective it is not "contamination".

Tonnage Analysis:

Hauler provided data estimates 5,271 tons of recyclables were collected at the drop-offs in 2015. This is about 35 pounds per person per year (assuming District population). Figure H-8 depicts historical pounds per capita.



⁸ Grimley, Nadine. "A trashy situation is getting attention in Warren." WKBN27 First News. 30 May. 2017. <http://wkbn.com/2017/05/30/a-trashy-situation-is-getting-attention-in-warren/>

Figure H-9 depicts the historical tonnage collected and costs of servicing the sites. The cost per ton in 2015 was \$74 and the six-year average is \$83. Table H-5 compares the SWMD's 2015 cost per ton to neighboring solid waste management districts.

Table H-5 Drop-off Costs

SWMD	Cost per Ton
Geauga Trumbull	\$74
Mahoning	\$127
Portage	\$125

Source: Quarterly fee reports and Annual District Reports for calendar year 2015. Operations of programs is difference in cost per ton for neighboring SWMD's. In 2013, the SWMD made a change from roll-off containers to front load containers. This change lowered the costs of the program. Neighboring SWMD Mahoning County began changing their program to front load containers in 2017.

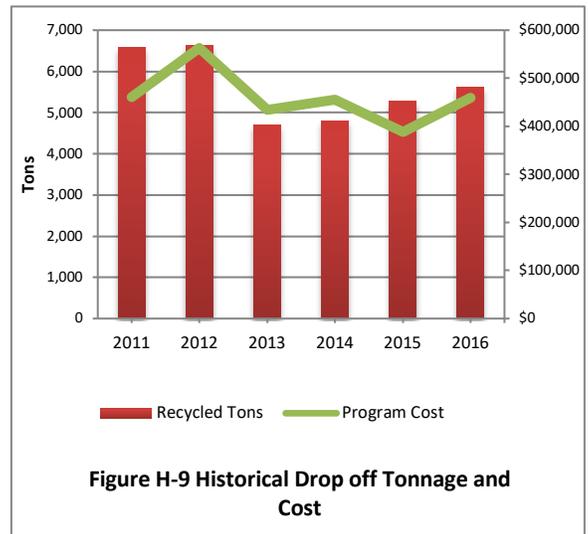


Figure H-9 Historical Drop off Tonnage and Cost

Challenges/Barriers

- Lack of political jurisdiction specific recycling data.
- Reporting from haulers.
- Compared to curbside low participation.
- Low tonnage recovery.
- Annual service contract cost increases.
- Large expense for SWMD.
- Constant monitoring and evaluation of performance needed.
- Issues with illegal dumping.
- High contamination (wish cycling).
- Definition of contamination.
- Frequent changes in the type of plastics accepted in the program.
- Communication of proper materials to recycle.

Pay As You Throw

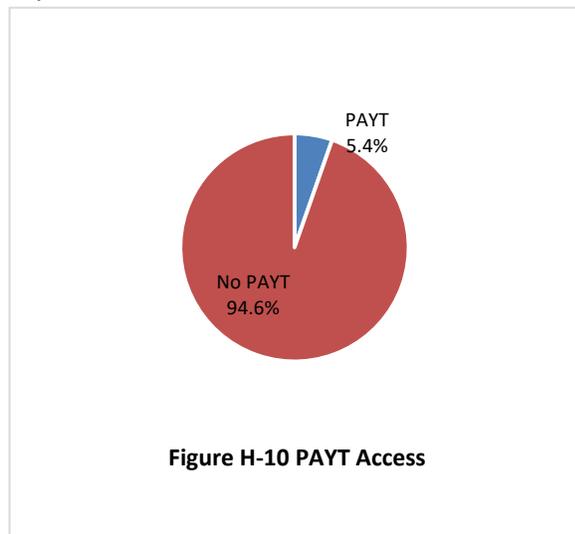


Figure H-10 PAYT Access

Of the 56 political jurisdictions 3 have pay as you throw (PAYT) type programs. Figure H-10 shows percentage of population with PAYT access (includes Cortland City) available in the SWMD.

Middlefield Village (Geauga County), a population of 2,693, holds a contract with Rumpke allowing households to either get cart-based trash (flat fee) or use a bag program for trash. The bag program is \$5 per bag and is a good PAYT model. It is unclear what percentage of households actually sign-up for the bag program. The \$5 bag program does include recycling collection for no additional fee – if this was City wide it would be a strong PAYT model.

Liberty Township (Trumbull County), a population of 11,781, holds a contract with Republic Services allowing households to use a bag program for trash. Households can opt into the

bag trash program for \$2 per bag and includes recycling collection for no additional fee. It is unclear what percentage of households actually opt-in to the bag program – if this was Township wide it would be a strong PAYT model.

Both programs use carts for recycle and embed costs of recycle in trash, which is a best management practice.

The last PAYT option is Cortland City (Trumbull County), a population of 6,927, offers variable rates, however the program is not a good PAYT model. The variable rates are not enough to act as a true economic incentive for recycling – the rates are: \$14.32 for 1 can, \$14.52 for 2 cans, and \$15.67 for 3 cans. Recycling is embedded (which is good) but recycling is collected in 18-gallon open topped containers, which is not a best management practice. The industry recommended rate differential is 80 percent increase per unit of disposal (SERA report – 2006 EPA), the rate differential in Cortland’s PAYT model are only 1 to 8 percent which are not enough to result in meaningful behavioral changes.

Total Residential Tonnage Analysis:

Figure H-11 shows total per capita recycling rate (curbside and drop-off) over time – includes estimates of curbside (same methodology as curbside alone). These programs collected 131 pounds per person per day in 2015.

Regionally as shown in Table H-6, solid waste districts have both curbside and drop-off programs to help meet the needs of the residential sector. In Lake County, Cuyahoga County, and Summit-Akron most political jurisdictions have some form of curbside. Correspondingly those district’s do not fund the drop-off programs. As shown, two districts fund the drop-off program, one subsidizes the program, and three do not.

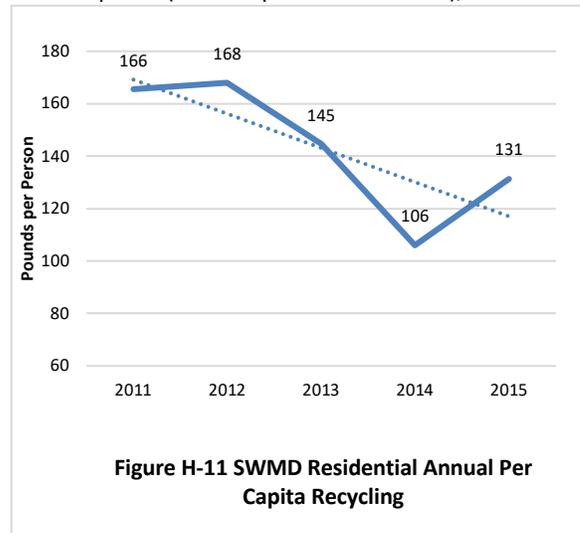


Table H-6 Regional SWMD Curbside and Drop-off Programs

SWMD	Population	Number of Political Jurisdictions	Subscription Curbside	Non-Subscription Curbside	Full Time Rural Drop-off	Full Time Urban Drop-off	Part Time Drop-off	Number Drop-off Locations	Drop-off Program Funded by SWMD
Geauga Trumbull	297,720	57 (22 Geauga + 35 Trumbull)	22	7	24	23	0	47	Yes
Lake County	229,245	23	11	10	1	1	0	2	No
Cuyahoga	1,255,921	59	0	57	NA	NA	NA	122	No
Summit-Akron	546,552	31	25	5	2	10	1	14	No
Portage	162,275	28	1	13	9	5	0	14	Subsidized
Mahoning	237,087	26	0	11	13	13	2	28	Yes

Source: 2015 Annual District Reports for each SWMD

B. Conclusions/Findings

With greater emphasis being placed on achieving the state’s diversion rate, it is important for solid waste districts to consider how certain components of municipal collection systems ultimately affect the performance of the District as a whole. Focus in the last plan built a strong drop-off recycling infrastructure. The last five years demonstrate increased costs, low participation, and declining recovery in this program. Over this same time curbside recycling shows little growth and subscription programs continue to outnumber non-subscription programs. There are opportunities for the SWMD to build the curbside infrastructure. Possible opportunities include:

- Target subscription curbside programs to transition to non-subscription programs.
- Encourage best management practices in curbside programs.
- Target political jurisdictions without curbside programs to implement non-subscription programs.
- Provide incentive grants for start-up funding/transition of programs to assist in overcoming cost barriers.
- Build stronger PAYT models using best management practices.

- Require jurisdiction metrics.
- Engage political jurisdiction stakeholders with outreach meetings.
- Provide contract assistance to political jurisdictions for curbside.

B. Commercial/Institutional Sector Analysis

This evaluation of the SWMD’s existing commercial/institutional recycling determines if existing programs are adequate to serve the sector or if there are needs that are not being met. The analysis conducted here for this plan update evaluates the strengths and weaknesses of existing programs. The ultimate goal is to determine if the SWMD can do more to address the commercial sector. Commercial/institutional sector within the SWMD consists of the following (non-exhaustive list): commercial businesses, schools and universities, government agencies, office buildings, stadiums, amusement parks, event venues (stadiums, concert halls), hospitals and non-profit organizations.

A. Analysis

Geographical

The SWMD is a two county District, Geauga and Trumbull Counties, geographically located in the northeast section of Ohio. According to “Ohio County Profile of Geauga County” prepared by Office of Research the land use/land cover is:

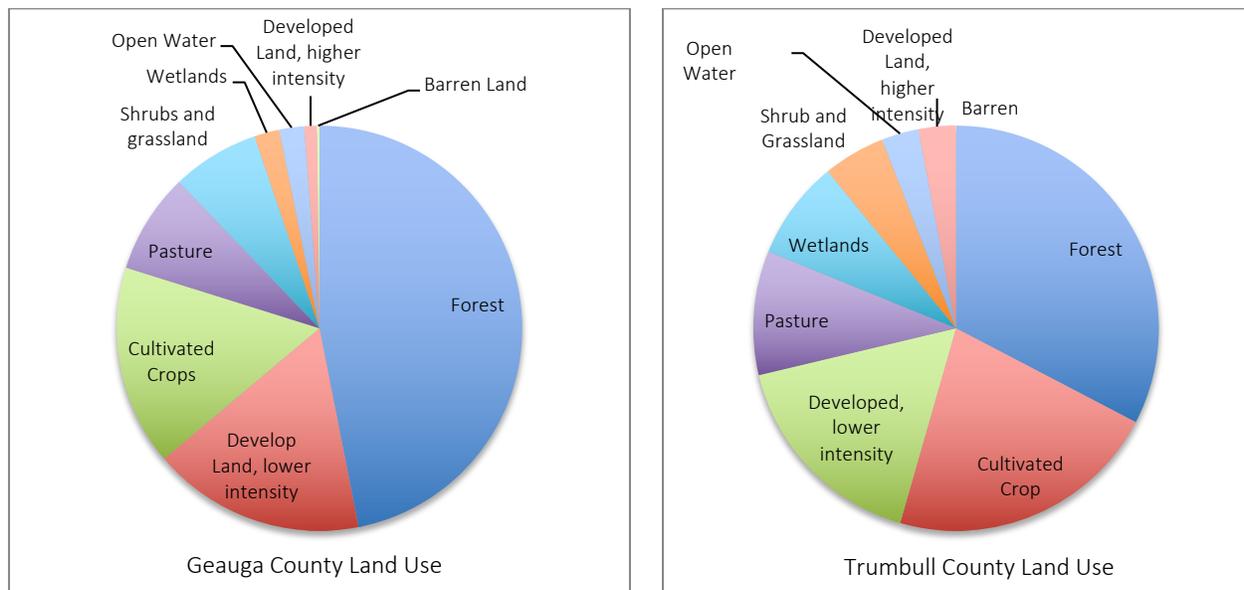


Figure H-12 Land Use in District

The top three land uses for both Counties is forest, cultivated crop, and low intensity developed land.

Chardon towards the northwest corner of Geauga County is the County seat and the only incorporated city in the County. The estimated population of Chardon was 5,193 in 2015. The west side of Geauga County, toward Cleveland, has a number of bedroom communities where residents commute to Cleveland for work. Bainbridge Township is the most populated Township with a 2016 estimated population of 11,509. Bainbridge is in the southwest corner of the County near US Route 422 which connects Geauga County to Cleveland. The second most populated township is Chester Township with 10,341 estimated population in 2016. Chester is in the northwest corner of the County and lies along US Route 322, another route into Cleveland. The eastern side of Geauga County and particularly the northeast corner of the County is less populated and dominated by forest and farmland. Geauga County has the fourth largest Amish settlement with a population of 8,537 according to the 2010 Census. The Amish account for 8.6%

of the total population in Geauga County. The population of Geauga County has increased by 1% from 2010 to 2015, and is projected to continue to grow at a slow rate. The Amish account for 8.6% of the total population in Geauga County. The population of Geauga County has increased by 1% from 2010 to 2015, and is projected to continue to grow at a slow rate.

Land use in Geauga County is primarily rural. Population density is low and commercial development is primarily along major transportation route corridors. For smaller commercial businesses there is difficulty in accumulating enough recycling and limits the cost-effective marketing options. The commercial basis is small and have concentrated districts or parcels in the higher population density areas.

Trumbull County is part of the Youngstown-Warren-Boardman metropolitan area. Warren and Niles are the largest Cities in the County with a 2016 estimated population of 39,898 and 18,458 respectively. Both of the Cities are located in the southern half of the County. Population in the County is concentrated in the southern half, and particularly along the corridor connecting the City of Warren with the City of Youngstown in neighboring Mahoning County. Kent State University Trumbull is located in Warren, one of seven region campuses of Kent State University, and serves more than 2,500 students. Outside of the southern corridor connecting Trumbull County to Youngstown, Trumbull County is rural with land use dedicated to forests or cropland. The Mosquito Creek Wilderness Area is located in the north central area of the County. Trumbull County has steadily lost population from 2010 to 2015, decreasing by 2 percent.

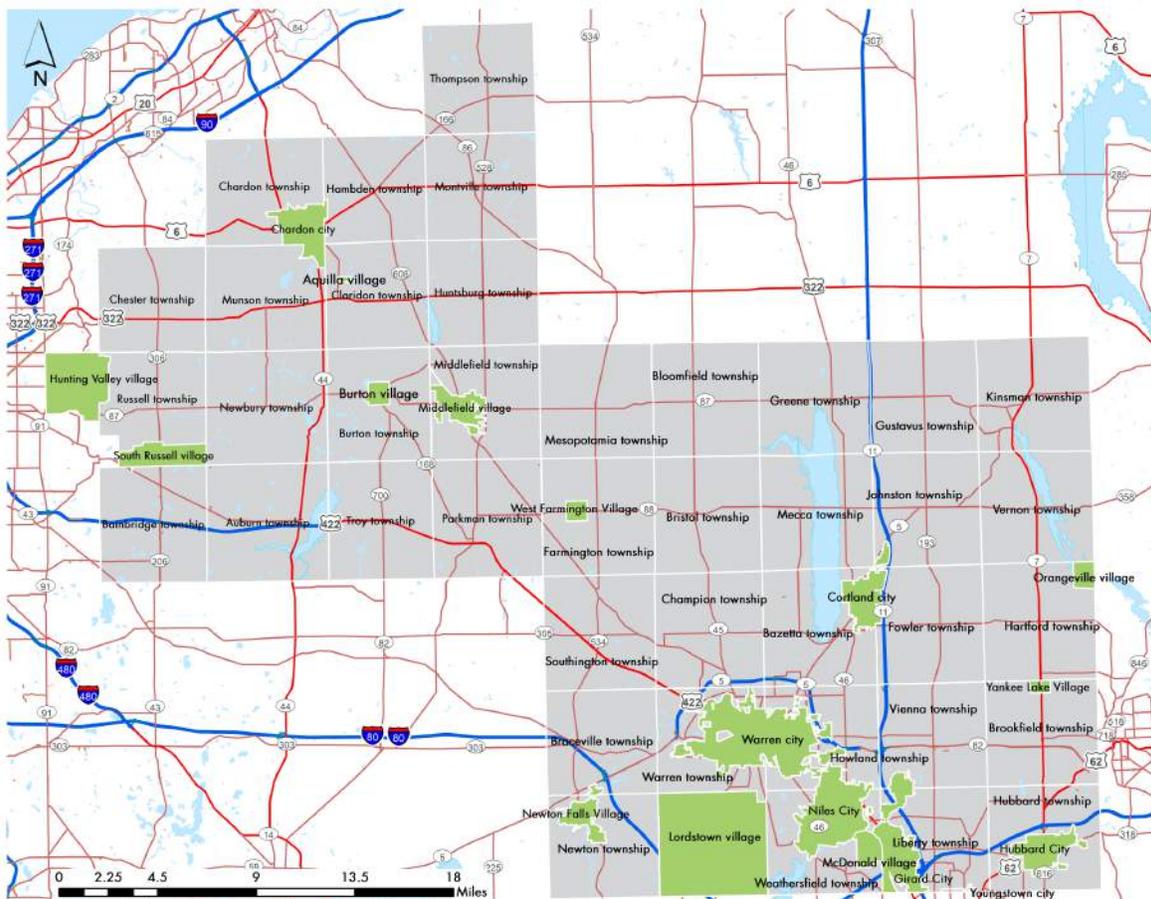


Figure H-13: Map of Geauga and Trumbull Counties

Trumbull County too, is overwhelmingly rural. Like in Geauga County, Trumbull County commercial development is along major transportation routes. The commercial basis is small and have concentrated districts or parcels in the higher population density areas.

The top sectors for employment in the District are car manufacturing, government, call center, auto parts, educational services, trucking, security, titanium, and food services. Overall the state of Ohio reported that 10 percent of employment was manufacturing based in 2010. The percent of county employment that is manufacturing based is higher in both Geauga and Trumbull Counties than the state average, at 15.5 percent and 14.2 percent respectively.

Table H-7 SWMD Top Employers

Gauga Top Employers		Trumbull Top Employers	
Company	Number of Employees	Company	Number of Employees
Great Lakes Cheese Co., Inc.	more than 500	General Motors Corp.	4,500
Pentair Water Treatment Company	230	Youngstown Air Reserve Base	1,792
Hexpol Compounding, LLC	225	Alorica	1,300
Flambeau, Inc.	160	Trumbull County	1,280
Stock Equipment Company	137	Delphi Packard	1,100
Mar-Bal, Inc.	122	Warren City School District	810
Saiar Plastics, LLC	115	AIM National Lease Trucking	750
		Arconic-Niles Ingot and Mill Products Operations	575
		AVI Food Systems	500
		Covelli Enterprises	500
		Ohio Security Systems	600

Source: Ohio County Profiles: Geauga County and Trumbull County published by Ohio Office of Research

Of those sectors, General Motors Corporation reported 7,246 tons of material sent to recycling in 2016 (did not respond to survey in 2015). Most of that material was reported as ferrous metal, corrugated cardboard, and wood. Hexapol Compounding reported 1,345 tons of material sent to recycling in 2015. The main materials recycled by Hexapol Compounding were corrugated cardboard and wood waste.

In Trumbull County, all of the top employers are located in the corridor connecting Warren and Youngstown, with the exception of Trumbull County. The Warren School District has more than 5,000 students and over 750 employees. In Geauga County the top employers are spread out throughout the County with a denser concentration of employers in the Burton Village and Middlefield Village areas. Burton is the location of the Kent State University Geauga Campus, which serves 2,800 students.

Diversion

Management of residential and commercial recycling makes separating commercial data from residential data challenging. Measurables obtained from this sector include recorded diversion data obtained from commercial surveys, brokers, haulers, and Ohio EPA sourced data from commercial businesses and material recovery facilities (MRFs). Using these data sources, as shown in Table H-5, a total of 41,864 tons are estimated as commercial recycling activities.

Table H-8 Commercial Recycling Data Sources in 2015

Program/Source of R/C Recycling Data	Quantities (Tons)
Commercial Survey	2,145
Buybacks, Brokers, Haulers & Processors/MRFs	34,645
Ohio EPA Commercial Retail Data	5,074
Total Commercial Recycling	41,864

While the estimations are rough, this demonstration shows 48 percent of the residential/commercial recycling is attributed to the commercial sector.

Functionality

Businesses can request recycling service from local and/or brokerage companies. The SWMD maintains a list of local haulers providing recycling services. Local haulers collect materials and transport them to a materials recovery facility for processing. Brokerage companies handle the selling of recyclables on behalf of the commercial clients. Commercial businesses generating recyclables contact a broker to collect and deliver to an end processor. Most of the SWMD’s recycling assistance to this sector focuses on one on one education delivered through waste audits or as requested by the business.

Event Venues and Parks: Recycling while away from home is a need the SWMD has identified and is working to develop throughout the District. The SWMD loans containers for special events to recycle beverage bottles and cans. The ClearStream containers are available for short-term loan and are free for event organizers to borrow. Interested parties can borrow up to two times a week. The SWMD received 5 requests between 2014 and 2015 to lend a total of 24 containers.

Commercial Businesses: Commercial businesses have the opportunity to contract with local haulers for recycling dumpster service. The SWMD facilitates this by offering technical assistance. Commercial businesses may be serviced with curbside recycling from Sunburst Environmental, Waste Management, Republic, Ohio Valley Waste Services, Major Waste Disposal, and Rumpke. However, not all haulers provide commercial recycling. Most notably, the Warren City environmental Services provide commercial trash hauling only.

Since 1994, the District has offered source reduction informational material and waste audits when requested for both the commercial and industrial sectors. The SWMD conducts about 1 waste audit a year.

Schools, Universities, Institutions: There are 24 public school districts in Trumbull County and 6 public school districts in Geauga County. The largest school district in Trumbull County is Warren City School District, followed by the Howland school district and the Niles City school district. All three of these school districts are located in the south-central portion of the County. In Geauga County, the largest school district is the Chardon School District. This school district is located on the western side of the County along major corridors towards Cleveland. There are also a significant number of students enrolled in private schools. There are just over 2,900 students enrolled in the Chardon School District, and just over 3,000 students enrolled in various private schools throughout the County.

Table H-9 SWMD School Districts

Gauga School Districts		Trumbull School Districts	
<i>District</i>	<i>Student Count</i>	<i>District</i>	<i>Student Count</i>
Private Schools	3,039	Warren City School District	5,041
Chardon School District	2,927	Howland Local School District	2,844
Kenston School District	2,887	Niles City School District	2,432
West Geauga School District	2,016	Hubbard Exempted Village School District	1,949
Berkshire School District	-	Lakeview Local School District	1,721
Cardinal School District	414	Girard City School District	1,712
Newbury School District	456	Private	1,693
		LaBrae Local School District	1,305
		Liberty Local School District	1,171
		Newton Falls Exempted Village School District	1,134
		Brookfield Local School District	1,016
		Champion Local School District	991
		Weathersfield Local School District	927
		McDonald Local School District	840
		Joseph Badger Local School District	832
		Maplewood Local School District	745
		Bristol Local School District	640
		Mathews Local School District	628
		Southington Local School District	524
		Lordstown Local School District	511
		Bloomfield-Mespo Local School District	299

Summit Academy School District	220
Steam Academy of Warren School District	216
Life Skills of Trumbull County School District	196
Hope Academy for Autism School District	46

Source: Web page for Geauga County Schools, <http://www.co.geauga.oh.us/About/School-Districts> and <https://www.publicschoolreview.com/ohio/geauga-county>.
 Webpage for Trumbull County Schools <https://www.publicschoolreview.com/ohio/trumbull-county>

The SWMD offers recycling box containers to schools, government offices or church. The cardboard box style containers are available free of charge. To receive boxes, entities are asked to complete an application which is available online. This program began in 2010. In 2014 the SWMD provided 388 boxes to 26 different entities, 109 boxes to 14 entities in 2015, and 148 boxes to 12 entities in 2016.

There are 24 schools in the District participating in an office paper-recycling program. Abitibi Consolidated provided the service till 2014. In 2014 and prior, Abitibi Consolidated, Inc. provided and serviced paper only drop-off containers in Geauga County. The program was originally operated as a fundraiser for participating entities. Abitibi provided market share revenues based on volume of material collected. In 2015, Abitibi abruptly ceased operations, fortunately Royal Oak Recycling took over servicing the SWMD’s site locations. In 2016 there were 48 locations including schools, government locations, and non-profits.

Four schools in Trumbull County have cardboard recycling. The District helped facilitate contracts between the schools and Associated Paper Stock.

In 2013, the District approached 2 schools, Champion High School (Trumbull County) and Notre Dame School (Gauga County) to provide information on food waste composting and in-house digesters. Neither school was interested in an on-site management program. In 2014, conversations between the SWMD and Champion High School continued and began with Trumbull Career & Technical Center and Earth Angel Farms. In 2015, the SWMD awarded a grant to Earth Angel Farms to purchase an in-vessel composter.

Both Geauga and Trumbull Counties have satellite campuses of Kent State University. Kent State University at Trumbull is in Warren, OH and serves more than 2,500 students. Kent State University at Geauga is in Burton, OH and serves more than 2,400 students. Kent State University at Kent in Portage County participates in RecycleMania, an 8-week period each spring where colleges and universities in the US and Canada report recycling and trash collection each week. The main Kent campus reported a recycling rate of 34.4% and ranked 110th in the competition. Kent State at Trumbull and Geauga do not participate in Recyclemania. Trumbull County is also home to Eastern Gateway Community College, 2,440 students, ETI Technical College, 212 students, and Trumbull Business College, 318 students.

There are a number of hospitals located in Trumbull County including Belmont Pines Hospital, Community Hospital of Warren, County Infirmary Farm, Mahoning Valley Hospital, Northside Medical Center, Saint Joseph Health Center, Select Specialty Hospital – Youngstown, Trumbull Memorial Hospital. Similar to location of major employers, large population centers, and biggest school districts, these hospitals are centered around the Warren to Youngstown corridor. There are three major hospital institutions in Geauga County: University Hospital Geauga Medical Center, Cleveland Clinic Foundation, and Heather Hill Hospital and Health.

Government Agencies, Office Buildings: The SWMD has not reached out to government office buildings to assess if they are implementing recycling programs and how those programs operate.

Other Opportunities

Gauga and Trumbull Counties are expected to continue to lose manufacturing between 2014 and 2024. Retail trade is projected to stagnate for Trumbull County and grow minimally for Geauga County by 2024. Sectors expected to experience growth include health care, education, administrative and waste services, and professional and business services. As a result both Counties are expected to experience overall growth. A shrinking manufacturing sector with growth in the services sector means the recycled tons of ferrous and non-ferrous materials will most likely decrease while recycling of paper and commingled recyclables may increase in the next several decades.

Butler County Recycling and Solid Waste District provides a great example of how targeted waste assessments lead to new recycling programs in commercial/institutional sector. In 2012, the District began a concentrated effort in tenant landlord education for commercial businesses and has resulted in at least one new recycling program per year since program inception. The waste assessments assist businesses in reducing their waste stream and to save money by implementing recycling programs. Success is partnership in working with Chamber of Commerce and various outreach efforts through advertisements/press releases.

Challenges/Barriers

- Collecting recycling data from businesses using brokers.
- Low survey response rates.
- Architectural barriers, storage container placement, cost of service (container, processing and hauling), and time/service constraints in collecting recyclables.
- Waste audits are requested.
- Garnering interest from businesses.
- Lack of waste audit requests.
- Lack of commercial resources available on SWMD web page.
- Challenging to determine business generation.

Commercial/Institutional Programming (description provided in Appendix I)

- Commercial Recycling & Source Reduction (this includes waste audits)
- Commercial Drop-off Recycling & Source Reduction (this includes drop-offs such as Planet Aid, Royal Oak Recycling, Protect-N-Shred, Associated Paper Stock, and Wal-Mart)
- Scrap Food Waste Composting Program

B. Conclusions/Findings

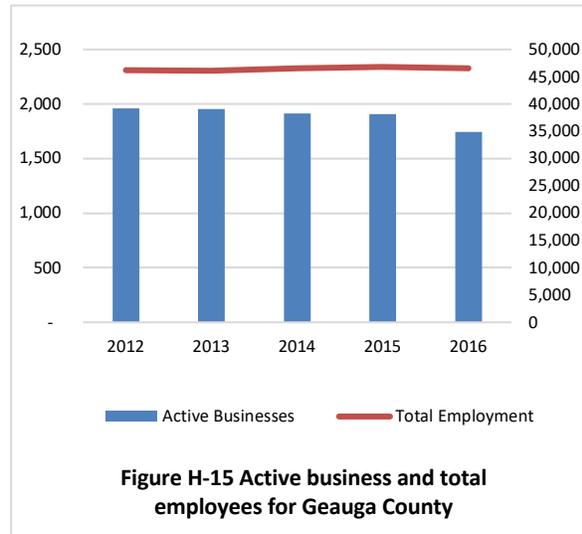
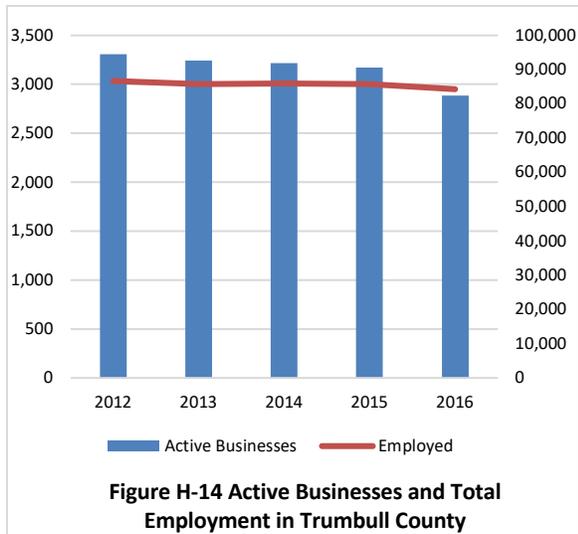
Assistance is available to this sector and is distributed when requested. However, the commercial/institutional infrastructure has gaps in service and there are opportunities for the SWMD to be a resource to build the infrastructure. Possible opportunities include:

- Targeting material specific campaigns or similar business campaigns to foster recycling infrastructure.
- Providing grants for start-up funding of service to assist in overcoming cost barriers.
- Increasing resources on the webpage.

C. Industrial Sector Analysis

This evaluation of the industrial sector determines if existing programs (offered either through the SWMD or other entities) are adequate to serve that sector and determine if additional programs are needed to support the industrial manufacturers in Geauga and Trumbull County.

A. Analysis



Trumbull County is part of the Youngstown-Warren-Boardman Metropolitan Statistical Area. Total employment is expected to increase in the Youngstown-Warren-Boardman Metropolitan Statistical Area by 5.1% from 2014 to 2024. However, during that same time period manufacturing employment is expected to decrease by 4.1%.⁹ The unemployment rate in Trumbull County was 6.1% in May 2017, which places the county within the top ten highest unemployment rates in the state.¹⁰ Geauga County is included in the Cleveland-Elyria-Mentor Metropolitan Statistical Area. This statistical area is expected to see a nearly identical manufacturing job decline as Youngstown-Warren-Board Metropolitan Statistical Area⁹. However, Geauga has considerably lower unemployment rate of 4.8% as of May 2017¹⁰.

Figure H-15 shows the number of active businesses in Geauga County declined in 2014, 2015, and again sharply in 2016. At the same time total employment in County increased in the years 2014 and 2015, followed by a slight decline in 2016. This suggests that either fewer businesses are hiring more people, or residents of Geauga County are working in other counties.

In Trumbull County, active businesses and employment has decreased each consecutive year since 2012, with the sharpest decline occurring from 2015 to 2016. One factor influencing business activity and employment is the steady loss of population Trumbull County is experiencing.

The largest industrial establishments by employees in Geauga and Trumbull County include:

Table H-10 SWMD Largest Manufacturing Employers

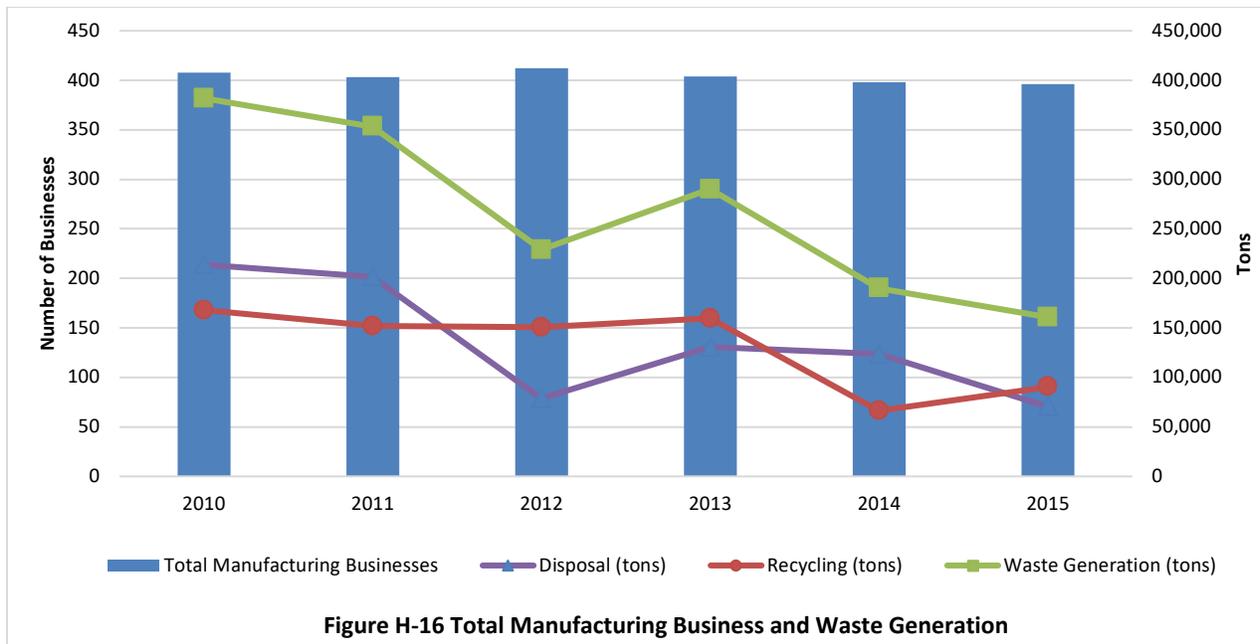
Gauga County		Trumbull County	
Manufacturer Industry	Number of Employees	Manufacturer Industry	Number of Employees
Great Lakes Cheese Co., Inc.	500	General Motors Corporation	4,500
Pentair Water Treatment Co.	230	Youngstown Air Reserve Base	1,792
Hexpol Compounding, LLC	225	Alorica (formerly West Corporation)	1,300
Flambeau, Inc.	160	Trumbull County	1,280
Stock Equipment Company	137	Delphi Packard	1,100
Mar-Bal, Inc.	122	Warren City School District	810

⁹ Source: "2024 Job Outlook Youngstown-Warren-Boardman Metropolitan Statistical Area", Ohio Department of Job and Family Services, June 2017.

¹⁰ Source: Ohio Department of Job and Family Services Office of Workforce Development, Bureau of Labor Market Information

Geauga County		Trumbull County	
Sajar Plastics, LLC	115	AIM National Lease	750
Duramax Marine LLC	89	Ohio Security Systems	600
Universal Polymer & Rubber LTD	88	Arconic-Niles Ingot and Mill Products Operation	575
Middlefield Pallet, Inc.	42	AVI Food Systems	500
Creative Mold & Machine, Inc.	35	Covelli Enterprise (Panera)	500
Normandy Products Company	30		
Middlefield Cheese	18		
Scot Laboratories	15		

The number of manufacturing businesses has steadily decreased from 2012 to 2015¹¹. During that same time period, disposal and recycling has generally also been declining. In 2013 a prominent steel manufacturer in Trumbull County cut back shifts and then in 2016 announced a permanent closure. Also between 2012 and 2013, RG Steel laid off more than 1,000 workers when it shuttered its doors¹²



Web-based searches found that the largest industries have sustainability plans, environmental stewardship, or recycling activities in place. Survey response from these entities is low. The SWMD's relationship with these entities is limited. Waste streams generated are specialized presenting challenges to assistance the SWMD could provide.

Excluded waste only accounts for 5% of total waste disposal. Since excluded waste was less than 10% of total waste, its impacts are not considered in this plan.

Challenges/Barriers

¹¹ US Economic Census, <https://www.census.gov/>

¹² "Demolition of steel mill dashes any hope of revival in Warren." *The Vindicator*. June 26, 2014: <http://www.vindy.com/news/2014/jun/26/demolition-of-steel-mill-dashes-any-hope/>

- Collecting recycling data from industries.
- Specialized waste streams.
- Low survey response.

Commercial/Institutional Programming (descriptions provided in Appendix I)

- Industrial Surveys
- Waste Audits

B. Conclusions/Findings

Assistance is available to this sector and is distributed when requested. The SWMD has found the industrial sector outreach to be challenging mostly in part because industries are proactive towards controlling waste, recycling and recovering resources and also applying energy saving techniques. Possible SWMD opportunities towards this sector include:

- Sharing and promoting Ohio EPA's Ohio's Material Marketplace.

D. Waste Composition Analysis

This evaluation of the SWMD's residential/commercial composition analysis describes and evaluates the wastes that make up the largest portions of the residential/commercial waste stream. The evaluation outlines what programs are in place to address these waste streams and what programs the SWMD should evaluate to further address those wastes.

A. Analysis

Generation

The SWMD generated 315,959 tons of municipal solid waste (MSW) from the residential and commercial sectors and recycled and composted 81,870 tons of this material as shown in Figure H-17.

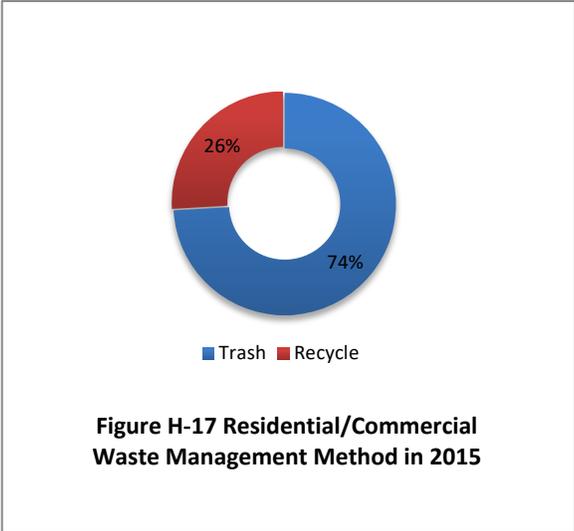


Figure H-17 Residential/Commercial Waste Management Method in 2015

Waste Generation = Wastes Disposed + Wastes Diverted

315,959 tons = 234,088 tons (disposed) + 81,870 tons (diverted)

Waste Composition

The largest component of the residential/commercial waste stream is projected to be paper at 27 percent followed by food waste at 15 percent and yard trimmings at 14 percent of the waste stream. Figure H-18 depicts the residential/commercial waste composition for 2014 as determined using US EPA national waste composition averages.

Fiber Waste Stream

Based on the 315,959 tons of MSW generated from the residential and commercial sectors, approximately 27 percent, or 85,309 tons of this waste stream should be fiber materials (based on US EPA's "Advancing Sustainable Materials Management: 2013 Fact Sheet",

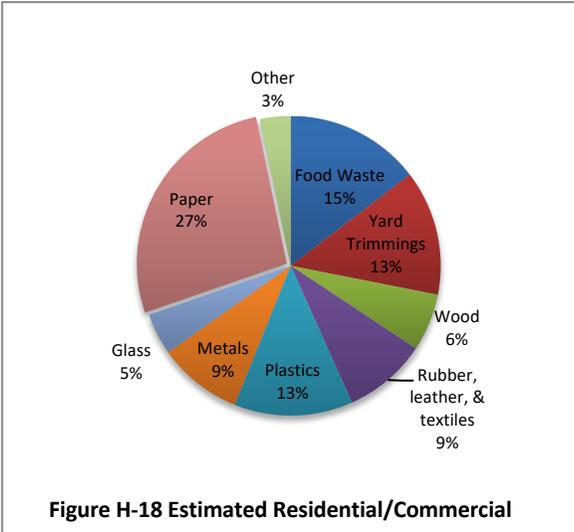


Figure H-18 Estimated Residential/Commercial

June 2015). The 2015 ADR reported a total of 19,271 tons of fibers diverted – at this time approximately 23 percent of the fiber waste stream is being diverted from the landfill.

Table H-11 Fiber Recycling in 2014

Generated Fibers	85,309 tons
Diverted Fibers	19,271 tons
Potential Diversion	66,038 tons

Fiber materials (cardboard and paper materials) have a significant recovery potential. Programs in place to divert fiber materials include: non-subscription and subscription curbside, drop-off, and Commercial Drop-off Recycling & Source Reduction (includes Royal Oak Recycling, Protect-N-Shred, Associated Paper Stock, etc.). Even though waste for residential and commercial sectors is commingled and difficult to separate for composition and generation purposes, the two sectors are separated when developing targeted diversion programs.

All Geauga County and Trumbull County residents have access to fiber recycling either through curbside collection program or at one of the many drop-off collection sites. A specific challenge in curbside programs stem around the single-family households participating in the program. While the SWMD has not conducted a study regarding participation barriers, other state and national studies identify time and effort to take materials to the curb or drop-off and/or fees for recycling participation as barriers.

Commercial businesses have the opportunity to contract with local haulers for recycling dumpster service. The SWMD facilitates this by offering technical assistance. Typical challenges include costs for recycling services (container, processing and hauling), space for recycling containers, time and effort to collect recyclables on-site.

These programs, while successful, divert only a small portion of the total fiber.

Yard Waste Stream

Based on the 315,959 tons of MSW generated from the residential and commercial sectors, approximately 14 percent, or 44,234 tons of this waste stream should be yard waste materials (based on US EPA’s “Advancing Sustainable Materials Management: 2013 Fact Sheet”, June 2015). The 2015 ADR reported a total of 29,199 tons of yard waste composted – at this time 66 percent of the potential yard waste stream is being diverted from the landfill.

Several cities and villages in the District have a yard waste collection program in place. The largest yard waste collection program is the City of Warren. In Trumbull County, Howland Township, Liberty Township, and the City of Cortland also have seasonal yard waste collection. In Geauga County, the City of Chardon and Village of Middlefield have seasonal yard waste collection. The District also sponsored an annual Christmas Tree recycling program allowing more localized Christmas tree chipping operations. Residents could drop off live Christmas trees at various drop-off sites throughout the two Counties. This program was discontinued in 2014.

Table H-12 Curbside Yard Waste Collection Programs in 2015

Community curbside service	County	2015 Tons Reported
City of Warren	Trumbull	558
Howland Township	Trumbull	DNR
City of Cortland	Trumbull	DNR
City of Chardon	Geauga	DNR
Village of Middlefield	Geauga	DNR
Christmas Tree Collection Program	Geauga and Trumbull	Data not collected
<i>Subtotal of Community Curbside</i>		558

Note: Cortland's hauler Republic picks up leaves as long as they are bagged separately -but that goes to landfill, this is for fall. Cortland started doing curbside collection of brush, chipping and then composting started 5 years ago-higher tonnage with curbside. Mainly just for tree trimming and debris, only happens in spring time. Liberty Township has leaves collected via Republic and that material is landfilled, so does Hubbard.

There are 14 compost facilities located in the District, 10 of which allow the public to drop off yard waste. Some of the facilities that are publicly available to residents charge for dropping off leaf or brush waste. The City of Wickliffe located in Lake County contracts with Green Vision Materials located in Geauga County for yard waste composting. The City of Warren has a bio-solids composting program.

The historical trend for yard waste diverted declined. Programming has remained consistent.

Information regarding yard waste programs (municipal operated) and available outlets are not posted on the SWMD website.

The historical trend for yard waste diversion has oscillated between just under 20,000 tons in 2014 to a high of nearly 50,000 tons in 2012. In 2015, around 30,000 tons of yard waste was composted in the District, comparable to 2011 tonnages.

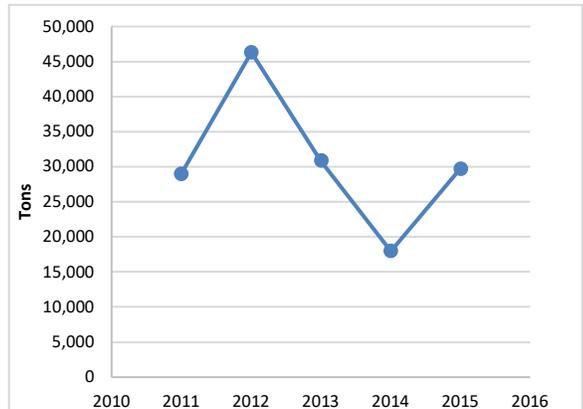


Figure H-19 Historical Yard Waste Composting

Yard Waste Programming (descriptions provided in Appendix I)

- Christmas Tree Recycling Grants (discontinued in 2014)
- Monitor/Tracking Yard Waste
- Technical Assistance

Food Waste Stream

Based on the 315,959 tons of MSW generated from the residential and commercial sectors, approximately 15 percent, or 47,394 tons of this waste stream should be food waste materials (based on US EPA's "Advancing Sustainable Materials Management: 2013 Fact Sheet", June 2015). The 2015 ADR reported a total of 1,011 tons of food waste composted – at this time approximately 2 percent of the food waste stream is being diverted from the landfill demonstrating much potential for diversion.

Historically, food waste diversion has been minimal but standardized reporting from large retailers such as Wal-Mart and Kroger has resulted in new data being captured at Ohio EPA. Food waste is a very challenging waste stream. Lack of infrastructure, transportation costs, board of health issues are all factors. There are no Class I Compost facilities within the District, which are permitted to compost food waste. In fact Northeast Ohio solid waste districts are finding similar infrastructure challenges. Neighboring Summit Akron Solid Waste Management Authority offered free collection and composting of food scraps to commercial businesses until year 2015 due to inability to find licensed facilities to consistently accept food scraps. The closest Class I facility to the SWMD is located in Medina County. However that facility only indicates accepting yard waste on their website.

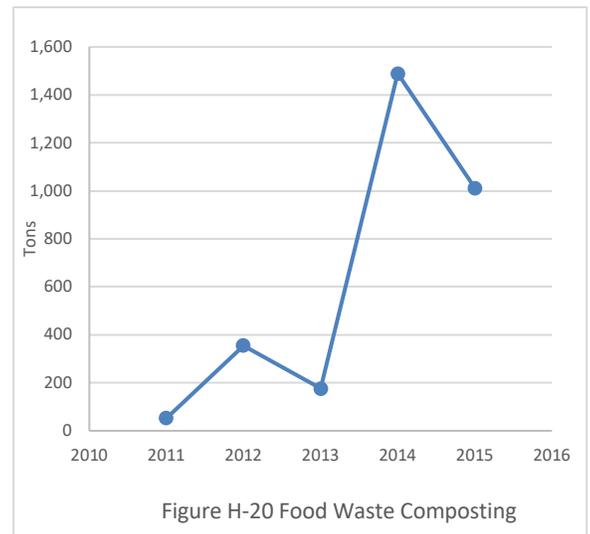


Figure H-20 Food Waste Composting

Realizing the lack of large-scale public/private composting infrastructure for food waste, the SWMD developed the Scrap Food Waste Composting Program in the 2013 Plan to encourage on-site institutional systems. After a couple years of outreach and discussions one grant was awarded in 2015 for an in-vessel composter to be used at a greenhouse to help manage green waste. The in-vessel composter is similar to the Earth Tub used at Youngstown

State University in that the composter eliminates odors and keeps vectors out. The intent of this program has not come to fruition. Lack of interest from institutions coupled with the SWMD's limited outreach has not driven the program. In Geauga County, larger private sector businesses are actively seeking material to feed their systems.

Food Waste Programming (descriptions provided in Appendix I)

- Organics Management Program

B. Conclusions/Findings

Fiber and food waste have potential diversion opportunities. Possible SWMD opportunities towards these waste streams include:

- Identify barriers for recovering commercial fiber.
- Review outreach for the Organics Management Program.
- Share and promote US EPA's food hierarchy.
- Share and promote US EPA's food recovery challenge.
- Utilize social media to bring awareness of food waste.
- Educate institutions on available resources such as LeanPath 360.
- Bring regional partners together to address food waste infrastructure.
- Spot light food donation and food rescue centers/missions.

E. Economic Incentive Analysis

By definition, economic incentives are designed to encourage participation in recycling programs. In accordance with Goal 6 of the 2009 State Solid Waste Management Plan, the SWMD is required to explore how to incorporate economic incentives into source reduction and recycling programs.

A. Analysis

Economic incentives in the waste and recycling world are offered to influence behavior. Typical economic incentives include rebates, rewards, grants, volume-based fee structures, etc. The majority of SWMD's offering economic incentives in the state either tie the amount recycled to some sort of financial compensation or reduce the cost of recycling.

Historically SWMD funding supports program expenses not allowing major budgeting for economic incentives. Past economic incentives include Christmas Tree Recycling grants and Scrap Tire Collection Grants. All 56 political jurisdictions were provided Christmas tree recycling grants until 2014 when the program ceased. Over the past 5 years all 56 political jurisdictions are provided a scrap tire grant to conduct their own scrap tire collection programs.

B. Conclusions/Findings

This Plan Update could re-allocate some program funding to offer economic incentives. In one neighboring solid waste district, an increase of households was measured in subscription services by offering financial incentives. Summit/Akron Solid Waste Management Authority achieved higher subscription participation by offering a Community Recycling Access Grant. The program was designed to motivate municipalities to implement local curbside collection programs. Funding was provided to communities shifting from subscription program to non-subscription program and or providing full-service drop-off locations. This program resulted in growing the number of non-subscription curbside communities in Summit County from 13 to 20.

Potential opportunities to consider include:

Residential Sector Incentives

- Provide incentives to political jurisdictions in the form of financial rewards for achieved recycling rates. Steps for implementing this is to set an annual sum of money to issue to political jurisdictions. Higher financial reward is given to communities achieving greater diversion rates.
- Provide grants to political jurisdictions to implement PAYT programs. Through an application process political jurisdictions could apply for a set dollar per household funding to assist with implementing PAYT.
- Provide grants to political jurisdictions to implement or convert to subscription curbside recycling programs. Through an application process political jurisdictions could apply for funds to support local program improvements.
- Provide contract assistance to political jurisdictions to bundle jurisdictions and services resulting in cost savings for services (such as consortiums).
- Provide rewards to residents whom reinforce desirable recycling behaviors.

Commercial Sector Incentives

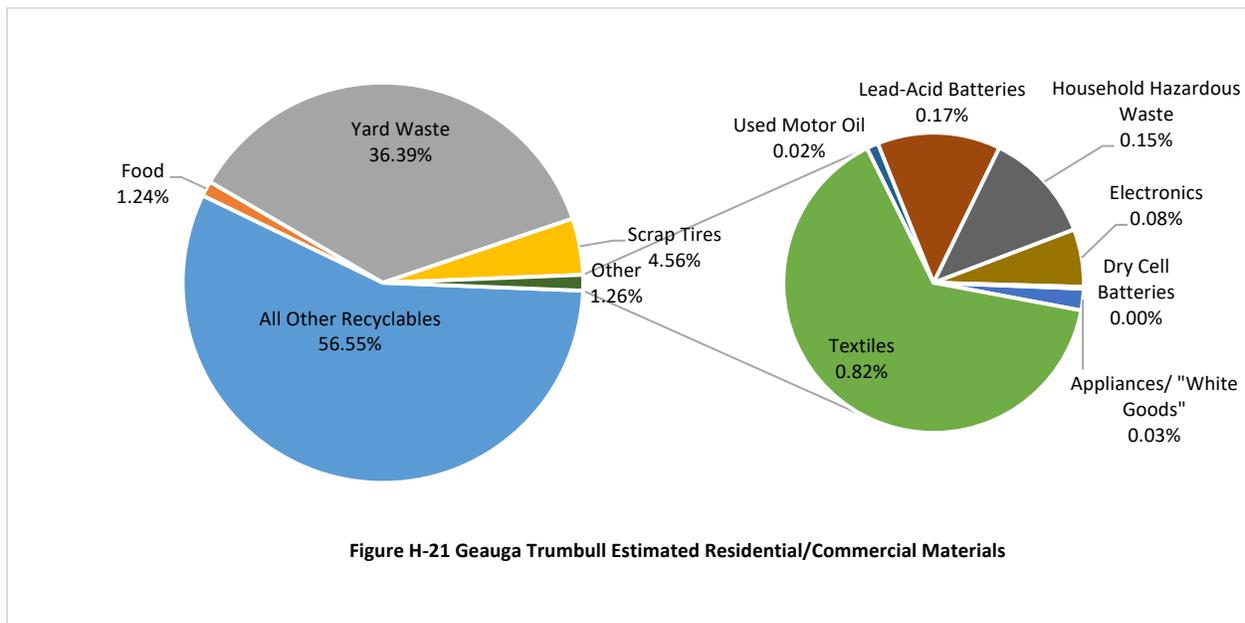
- Provide grants to expand recycling in the commercial sector.

F. Restricted and Difficult to Manage Waste Stream Analysis

Goal 5 of the 2009 State Plan requires SWMD’s to provide strategies for managing scrap tires, yard waste, lead-acid batteries, household hazardous waste, and obsolete/end-of-life electronic devices. This analysis evaluates the SWMD strategies and considers other materials and programs for difficult to manage waste.

A. Analysis

In 2015, approximately 43 percent of the waste recycled is categorized as restricted or difficult to manage waste. These categories are shown in Figure H-20 below.

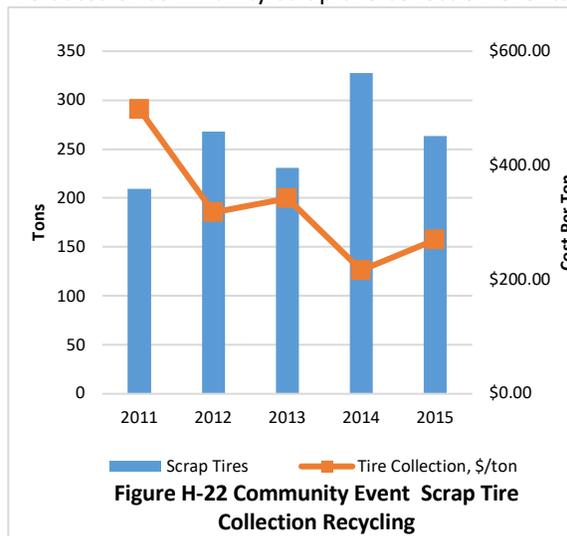


In 2015 the SWMD expended roughly 17 percent of 2015 expenses to the management of restricted and difficult to manage waste streams, and roughly 24 percent in 2016.

Scrap Tires – In 1996, regulations banning disposal of whole scrap tires at solid waste landfill facilities and incinerators became effective. As shown in Figure H-21 above, approximately 3,735 tons of scrap tires were recycled in 2015, about 263 tons of tires were collected during community scrap tire events.

Geauga and Trumbull County residents have many opportunities available to properly manage scrap tires and divert them from the landfill. In addition to outlets accepting tires for nominal charges, the SWMD offers yearly grants to communities to assist in disposal of scrap tires. The dates of community scrap tire collection events are published on the SWMD's website.

The scrap tire collection event is funded by the SWMD. The chart above depicts the tons recycled and cost per ton of the scrap tires collected through the collection program. The figure demonstrates the cost per ton to handle the tires has decreased from over \$400 per ton in 2011 to under \$300 per ton in 2015.



There are many retail outlets accepting unwanted tires throughout the SWMD, however scrap tire collection events offer residents a no-cost or low-cost (depending on community) opportunity to recycle scrap tires. In 2015, 50 of the 56 political jurisdictions applied for and received grants for scrap tire collection events.

Ohio EPA estimates more than 12 million scrap tires are generated in Ohio. Scrap tires not properly disposed have the potential to end up in illegal dumps creating hazards to public health and the environment. The number of tires and the cost to handle tires are challenges the SWMD is addressing consistently.

The SWMD expended, roughly 5.1 percent of 2015 expenses to the collection of scrap tires, and 4.7 percent of 2016 expenses.

Strengths:

- Additional outlet opportunity.
- Service to political jurisdictions to assist with cleanups.
- SWMD data collection and tracking.
- Retailer take-back.
- Retailer take-back provides a year-round outlet. List of retailers is on the SWMD website.

Weaknesses:

- Collection offered only once a year.
- Retailer take-back businesses charge fees.
- Not all communities offer scrap tire recycling every year because they may not have applied for grant funding.
- Location of scrap tire outlets on website are somewhat hidden and take some navigating.

Yard Waste – Despite legislation in 1995, attempting to limit and restrict the use of landfills for disposal of yard waste, many residents manage their yard waste at the curb with their household trash. If residents mix yard waste with municipal trash the yard waste is disposed in the landfill. As such, tracking total yard waste discarded at the landfill is not feasible.

Yard waste management is decentralized. The SWMD does not fund or operate yard waste management collection or facilities. Haulers in the SWMD do not offer curbside separate yard waste collection hauling. Residents residing in the Cities of Warren, Howland Township, Liberty Township, City of Cortland, City of Chardon, and Village of Middlefield have separate curbside yard waste collection hauling during leaf season. There are 14 in-district registered compost facilities. Three of these facilities are public sector owned facilities, one of which is open for public use: Middlefield Village. The City of Warren Water Pollution Control Center is not open for public use. The other 12 facilities are privately owned, 10 of which allow residents to drop off yard waste. Some of the publicly available facilities charge a fee for use. Processing of yard waste is the responsibility of registered compost facility owners.

The District does not directly provide residents with information regarding composting, nor do the websites of communities with leaf collection provide information on composting. However to encourage backyard composting, the District offered a one-day sale on rain barrels and compost bins in the summer of 2015. Additionally the District provided a total of \$9,700 in grant funding for Christmas tree drop off recycling to communities in Geauga and Trumbull Counties. However, that program was suspended starting in year 2016.

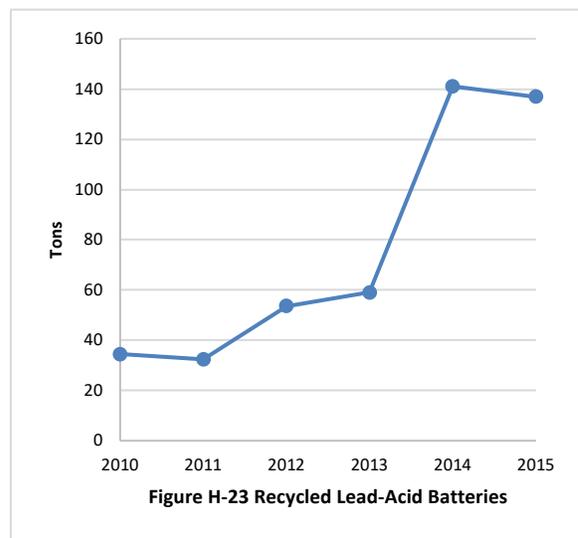
Strengths:

- Five political jurisdictions manage programs to divert fall leaves from the landfill.

Weaknesses:

- Lack of convenient infrastructure.
- Promotion of backyard composting is not very strong.
- Costs associated with developing and maintaining infrastructure within the SWMD.
- SWMD website is not a resource for yard waste management information.

Lead-Acid Batteries – In 2008, regulations banning disposal of lead-acid batteries in landfills became effective. Lead-acid batteries have a high recycling value and Ohio has a retailer take-back law. In addition, the SWMD accepts lead-acid batteries at the HHW amnesty day and facility. Figure H-23 shows the cumulative tons of lead-acid batteries from HHW collection events and survey results of commercial businesses. The tons of lead-acid batteries collected increased steadily from 2010 to 2013. In both 2014 and 2015, survey efforts returned increased tonnage of recycled lead-acid batteries.



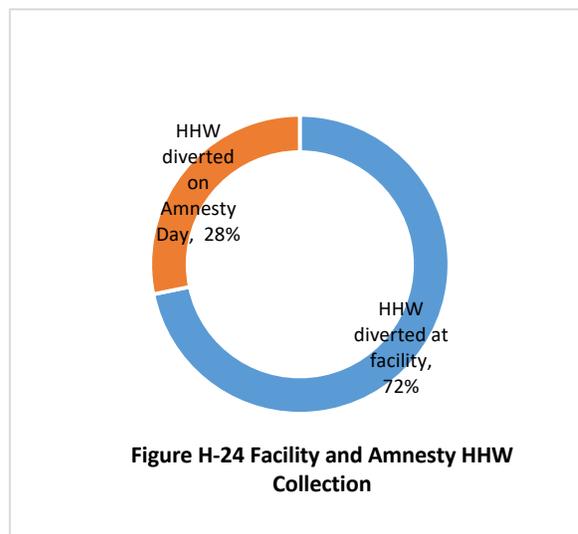
Strengths:

- Ohio law.
- Retailer take-back.
- Well-developed infrastructure.
- Residents have the opportunity to use the long-term HHW collection to properly manage lead-acid batteries.

Weaknesses:

- Lack of retailer take-back data.
- SWMD data collection and tracking from retailers.
- District website is not a resource for lead-acid battery management information.

Household Hazardous Waste – Households produce hazardous wastes containing chemicals that pose environmental risk. Informing the public to these dangers and providing outlets for proper disposal or recycling has been a priority item for the SWMD. The SWMD has offered household hazardous waste collections since 1997. Two opportunities are available to residents. The seasonal household hazardous waste facility in Trumbull County is operational at least 6 consecutive months a year. In 2015, collection was available every Wednesday and the first Saturday of the month from May through October. HHW amnesty day is offered in Geauga County and is available one day a year.

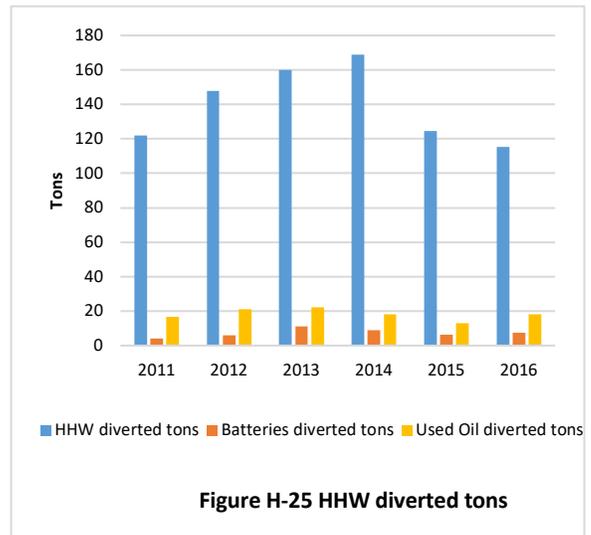


The current facility in Trumbull County services all District residents, but is at a distance to many residences in Geauga County. For instance, 75 percent of the area of Geauga County is 25 miles or more from the current HHW facility located in Warren. This travel distance may explain the low participation rate in the usage of the HHW facility.

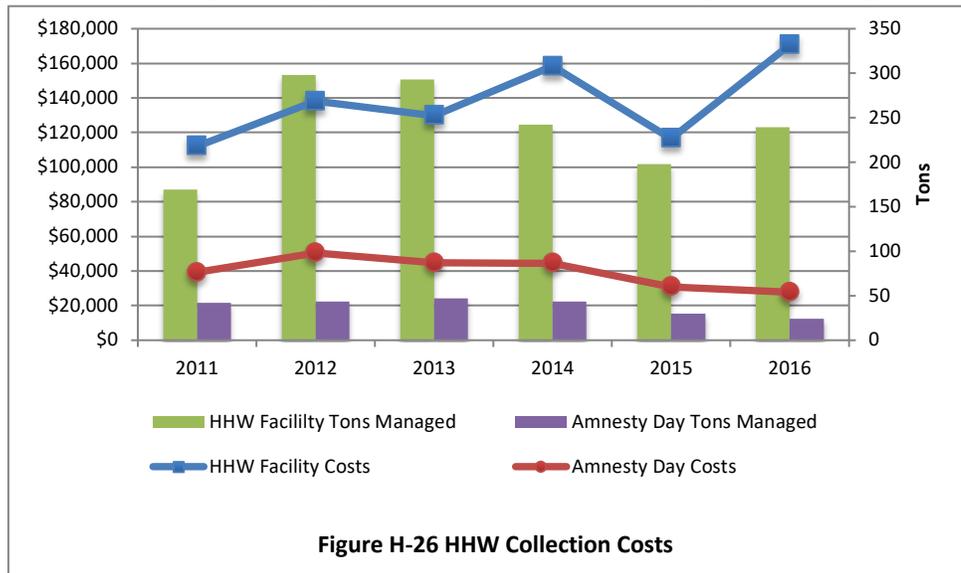
In 2015, 28 percent of the total HHW collected by the District was collected at the Amnesty day event.

Household hazardous waste includes such materials as household and lead-acid batteries, gasoline, turpentine, spray paint, fertilizer, pool chemicals, bleach and household cleaners, antifreeze, automotive fluids, compact fluorescent bulbs, adhesives, mercury containing devices, etc.

Each year the amount of materials collected through HHW collection varies as does the toxicity level. As shown in Figure H-25 majority of material collected either at the HHW facility or during Amnesty day is HHW. Batteries and used oil historically make up a smaller portion of the waste stream diverted through the HHW collection facility and collection events.



HHW collection is challenging. There are challenges to keep the costs within a reasonable budget and challenges to make the collection convenient so residents will utilize the service. In addition there are risks associated with proper handling and management of HHW. The SWMD takes all of these factors into account when bidding and selecting contractors. Figure H-26 shows the costs to operate the HHW Facility are more than the Amnesty Day and more material is managed at the HHW Facility. The average cost per ton to manage HHW at the Facility is roughly \$587 and at the Amnesty Day is roughly \$1,043.



The SWMD expended roughly 11 percent of 2015 expenses and 16 percent of 2016 expenses to the collection of HHW.

Neighboring SWMD's operating HHW collections are compared in Table H-13.

Table H-13 Neighboring SWMD HHW Programs

SWMD	Description	Total Cost	Cost/Vehicle	Cost to Resident	Tons Managed
Geauga Trumbull	Permanent (seasonal) and single day collection	\$198,340	\$46.39	No user fees	115
Cuyahoga	Permanent	\$307,771	Not available	No user fees	253
Lake	Single day	\$50,000 - \$80,000	Not available	No user fees	DNR
Summit-Akron	Permanent (seasonal)	\$172,037	\$40.25	No user fees	105
Mahoning	Single day	\$33,000	\$48.10	No user fees	22

Source: 2016 Data collected via phone solicitation from neighboring SWMDs.

Strengths:

- Long-term availability provides more convenience to residents.
- SWMD data collection.
- Diverts harmful materials from the environment.
- Residents are not charged user fees for the service.
- SWMD competitively bids for contractor services.
- Alternative product information is available on website.
- Additional advertisements in October 2017 increased awareness showing increased tonnages.
- Separate building to collect and manage HHW.
- Permanent opportunity for residents.
- Several months per year availability is convenient.

Weaknesses:

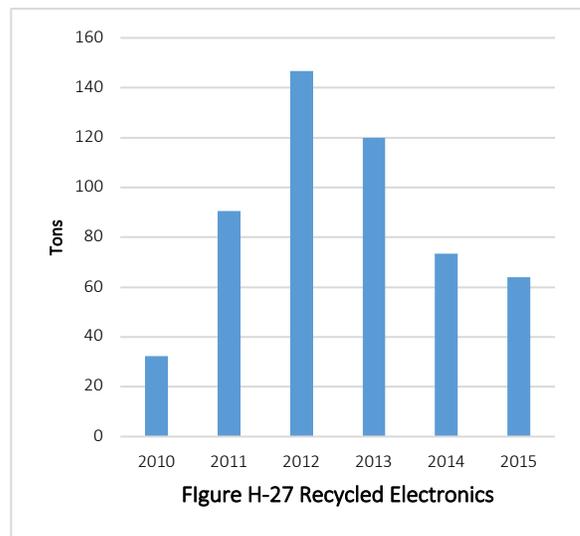
- Program costs to properly manage hard to recycle materials are typically high.
- Volume of latex paint collected is a contributing factor to high program costs.
- Geauga County residents have a longer commute to the facility.
- Alternative product information on website may be difficult to find.

Electronics – Electronics contain hazardous materials that can pose health and environmental risks after disposal.

The preferred method of handling is donation for working electronics and recycling for non-working electronics. The SWMD maintains a list of retailer take-back, secondhand retailers, and scrap yard outlets where residents may take electronics. Each location varies as to the type of electronics accepted and user fees charged. Residents may also take electronics to the HHW Recycling Facility. Televisions recycled at the HHW Recycling Facility are charged a nominal fee. (Fee was waived in 2017.)

Figure H-27 shows the historical electronic recycling in the SWMD. Years 2012 and 2013 show significant spikes.

The SWMD recognizes e-waste is a growing material stream and wants to be of assistance in diverting these materials from the landfill. The major obstacle is costs. The SWMD is continually looking for options to help residents properly manage this material. Partnerships and collaborations are areas the SWMD is beginning to explore.



Strengths:

- Educates residents to recycling or reuse outlets in the SWMD.
- Diverts harmful materials from the environment.
- Long-term availability provides more convenience to residents.

Weaknesses:

- User fees charged on televisions.
- Not all outlets accept all types of e-waste.
- Data can be difficult to obtain.
- Location of e-waste outlets, such as third-party recyclers or take-back retailers are not identified on website.

Other –Appliances – As shown in Figure H-27 below, 24 tons of appliances were recycled in 2015. In 2014, 21 tons of appliance recycling was reported. This was a significant decline from 2013 to 2014. The decline is changed reporting from a broker, recording appliances as ferrous metals instead of appliances. The tonnages reported in 2014 and 2015 only include appliances collected during the drop off events.

Residents have an opportunity to recycle appliances through retailer take-back, scrap processors, or one-day collection events. Each of these opportunities operates differently. Retailer take-back and scrap processors rely on the household generating the appliance waste to properly manage the appliance. Opportunities such as these hold the household accountable for the waste produced. It helps that retailer take-back opportunities have become more prevalent with big box store companies offering to remove appliances as a new one is delivered. Taking appliances directly to scrap processors offers a greater incentive to recycle the appliance because they usually pay market pricing for scrap metal. One-day collection events rely on the SWMD to manage the appliances. Appliances recycled through the one day events include: refrigerators, freezers, dehumidifiers, and air conditioners.

In 2015, the cost of appliance collection was recorded as a separate line item. The cost per ton was \$384.

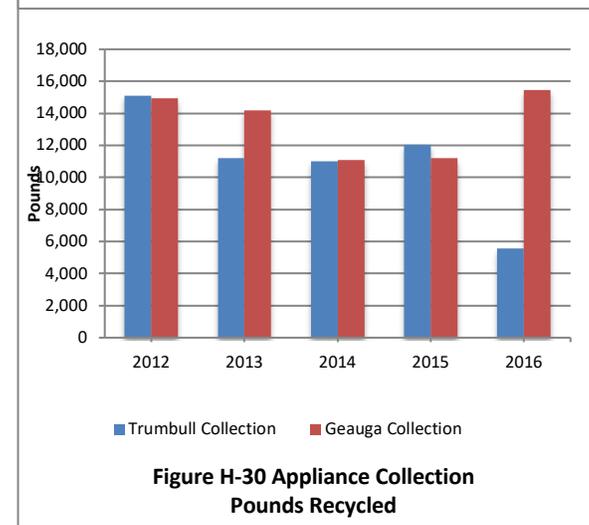
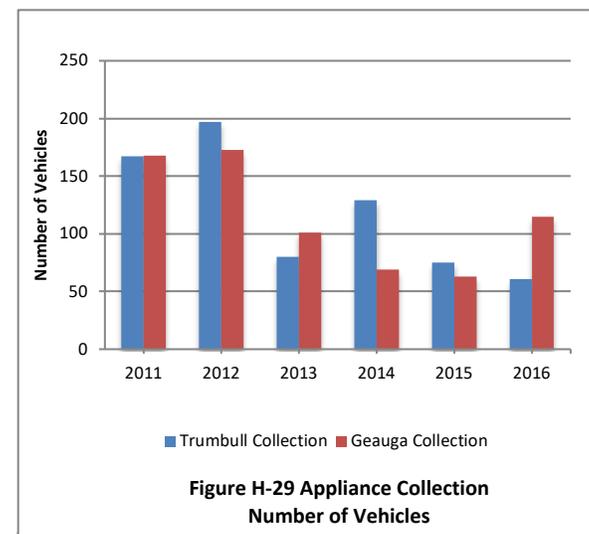
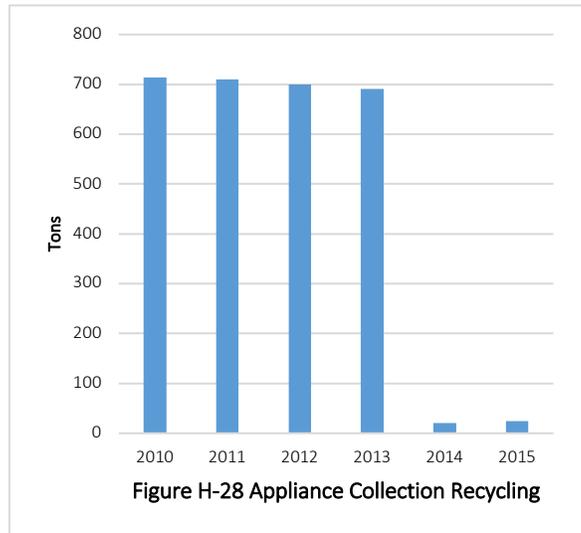
Figure H-29 depicts the number of vehicles participating in the one-day appliance collection program. Over the six years, an average 118 cars participated in Trumbull County and 115 cars in Geauga County. Figure H-30 shows the pounds collected. Over the six years, an average of 10,984 pounds in Trumbull County and 13,372 pounds in Geauga County.

Strengths:

- Long-term availability provides more convenience to residents.
- SWMD receives some revenues from sale of scrap.
- SWMD data collection.
- Residents are not charged user fees for the service.
- Proper management of Freon-bearing appliances.
- List of scrap dealers on website.
- Retailer take-back.

Weaknesses:

- Cost.
- Reliance on SWMD to handle appliances rather than local scrap outlets.



- Lack of retailer take-back data.
- District data collection and tracking from retailers.

B. Conclusions/Findings

District provides convenient permanent (seasonal) opportunity for a number of difficult to manage waste streams. Costs to provide proper management and/or diversion are higher than landfill tipping fees. Retailer take-back and scrap yards are additional outlets the District could better promote/inform residents. Education/outreach materials and alternatives (prevention of harmful HHW) are areas which could be improved.

G. Diversion Analysis

A. Analysis

Waste diversion is defined as the amount of waste recycled and the amount of waste diverted from entering the waste stream through source reduction activities. Waste diversion activities include waste minimization (also called source reduction), reuse, recycling, and composting. The diversion analysis takes a look at the diversion programs, infrastructure, rate and trends, and materials.

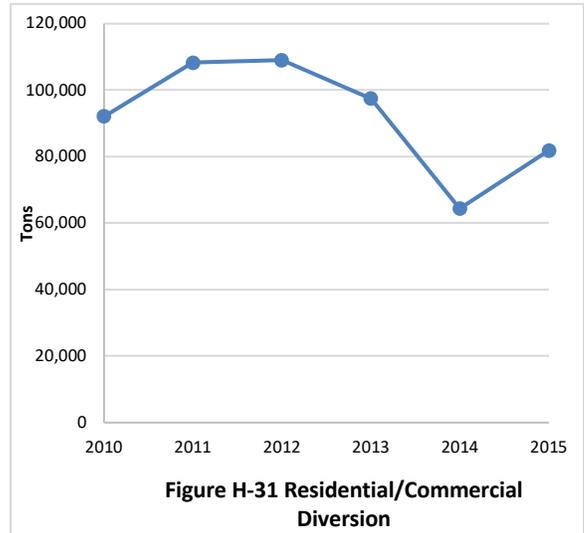


Figure H-31 Residential/Commercial Diversion

Residential/commercial diversion in the SWMD trends near or above 100,000 tons from 2010 through 2013, before dropping below 65,000 tons in 2014. Since 2014, the residential/commercial diversion has increased slightly above 80,000 tons.

In 2014 cardboard and paper streams lowered considerably from historic trends. The largest source of data for these materials is reported from haulers and brokers. At this time the SWMD does not have a clear an understanding of why reported tonnages were lower.

To understand the breakdown of materials further, figure H-32 shows the residential/commercial material categories diverted in 2015.

The material categories reported as most recycled in

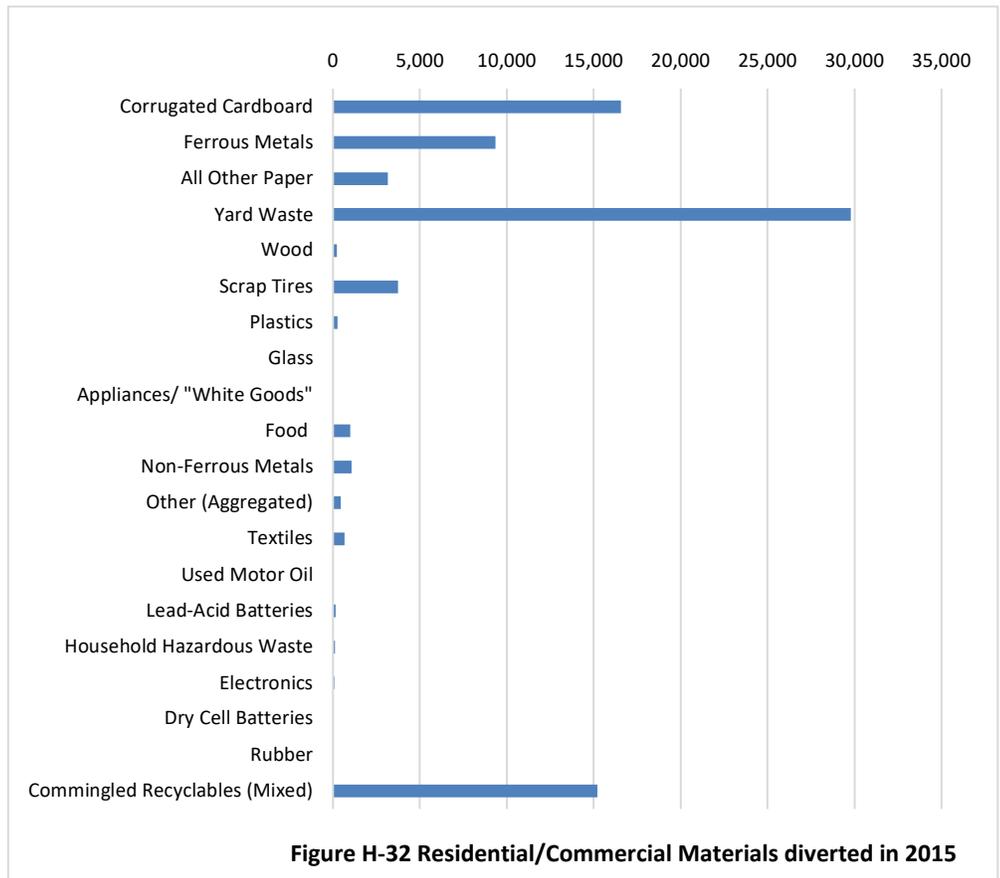


Figure H-32 Residential/Commercial Materials diverted in 2015

2015 includes cardboard, ferrous metals, commingled recyclables, and yard waste. As shown in Table H-14 these materials have also historically been the most recycled.

Table H-14 Historical Residential/Commercial Materials Diverted per Material Category

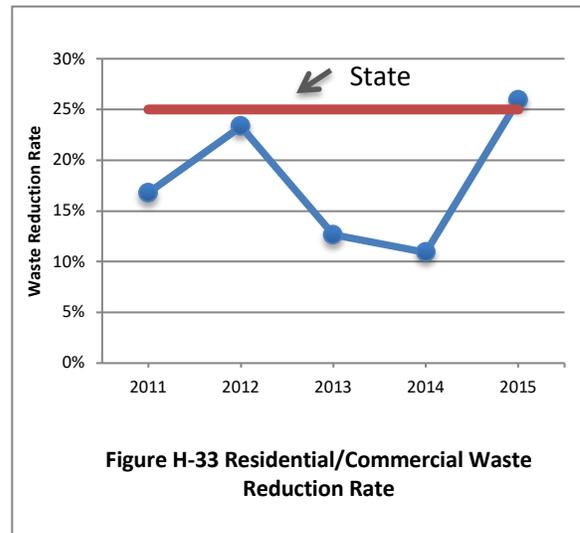
Materials	2010	2011	2012	2013	2014	2015
Standard Recyclables						
Corrugated Cardboard	25,388	31,915	24,329	27,120	10,036	16,559
Ferrous Metals	13,375	13,845	10,128	10,336	13,055	9,355
All Other Paper	13,792	19,088	14,109	13,944	5,425	3,162
Plastics	232	667	297	273	345	270
Glass	87	1,434	5	16	22	1
Wood	-	496	239	428	874	242
Non-Ferrous Metals	2,558	2,680	2,391	2,399	1,414	1,054
Commingled Recyclables (Mixed)	3,424	3,547	4,618	7,260	8,408	15,216
<i>Subtotal</i>	58,856	73,673	56,116	61,776	39,579	45,859
Organics						
Food	-	53	355	176	1,489	1,012
Yard Waste	29,423	28,992	46,315	30,839	17,961	29,793
<i>Subtotal</i>	29,423	29,045	46,670	31,015	19,451	30,805
Hard to Recycle Materials						
Scrap Tires	2,752	3,279	4,011	2,910	3,840	3,735
Appliances/ "White Goods"	714	710	700	691	21	24
Other (Aggregated)	-	631	549	133	439	440
Textiles	181	679	655	656	668	668
Used Motor Oil	24	17	17	17	15	13
Lead-Acid Batteries	34	32	54	59	141	137
Household Hazardous Waste	111	85	130	115	149	124
Electronics	32	91	147	120	73	64
Dry Cell Batteries	-	-	-	-	-	2
Rubber	-	-	-	-	-	-
<i>Subtotal</i>	3,850	5,524	6,262	4,701	5,345	5,207
Total Tons	92,129	108,241	109,047	97,492	64,375	81,870

The historical material trend identifies the changes relative to the materials and factors that occurred over time such as:

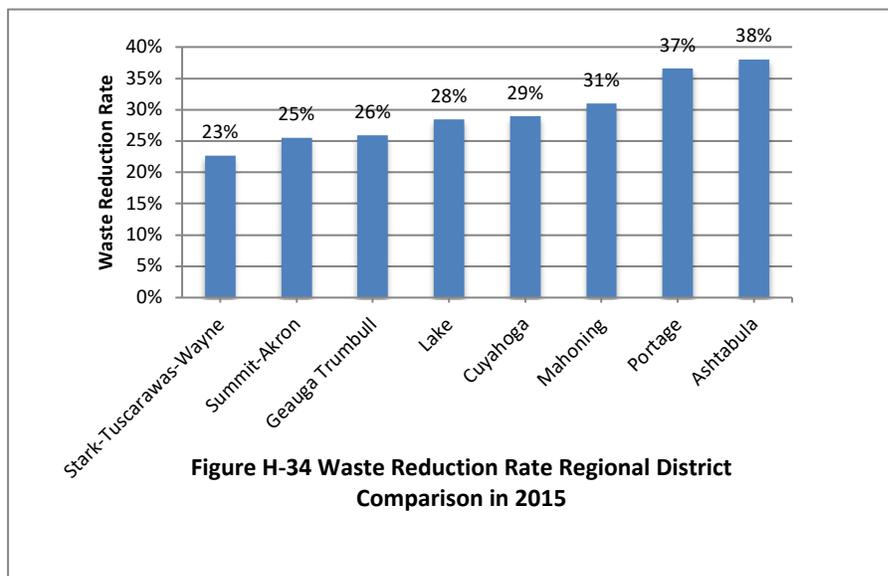
- Reported cardboard recycling tonnage dropped by more than half from 2013 to 2014, and rose modestly in 2015.
- Decreased ferrous metal tonnages due to loss of industry and lack of reporting.
- Paper recycling has dropped around 10,000 tons from 2010 to 2015. The SWMD has no explanation for the decline in materials.
- Non-ferrous metal recycling is down by more than 1,000 tons from 2010 to 2015, again mostly attributed to loss of industry and lack of reporting.
- Commingled recycling is up five times the 2010 levels due to expansion of subscription curbside services, expansion of drop-off locations, and a move towards single-stream recycling.
- Food composting has gone from non-existent in 2010, to diverted around 1,000 tons from landfill. This still represents a small portion of the waste stream that is food.

Based on reported data obtained from surveys, haulers, and Ohio EPA, commingled recyclables are largely being captured by the curbside and drop-off recycling programs while paper and cardboard are being captured by commercial businesses and reporting MRFs.

Figure H-33 shows the diversion achieved over the past five years in comparison to the State residential/commercial waste diversion goal, represented by the red line. In 2015 the waste reduction rate was 26 percent.



The SWMD's residential/commercial waste reduction rate compared to other regional districts is outlined in Figure H-34.



Challenges/Barriers

- Collecting recycling data.
- Low survey response.
- Data fluctuates based on responding entities.
- To increase residential diversion.
- Lack of food waste diversion infrastructure.
- Waste minimization and reuse are largely unexploited for the residential/commercial sector.

B. Conclusions/Findings

Data is dependent on responding entities. Basic procedures for collecting data is voluntary reporting and low responses which support fluctuations recorded in cardboard and paper recycling. Recycling is not always captured through voluntary reporting. Reuse infrastructure heavily falls on non-profits and their development of reuse centers.

Potential opportunities to consider include compiling a resource guide to donating as well as assisting in the development of reuse centers. Program areas to consider implementing for this plan update to address waste minimization and reuse models are volume-based incentive-fee collection systems, education and outreach approaches, creation and promotion of a reuse and repair network.

H. Special Program Needs Analysis

Ohio Revised Code 3734.57(G) gives SWMDs the authority to fund a number of activities that are not related to achieving the goals of the state solid waste management plan. In addition, there are other programs that SWMDs fund that are not addressed in either the state plan or law. This analysis evaluates the performance and status of these activities and programs and the value to the SWMD.

A. Analysis

Environmental Enforcement Program: Since 2008 the SWMD funded this program by supplementing the cost of an environmental law enforcement program with the Geauga County Sheriff’s Department, the Trumbull County Sheriff’s Department, and the Warren City Police Department. The officers are assigned to the SWMD through a contractual agreement to enforce litter laws, open dumping, and zoning violations that relate to environmental issues. The enforcement agencies met monthly with the Health Districts to assure program success.

Little improvement in environmental issues was recorded and in part from lack of support of the Prosecutor’s office and judges.

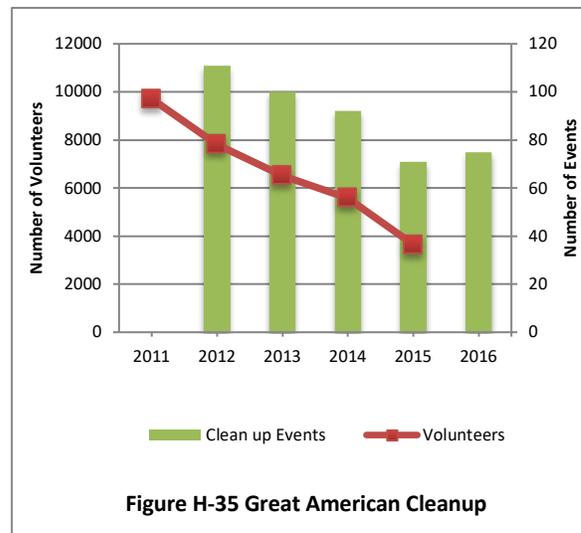
As a result of internal analysis of SWMD expenditures compared to waste reduction performance and in part to administration problems and a new sheriff in Geauga and Trumbull County this program was suspended in December 2016.

The SWMD allocated roughly 11 percent of 2015 expenses to Environmental Enforcement.

Health Department Enforcement: In 1997 the SWMD began providing financial assistance to Ohio EPA approved Health Districts to implement a solid waste enforcement program. At the time four Health Districts, Warren City, Girard City, and Geauga and Trumbull County received funding to conduct inspections and investigate general solid waste/nuisance complaints. In 2014, Girard City was no longer on the Ohio EPA approved Health District list. In addition, these Health Districts work with the Environmental Enforcement Program meeting monthly to share information and resolve environmental issues.

The SWMD allocated roughly 3 percent of 2015 expenses to Health Department Enforcement.

Great American Cleanup: For over 25 years, the SWMD has participated in the Keep America Beautiful/Great American Clean Up Program. Research indicates individuals are substantially more likely to litter into dirty or already littered environments than into clean ones (Cialdini, Kallgren, & Reno, 1991; Geller, Witmer, & Tusso, 1977; Herberlein, 1971; and Reiter & Samuel, 1980). The cleanup is held in April and May before the weeds grow covering unsightly road litter in ditches, parks, and along roadsides. Volunteers are given trash bags for their clean ups along with bottled water and flower seed packets for beautification projects within the community. This strategy helps to reduce litter and keep the community clean. Figure H-35 depicts the number of volunteers and events held.



B. Conclusions/Findings

While not direct, special needs help District's achieve state goals. In Districts, as proven by Lawrence-Scioto, a strong enforcement program helps keep illegal dumping and contamination minimal. Lawrence-Scioto SWMD, the enforcement program is run by an enforcement officer, whom is an employee of the SWMD and is commissioned by each counties sheriff, giving the enforcement officer jurisdiction in both counties. The enforcement officer is a full-time position whose sole responsibility is the enforcement of illegal litter issues. The enforcement officer has access to the Ohio Attorney General's website (access granted by Lawrence County Sheriff). Access to the website provides personal information, license plate numbers and warrants for arrest, which can be used against offenders. The program has support of the county sheriffs, county prosecutors, and many county judges. Lawrence-Scioto's programs was established in 2006 and statistics in 2011 report 136 cases investigated with 64 cases tried in court in favor of the District and 72 cases successfully resolved outside of court.

Health department funding in the District investigates complaints and is a partnership which supports the waste management system. These type of special programs, provide value when implemented with performance checks and stakeholder buy-in.

I. Financial Analysis

The purpose of this analysis is to examine the SWMD's current financial position and assess the financial requirements and revenue sources throughout the next planning period. The SWMD is currently funded through revenues from designation fees and the sale of recyclables collected. The SWMD does not currently collect a disposal fee at local disposal facilities separate from the designation fee.

A. Analysis

Revenues

Disposal Fee:

Districts that have municipal solid waste landfills within their boundaries can be funded through a tiered disposal fee. This fee is levied on waste disposed at the local landfills. The District does not currently have an adopted disposal fee collected at in-district disposal landfills.

Generation Fee:

In accordance with ORC 3734.573, a solid waste management policy committee may levy fees on the generation of solid wastes within the district. Levying a generation fee means any landfill or transfer facility receiving district waste, regardless of where in Ohio the waste is disposed, remits the generation fee. The District does not have an adopted generation fee.

Other Revenue Sources: Designation Fee

A designation fee allows for the collection of fees on District-generated waste that is disposed both in and outside Ohio. The legal process for instituting a designation fee is tied to the ability to designate public or privately-owned solid waste facilities where all solid waste generated within the District must be delivered for transfer or disposal. The Policy Committee must reserve the right to implement designation in the District's approved solid waste management plan (ORC 343.01(l)(2)). The District adopted, ratified, and implemented a \$5.50 per ton designation fee as part of its plan update.

Designation fee revenue historically shifted as seen in Figure H-36 due to varying factors.

As reported in recent Annual District Reports, the SWMD has had several waste haulers under investigation that are potentially misidentifying the origin and classification of waste. This may have impacted the designation fees. In addition, an auto shredding operation with a large amount of auto-fluff generated and landfilled as industrial

waste has impacted the designation fees. Misidentification of waste origins from haulers contributes to a downward revenue trend.

Increases seen in 2013 are attributed to drilling of a few test wells for exploratory shale well drilling. The generated sludge was landfill as industrial waste increasing disposal and designation fee revenue (\$227,550 additional revenue).

In 2015, designation fee revenues decreased by 14 percent due to industrial disposal decreases. The SWMD is projecting decreasing tons of industrial disposal (and industrial diversion) based on recent surveys indicating an exodus of industry leaving the region. This trend will affect future revenues received through the designation fees.

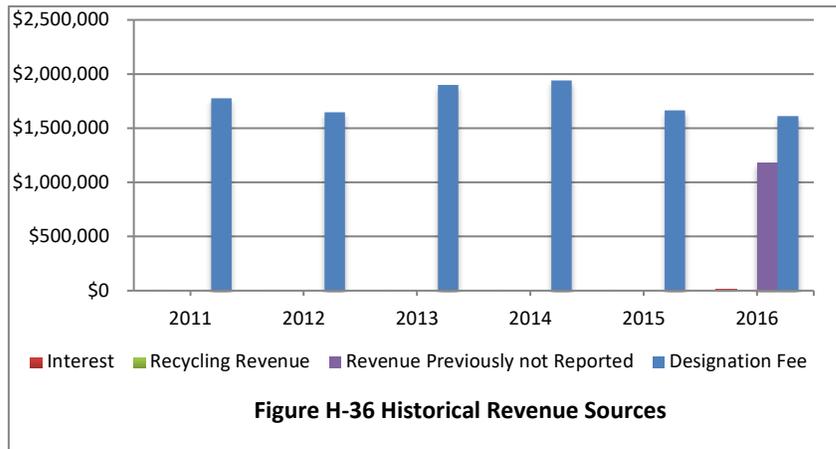


Figure H-36 Historical Revenue Sources

Other Revenue Sources: Interest and Recycling Revenue

The SWMD receives revenues from: interest, sale of recyclable, user fees on e-waste and contract settlement penalties. Historically sale of recyclables, user fees on e-waste, and contract settlement penalty revenues were not reported on the District Fee Reports to Ohio EPA. The State Auditor report credits \$1,173,976.84 as revenue from these sources. The \$1,173,976.84 is added to the fund balance at 2016 year-end.

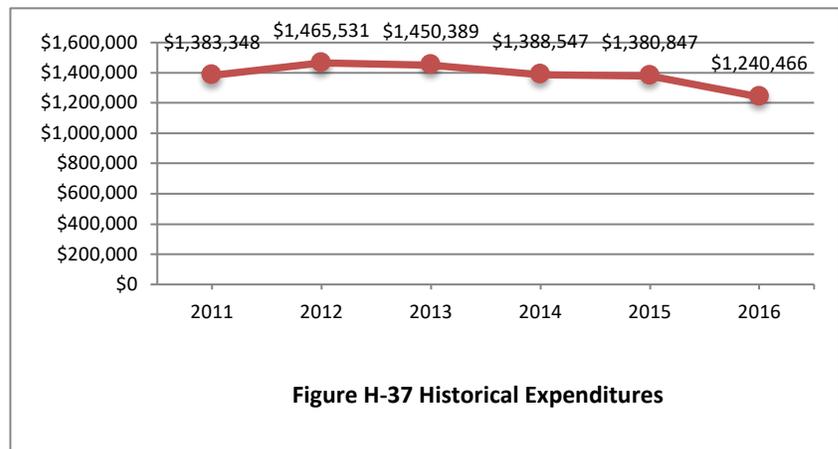


Figure H-37 Historical Expenditures

These revenue variations create uncertainty in SWMD fee revenues, causing the SWMD to rely more on the cash carry-over balance projected into the future to support stability for the planned programs and services.

Expenditures

District expenditures averaged 80 percent of District revenues in the past five years. Since 2012, annual program spending was reduced following the downward revenue stream. Over this time period the SWMD made changes to the special collection programs resulting in significant program savings. However, the greatest cost saving is attributed to suspending the Environmental Enforcement Program.

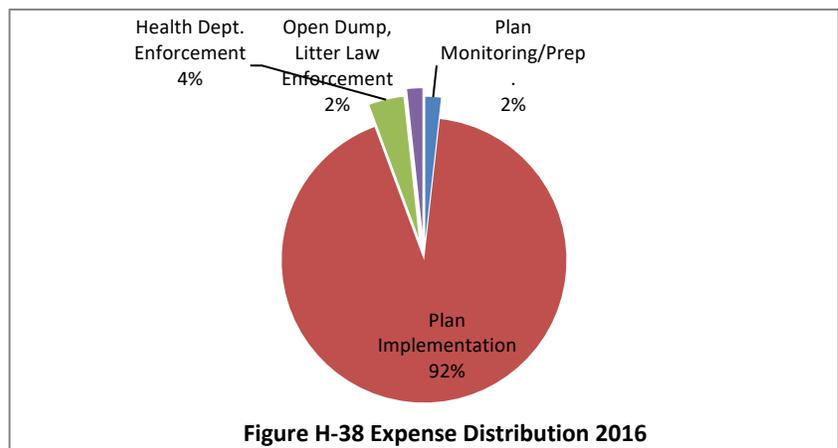
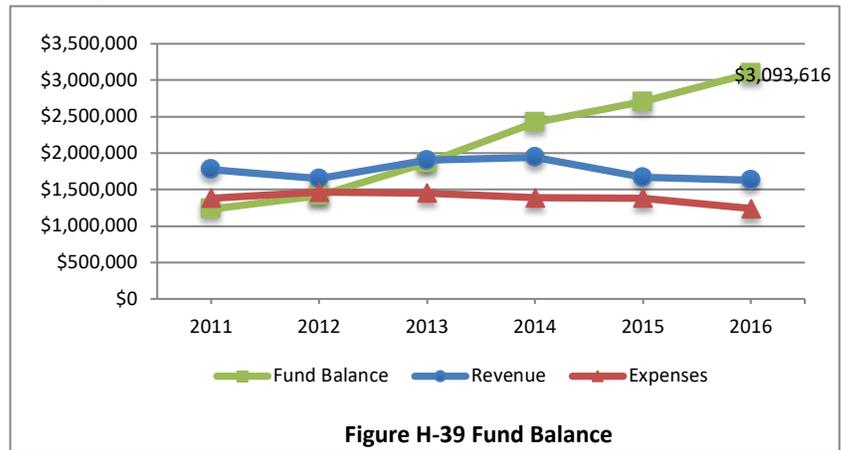


Figure H-38 Expense Distribution 2016

Figure H-38 depicts the expenditure distribution categories for 2016.

Carryover Balance

Figure H-39 shows the fund balance accruing over the past 6 years to an amount equaling at least 2.4 years of operating costs. The SWMD adjusted spending levels as revenues declined to maintain a minimum fund balance. The additional fund balance revenue added in 2016 positions the SWMD with a cushion of revenue for programs.



COMPARISON TO OTHER NEIGHBORING SWMD'S

Compared to neighboring solid waste management districts, the per capita revenue and expenses are third highest in the region. The amount of money spent on programs per resident in the SWMD is \$4.64 per year.

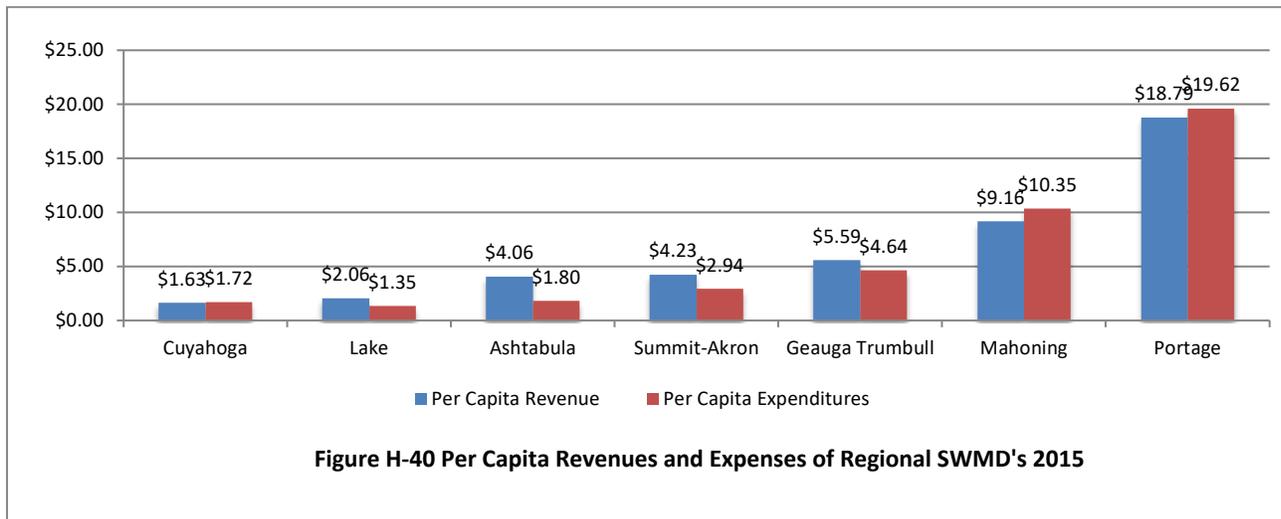


Table H-15 shows reported expenses for residential/commercial recycling programming in neighboring solid waste management districts. Most districts do not expend costs for curbside recycling. Residential curbside recycling is typically not subsidized by local government or SWMD's. If curbside programs are lacking, Districts meet State Recycling Goals by offering recycling community drop-off programs. Costs vary depending on number of containers and frequency of service. Drop-off costs for the SWMD are second highest in the region. Special collection drives vary but tend to be a large expense for all of the solid waste districts in the region. Special collections focus on tires, HHW, electronics, Freon Appliances and other hard-to-dispose materials.

Table H-15 Annual Reported Expenses for Residential/Commercial Programming 2015

SWMD	Curbside	Drop-off	Special Collections	Yard Waste Programs	Education/Awareness
Cuyahoga	\$0.00	\$12,063.35	\$403,715.36	\$0.00	\$301,000.24
Lake	\$0.00	\$1,836.00	\$125,246.17	\$0.00	\$96,085.88
Ashtabula	\$0.00	\$36,130.36	\$0.00	\$0.00	\$942.70
Summit-Akron	\$0.00	\$0.00	\$121,971.07	\$0.00	\$198,854.38

SWMD	Curbside	Drop-off	Special Collections	Yard Waste Programs	Education/Awareness
Mahoning	\$19,188.75	\$591,567.00	\$69,676.78	\$0.00	\$141,832.04
Portage	\$1,749,898.24	\$213,199.32	\$17,197.80	\$0.00	\$27,920.89
Geauga Trumbull	\$0.00	\$388,247.09	\$230,942.63	\$26,044.00	\$101,417.73

Source: Solid Waste Management District Fee Summary: 2015, Ohio EPA. Not representative of all SWMD expenses, such as administrative and overhead.

B. Conclusions/Findings

Funding is stable for the District. Out of seven districts in northeast Ohio, the District has one of the higher per capita revenues and expenses. The largest programming expenses for the District is the drop-off program. Compared to neighboring Districts, only one other has drop-off program expenses higher. This is namely due to most of the northeast Ohio districts implementing curbside programs or requiring communities to fund drop-off program costs.

J. Regional Analysis

The purpose of the regional analysis is to consider regional opportunities for collaboration and partnerships, and to also consider how the policy committee's decisions may impact other stakeholders in the region.

Collaboration is a process where people or organizations come together to solve problems with a common goal. Through the process of sharing differing perspectives, experiences and resources we can expand opportunity and improve performance. Collaboration enables decision makers to realize several benefits, including mutual respect for agency/jurisdictional authority, unified efforts, collective support with mutually beneficial financial outcomes. Geographically differing economic challenges, program performance, constituent demands and emerging technologies, issues faced by all Ohio's SWMDs, dictate that regional concepts be explored.

As such, by joining forces and economies of scale, communities have been able to explore best available technologies while implementing projects that individually would have been too expensive to develop for a single entity. Urban, rural plus small and large communities have benefited as costs and volume responsibilities are spread over a larger population of participants while educational, management and purchasing power are shared.

Other identified stakeholders in the region that may have a key interest and involvement in SWMD programs, problems, and solutions.

- Neighboring SWMD's
- Neighboring Soil and Water Conservation Districts
- Private service providers
- Non-profit organizations
- Chambers of Commerce

Potential program collaboration areas could include:

- Charging user fees on HHW to other SWMD residents so that residents may use the most convenient opportunity.
- Collaboration with MRFs in waste shed on education and illegal dumping.
- Hold brown bag discussions regarding food waste infrastructure and consider collaborations.

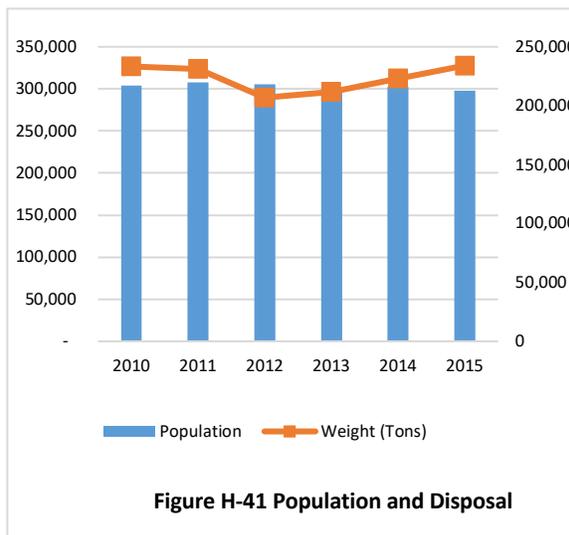
K. Population Analysis

This analysis evaluates whether the population changes will affect the programs.

A. Analysis

The population of Geauga County increased from 2010 by 1%, but at the same time Trumbull County’s population decreased by 3% so that from 2010 to 2015 the combined population of the Counties declined by 2%. Over the same time period, the statewide population increased by 2%. That population increase is concentrated in the southwest and central portions of the state while population in the northwest corner of the state has been declining.

Population has declined faster from 2010 to 2015 in the District than what the 2009 solid waste plan projected because of the larger than expected population decline in Trumbull County and a smaller than expected population growth in Geauga County. The last plan update assumed Geauga would experience a constant 0.27% growth, but the County only grew by 0.1% from 2010 to 2015. Trumbull County was projected to experience a 0.66% population decline each year of the planning period at the last plan update. However, Trumbull actually experienced a 0.7% population decline from 2010 to 2015.



Despite the faster than expected population decline, actual disposal was not significantly lower than projected for the last planning period. The last plan projected 2015 disposal to be 214,261 tons, but actual tons disposed was greater than 234,000 tons.

Population affects waste generation rates but take into account the contributing factors of population growth: household income, educational attainment levels, people per household, and economic activity. Economic activity and population growth affect household income and household income impacts per capita waste generation; and higher income households tend to produce higher amounts of waste. However, higher income households tend to achieve higher recycling participation rates. These complex factors impact waste generation and dynamically occur over time.

The combined population is expected to decline over the planning period by 7%. Geauga County is projected to experience a 3% population increase, but the population of Trumbull County is expected to fall by 12% over the same time based on ODSA Planning Research and Strategic Planning Office projected estimates for 2015, 2020, 2025, 2030, and 2035. To determine population estimates between these years, straight-line interpolation was used. To determine an estimate population for 2016, 2017, 2018, and 2019, population for years 2015 and 2020 were averaged over the 5-year time span.

Population projections gauge future demand for services, but in projection calculations there are room for errors because of the difficulty associated with forecasting. As projected by ODSA, population is expected to increase. However, when compared to historical population growth, the projected growth is modest.

L. Data Collection Analysis

This analysis evaluates the SWMDs current data collection efforts and identifies ways to improve its data.

A. Analysis

This analysis evaluates the SWMDs current data collection efforts and identifies ways to improve its data.

Waste is generated by three sectors: residential, commercial and industrial. Waste source reduced, recycled, composted, incinerated, and disposed are measured to establish a baseline and determine waste generation, and

measure recycling rates. Collecting data is challenging due to a variety of factors and takes considerable time and effort to gather and analyze. Issues encountered when surveying include:

- Low participation rates
- SWMD time commitment
- Lack of response
- Survey costs
- Errors in reported values

The data collection process for each sector is described below.

Residential

The SWMD gathers data from service providers and Ohio EPA annual published data. Service providers operate the Curbside recycling, Drop-off recycling, HHW collection, Curbside Freon Appliance collection, and Scrap Tire collection. As part of contracts service providers report volumes to the SWMD. For instance, the E-waste invoices per pound of glass thus provides the total to the SWMD. Appliances are aggregated and tonnages are provided. Scrap tires are reported as part of the grant requirement process.

Commercial

The SWMD gathers data from commercial businesses and Ohio EPA annual published data. Businesses surveyed are mailed a cover letter, survey, and postage-paid return envelope. Businesses can also download the commercial survey from the District's website. Survey recipients are given the option to submit their completed surveys online, via email, or fax. Approximately two to three follow up requests are sent via e-mail to contacts every two to three weeks. Follow up phone calls are placed to entities if data has not been submitted after receiving the final follow-up request via e-mail. The quantity of follow-up phone calls made to each survey recipient varies on a case-by-case basis. Non-responders are prioritized. Priority has been placed on obtaining responses from entities that have not provided data within the last two surveys and to businesses known to generate significant quantity of recycling and waste.

The SWMD makes an effort to understand how materials are obtained and managed by entities that submit recycling information. To avoid double counting the SWMD strives to identify if there are any materials that might be reported by more than one entity.

The SWMD mailed 30 commercial surveys in 2015 and received 15 responses. While the response rate was 50%, there are more than 6,000 commercial businesses with NAICS classifications such as wholesale trade, retail trade, accommodation and food services, arts, entertainment, and recreation, etc. that may be recycling. Surveys from previous years are not included in response rate statistics.

An analysis of the source data reveals that 22% of the commercial recycling and composting data comes from the Ohio EPA. Haulers provided 48% of the commercial data, and brokers provided 25%. Surveys accounted for 5% of the commercial recycling data. This data demonstrates that haulers and the Ohio EPA are providing the majority of usable recycling data. It also reveals that only a fraction of commercial businesses are surveyed and an even smaller proportion contribute to the recycling data through the survey. The challenge of capturing accurate diversion data from businesses is evident after multiple years of surveying using both web-based survey and mailed paper survey options. The low response rate presents an opportunity for the SWMD to evaluate a lower cost method and more strategic approach to capturing data from the largest commercial businesses operating in the District.

Across the state of Ohio, many districts are challenged with low response rates. The Districts survey mechanisms are similar to other District survey mechanisms. One district employing an email survey mechanism, SWACO (Franklin County, Ohio), experiences challenges with maintaining an up-to-date email database. Employing an email survey requires follow-up phone calls to non-responders. SWACO also uses a mailed survey for those businesses where an email contact was not provided. Emailed surveys achieved a higher response rate than mailed

surveys (statistics do not weigh number of calls made for emailed surveys versus mailed surveys). Both mechanisms require a considerable amount of staff time and effort to achieve responses.

Industrial

The SWMD gathers data by surveying the industrial sector businesses. The same survey procedure described for the commercial sector is also used for the industrial sector.

The SWMD supports the Ohio Recycles Survey, a collaborative statewide recycling survey effort promoted by Ohio’s solid waste management districts, the Ohio Council of Retail Merchants, the Ohio Chamber of Commerce, the Ohio Manufacturers’ Association, and the Ohio Environmental Protection Agency (Ohio EPA). Businesses have the opportunity to complete the Ohio Recycles Survey online.

The SWMD mailed 637 industrial surveys at the last plan update. In 2015, only 467 surveys were mailed due to the loss of industry in between the last plan update and 2015. Several large manufactures that previously reported either closed or cut production. The District received on 29 responses, a response rate of 6%. Surveys from previous years are not included in response rate statistics.

M. Education/Outreach Analysis

See Appendix L for analysis on education and outreach programs.

N. Processing Capacity Analysis

A. Analysis

The District relies on out-of-district material recovery facility (MRF) processing capacity. A MRF is a specialized facility that receives, separates and prepares recyclable materials for marketing to end-user manufacturers. Materials collected at the curb and through drop-off programs are sent to MRFs. There are six single-stream or multi-stream MRFs that accept residential and commercial recyclables operating in the region. All of these facilities have complex sorting equipment and are able to process limited materials (plastic bottle and jugs, paper, cardboard, glass, and cans). If other materials are placed in the bins destined for these MRF it can be dangerous for the workers and sorting machinery.

Three of the MRFs are located in Summit County to the west of the District. Portage County, south of Geauga and west of Trumbull, operates a publicly owned MRF. There is also a Waste Management MRF in Cuyahoga County. During the last plan update (2013 Plan Update) there were no MRFs operating in the District. In 2016, Neo-Arc opened a dirty MRF in Trumbull County. However, Neo-Arc was unable to meet the recycling facility exemption status by diverting 60%. In January 2017, the Neo-Arc MRF converted to a clean MRF.

Material Recovery Facility	County	Type Ownership	Material Processed	Processing Capacity (tpy)	Distance from Warren (Mi)	Distance from Chardon (Mi)
Kimble Transfer and Recycling Station	Summit	Private	SS	25 tph	38	31
Republic Services - Akron Recycler	Summit	Private	SS, MS	11,000	45	50
Waste Management – Greenstar Akron MRF	Summit	Private	SS, MS, blue bag	180,000	43	52
Portage County SWMD Recycling Center	Portage	Public	MS, blue bag	11,000	39	44
Waste Management of Ohio	Cuyahoga	Private	SS, MS, blue bag	78,000	44	28
North East Ohio Automated Recycling Center (Neo-Arc)	Trumbull	Private	Dirty MRF in 2015	20+ tph	0	42

SS = single stream, MS = multi stream, tpy = tons per year, tph = tons per hour
Not all facilities listed accepted or processed District materials.

In 2015, District materials were processed at the Waste Management of Ohio and Rumpke Recycling – Dayton. (These two facilities reported receiving District materials on the 2015 Ohio EPA MRF report.)

In January 2017, the District signed a contract with Ohio Valley Waste Service to service (provide containers, transportation, and processing) drop-off recycling containers in Geauga and Trumbull counties. In 2017, Ohio Valley hauled the recyclables to North East Ohio Automated Recycling Center (Neo-Arc) located at 1400 Front St SW, Warren, Ohio.

APPENDIX I: CONCLUSION, PRIORITIES, AND PROGRAM DESCRIPTIONS

A. Actions and Priorities

1. Evaluate

The District’s 2013 Plan led a path towards increased waste reduction and recycling in the residential/commercial sector projecting a rate of 30 percent in year 2015. The District fell short in meeting the targeted waste reduction rate increase obtaining 26 percent in 2015. Two programs expected to increase recycling include drop-offs and curbside recycling. Curbside was expected to increase with the addition of services in the City of Warren. Even though the City of Warren did not implement curbside recycling, the recyclables collected throughout the District via curbside increased. The programs that did not show increases include drop-offs and reports from businesses, buybacks, brokers, haulers, etc. Overall, the 2013 Plan focused on maintaining programs and current level of services.

The evaluation in Appendix H demonstrates how the District has performed in offering and maintaining services as outlined in the 2013 Plan. Holistically, the District implements an integrated solid waste management system but could strengthen some programs, add new programs to address service gaps, and develop a vision/mission to ensure management is complimentary. In addition, as the District continues day to day operations it needs to interlace outreach in all its programs and especially to its stakeholders.

Waste management is a complex puzzle with many pieces. Table I-1 shows various aspects of waste management in the District and identifies ways for strengthening the integrated system.

Table I-1 Suggestions to Strengthen Integrated Waste Management

Integrated Waste Management	Suggestions to Strengthen Integrated Waste Management
Source Reduction/Waste Minimization	<ul style="list-style-type: none"> • Opportunity to promote food waste diversion at large-scale commercial operations and in resident homes.
Reuse	<ul style="list-style-type: none"> • Supporting local reuse system through partnerships could have large impacts to reduce reliance on landfills. • Support food recovery initiatives.
Recycling and Composting	<ul style="list-style-type: none"> • Residential: Support expansion of curbside services. Volume based billing methods are one of the most effective programs available to increase diversion. Increase communications to residents. Develop targeted education messages. Some drop-off contamination is from “wish cycling”. Materials can be recycled but not in the Materials Recovery Facility. • Commercial/Institutional: Increase relationships with this sector through outreach, explore barriers to recycling, consider incentives, and explore methods to obtain data. • Local government support and collaboration. Utilize District resources – one message. District branding and outreach strategies. Provide an electronic communication tool for communities. • Public engagement: Use effective campaign strategies to develop targeted campaigns. • Maintain sufficient staffing to support programs.
Special Wastes	<ul style="list-style-type: none"> • Continue operations evaluation at least annually. • Enhance and grow opportunities by adding best practices. • Look beyond District borders and consider hub and spoke options to manage special wastes.
Policies	<ul style="list-style-type: none"> • There is a need for special programs, especially enforcement. This program needs to balance with the District’s vision and mission.

2. Actions

In preparing the 2019 Plan the District first evaluated its current programs to identify gaps in the integrated system, program services, efficiencies, and performance. The gap analysis and comparisons of actual performance to potential or desired program performance and can be found in Appendix H. Potential program options to address the gaps in programs were placed into a matrix alongside the programs. New programs were added for newly identified gaps. See Appendix H and L for an in-depth evaluation. Potential and new program options are summarized in Table I-2. These suggestions could help strengthen programs, improve performance, and/or increase effectiveness.

Table I-2 Program and Strategy Summary

Analysis	Strengths	Areas for Improvement/Specific Actions
Residential - curbside	There are 3 PAYT type programs within the District that encourage recycling. All residents of Geauga County have opportunity to some type of curbside recycling, either subscription or non-subscription.	District grants to support jurisdictions in expanding curbside infrastructure, non-subscription and opt-out type access, and adoption of best practices, particularly in larger cities within the SWMD such as City of Warren. Contract with haulers to provide community specific data on tonnages and types of collection systems in use. Develop consistent education messaging around the benefits of recycling. Build stronger PAYT models and expand.
Residential – drop-off	At least one drop-off located in most communities within the District, and the locations of the drop-offs has remained constant.	Communicate with haulers to provide community specific data on tonnages. Relocate drop-offs located in areas where non-subscription curbside is available for residents. Create consistent and clear educational material for drop-offs. Enforcement of illegal dumping at drop-off sites.
Commercial/Institutional	The SWMD offers recycling containers to schools, government office, and churches. Majority of the schools in the District participate in an office paper-recycling program with Abitibi. The District offers source reduction information and waste audits to businesses that request it.	Strategize data collection by developing relationships with targeted smaller businesses through phone calls or site visits. Continue paper surveys for large businesses already in the habit of completing them. Improve commercial and institutional education outreach and conduct more waste audits. Develop dialogue with business owners to understand barriers to recycling and offer small grants to help overcome barriers. Add web resources for business recycling to website. Help implement food waste source reduction and recovery strategies.
Industrial	Industrial waste and reduction rate is strong.	Improve survey responses by developing relationships with top generators to maintain a contact within the business and encourage data reporting.
Waste Composition	Strong fiber (paper, cardboard, etc) infrastructure for processing.	Residential waste composition study shows fiber (paper, cardboard, etc.) is largest material in the waste stream. Plastics continuing to grow in waste stream and local viable markets for various plastics is a barrier. Food waste composting infrastructure is not within a reasonable distance, but reduction and reuse are strategy areas .
Economic Incentive	District grants support recycling of difficult waste through scrap tire grants. The District offers grants to help local industries that are interested in manufacturing a product from materials in the waste stream.	Continue to offer grants for scrap tire collection. Offer grants to the commercial and institutional sector for recycling infrastructure, such as for carts, educational tools, and waste audits.
Restricted and Difficult to Manage Waste	District operates a seasonal HHW recycling facility in Trumbull County and provides residents with an HHW annual amnesty collection day event.	Semi-permanent or permanent drop-off for Geauga residents. Discontinue Latex Paint collection and provide educational material on proper disposal of Latex Paint. Targeted education material to residents on dates and times of HHW collection. Conduct an annual HHW collection program evaluation and streamline collection based on evaluation.

Analysis	Strengths	Areas for Improvement/Specific Actions
Diversion	Residential/commercial waste reduction rate is 26 percent.	The District is not meeting Goal 1 of 90% recycling access for residents. The industrial sector did not meet Goal 2 of 66% diversion in the reference year, but is projected to meet Goal 2 by the first year of the planning period.
Special Programs	HHW collection is offered semi-permanent. The District participates in the Great American Cleanup. Health Department successful in abatement.	Explore best management options for HHW in Geauga County. Rebuild enforcement program with clear role and responsibilities.
Financial	Not applicable.	The District is projected to see a decline in revenues. This is exacerbated by the change in ASR regulations that is projected to result in a \$122,789 annual loss in revenue for the District.
Regional	Unexplored	Consider partnering with other SWMDs for difficult to manage waste streams.
Data Collection	Capturing larger generators data from industrial sector.	Evaluate a lower cost method and more strategic approach to capturing data such as phone calls and online surveys to increase response rates. Increase outreach to commercial sector.
Education/Outreach	The District has a full-time Public Relations Community Outreach Coordinator.	Advertise recycling options using combination of website, mailers, and social media. Add Waste Wizard widget to website to allow users to search for material outlets. Track visitors to website. Promote businesses that are recycling on the website. Develop an outreach and marketing plan with consistent message following best practices and targeted education messages. Migrate education/outreach to community based social marketing.
Recyclable Material Processing Capacity	Ample capacity provided by private sector MRFs.	Not a priority.

Actions/suggestions and areas of improvement identified in Appendix H, Table I-1 and Table I-2 does not commit the District to undertake every suggestion. The exercise of performing the gap analysis helps the planning journey by providing a summary list of proposed changes, improvements, etc. To assess programs the District could implement, the Policy Committee conducted a 2-hour workshop to discuss program options and rank based on priority implementation. Ranking accounted for impacts on tons diverted, relative costs to the District, direct and immediate needs for their impact on a full range of generators and materials.

3. Priorities

Short Term (now to 2 years)

Curbside

- Work with political jurisdictions to increase residential recycling rates.
- Encourage political jurisdictions to adopt best practices of cart-based systems in curbside programs.
- Offer economic incentives to implement NS such as grants.

Commercial/Institutional

- Strategic data collection: Larger businesses do paper survey because they are already in the habit, tackle smaller businesses in different manner such as phone calls, etc. to get better response, promote go to site and fill out survey, need to develop partnership to business, have to find out who the contact is so District can develop a relationship.
- Focus on commercial businesses, develop list for type size, and outreach, work with businesses to find out barriers to recycling and how recycling can be implemented
- Add business content page to website for a web resource.

Special Waste

- Explore best management options for HHW and special wastes for Geauga residents.
- Implement best management options for HHW and special waste streams for Geauga residents.

Education

- Develop an outreach and marketing plan with consistent messaging following best practices and targeted education messages.
 - Consistent messaging for materials collected in MRF waste shed
 - Campaign to educate residents to curbside opportunities available
 - Campaign to increase subscription recycling
 - Campaign to address drop-off contamination
- Advertise District programs using various media outlets (social media, utility bill mailers, community newspaper, signs, flyers, etc).
- Become information hub for solid waste and how to properly manage it.
- Add Waste Wizard widget or comprehensive information list to website to allow users to search for all available material outlets (recycling and reuse – not only District programs).
- Track website visitor and page flows to optimize web design.
- Use Social Media: Twitter, Facebook (two-way communication tools)
- Encourage political jurisdictions to communicate recycling opportunities on their webpages and link to District webpage and adopt consistent messaging.
- In person meetings and phone conversations to implement recycling programs.

Drop-off

- Pilot monitoring equipment (cameras) at problem contamination sites. Possible expansion to all sites.
- Work with hauler.
- Ensure signage is visible, clear and concise.
- Proper messaging about what to put in the bin.

Mid Term (2 to 4 years)

Curbside

- Continue education and outreach.
- Monitor number and types of curbside programs.

Commercial/Institutional

- Target landlords and institutional administrators to provide technical assistance including: contract assistance, recycling options, etc.

Special Programs

- Rebuild enforcement program.
- Research and develop literature on food reduction tips.
- Add food waste management strategies on webpage (residential and commercial sectors).
- Develop readily available education pieces for print handouts.

Long Term (5 years or more)

Special Programs

- Target institutions to discuss food waste management issues.

- Engage regional solid waste districts to discuss food waste management opportunities and developments.

B. Programs

Residential Recycling Programs

ID	Name	Start Date	End Date	Goal(s)
NSC 1 - 7	Non-Subscription Curbside Recycling	Ongoing	Ongoing	1 and 2

In 2017, seven political jurisdictions had a non-subscription curbside recycling program. These political jurisdictions include:

- | | |
|---|---|
| <p><u>Geauga County</u></p> <ul style="list-style-type: none"> • NSC 1 – Middlefield Village | <p><u>Trumbull County</u></p> <ul style="list-style-type: none"> • NSC 2 – Cortland City • NSC 3 – Hubbard City • NSC 4 – Lordstown Village • NSC 5 – Newton Falls Village • NSC 6 – Liberty Township • NSC 7 – Wethersfield Township |
|---|---|

Curbside programs are operated by either political jurisdictions or private haulers (see Appendix B). The political jurisdiction or resident pays for the program.

In 2017, all curbside materials were collected single stream (commingled) with either a bin or cart-based system. The standard recyclables collected depends on the hauler. Rumpke collects: paper, cardboard, plastic bottles and jugs, cartons, metal-cans, and glass. Republic collects: paper, cardboard, plastics #1 through #7, metal-cans, and glass. The District expects these materials to be collected throughout the remainder of the planning period, yet markets guide the materials collected.

ID	Name	Start Date	End Date	Goal(s)
SC 1 - 22	Subscription Curbside Recycling	Ongoing	Ongoing	1 and 2

In 2017, twenty-two political jurisdictions offer a subscription curbside recycling program. Curbside services are provided by a private hauler. The resident must opt-in and pay for the program.

- | | |
|--|---|
| <p><u>Geauga County</u></p> <ul style="list-style-type: none"> • SC1–Aquilla Village • SC2–Burton Village • SC3–Chardon City • SC4–South Russell Village • SC5–Auburn Township • SC6–Bainbridge Township • SC7–Burton Township • SC8–Chardon Township • SC9–Chester Township • SC10–Claridon Township • SC11–Hambden Township • SC12–Huntsburg Township • SC13–Middlefield Township | <p><u>Trumbull County</u></p> <ul style="list-style-type: none"> • SC21–Howland Township • SC22–Brookfield Township |
|--|---|

- SC14–Montville Township
- SC15–Munson Township
- SC16–Newbury Township
- SC17–Parkman Township
- SC18–Russell Township
- SC19–Thompson Township
- SC20–Troy Township

In 2017, all curbside materials were collected single stream (commingled) with either a bin or cart-based system (whichever the resident chooses). The standard recyclables collected depends on the hauler. Rumpke collects: paper, cardboard, plastic bottles and jugs, metal, and glass. Republic collects: paper, cardboard, plastics #1 through #7, metal-cans, and glass. The District expects these materials to be collected throughout the remainder of the planning period, yet markets guide the materials collected.

ID	Name	Start Date	End Date	Goal(s)
FTU 1 - 24	Full-Time Urban Drop-Off	Ongoing	Ongoing	1 and 2

The District has full-time urban drop-offs available 24/7. Containers are 8-cubic yards. The number of containers and service frequency depends on the location. In 2015, 5,271 tons of material was collected from all drop-offs, including the full-time rural drop-offs. The District directly contracts with a private hauler to provide and service the drop-off locations and pays for this service.

<u>Geauga County</u>	<u>Trumbull County</u>
• FTU1 - Bainbridge Township 17800 Haskins Road, Chagrin Falls, Ohio 44023	• FTU7 - Bazetta Township 3372 State Route 5, Cortland, Ohio 44410
• FTU2 - Chester Township 12535 Chillicothe Road, Chesterland, Ohio 44023	• FTU8 - Brookfield Township 774 State Route 7 NE, Brookfield, Ohio 44403
• FTU 3 - Munson Township 12200 Auburn Road, Chardon, Ohio 44065	• FTU9 - Champion 5435 Kuszamaul St, Warren, Ohio 44483 ****Closing May 2018****
• FTU4 - Newbury Township 11014 Kinsman Road, Newbury, Ohio 44065	• FTU10 - Girard City 100 Main Street, Girard, Ohio 44420
• FTU5 - Notre Dame – Cathedral Latin School 13000 Auburn Road, Chardon, Ohio 44024	• FTU11 - Howland Township 3403 Ridge Rd SE, Warren, Ohio 44484
• FTU6 - Russell Township 14921 Chillicothe Road, Novelty, Ohio 44072	• FTU12 - Howland Township Fire Station 169 Niles Courtland Rd, Warren, Ohio 44484
	• FTU13 - Howland Trumbull Recycling Center 3590 N River Rd NE, Warren, Ohio 44484 Site is not serviced by SWMD contract
	• FTU14 - Hubbard City 33 West Liberty St, Hubbard, Ohio 44425
	• FTU15 - Hubbard Township 2600 Elmwood Dr ext, Hubbard, Ohio 44427
	• FTU16 - Kinsman Township 6380 State Route 87, Kinsman, Ohio 44428
	• FTU17 - Niles City 15 East State St, Niles, Ohio 44446
	• FTU18 - Warren Township Sports Complex 4651 West Market St, Leavittsburg, Ohio 44430
	• FTU19 - Trumbull Career and Technical Center 528 Educational Hwy, Warren, Ohio 44483
	• FTU20 – Warren Christ Episcopal Church 2627 Atlantic St NE, Warren, Ohio 44483
	• FTU21 - Summit Academy

	1461 Moncrest Dr NW, Warren, Ohio 44483
	<ul style="list-style-type: none"> • FTU22 – Admin Building 347 N Park Ave, Warren, Ohio 44481
	<ul style="list-style-type: none"> • FTU23 – Chardon City 470 Center St, Chardon, Ohio 44024
	<ul style="list-style-type: none"> • FTU24 – SWMD Admin building 5138 Enterprise, Warren, Ohio 44481

Source: These locations are as of February 2018. Locations are subject to change and did change from 2015 as was reported in Appendix B, Table B-2a.

The standard recyclables collected in 2015 include: paper, cardboard, plastic #1 through #7, metal-cans, and glass. The District expects these materials to be collected throughout the remainder of the planning period, yet markets guide the materials collected. The District also provided drop-offs to four site locations available for private use only, i.e. not advertised as publicly-available locations.

Drop-off containers will continue to be available through the planning period to serve those population areas without curbside recycling. Drop-off site locations are subject to change at any time for unforeseen reasons or to maintain performance and reasonable costs. Ongoing changes to the global recycling market are impacting recycling processing by placing strict restrictions on recyclables processed for end use. These impacts affect how the material recovery facilities operate. Changes to this part of the waste management system are affecting how the District does business. Rising costs and the request for cleaner recyclable materials are real struggles. It may be necessary to reduce the number of urban and rural sites in both counties creating smaller regional systems for drop-offs, if costs continue to rise. Planning for program cost increases, Figure I-1 depicts a conceptual regional plan for the drop-off sites:



Note: 14 Geauga County sites decrease to 7.
32 Trumbull County sites decrease to 11

The budget presented in Appendix O can support program costs of \$600,000 annually if money allocated to Education and Outreach and/or Recycling Incentive Grants are re-directed towards the drop-off program.

As this plan is implemented, political jurisdictions with drop-offs may begin non-subscription curbside recycling services. The District may discontinue sites in these jurisdictions or may re-locate drop-off containers to schools to begin recycling programs. If containers are moved to schools the District will finance/subsidize the program for at least 1 year of service.

All options are open for operations and implementation of this program. This may include District-serviced and provided programming. A full cost accounting analysis will be conducted of a District-serviced program if drop-off bid costs exceed expenses planned (as presented in Appendix O) and/or the bid costs will impact the District's ability to provide other programming planned.

ID	Name	Start Date	End Date	Goal(s)
FTR 1 - 23	Full-Time Rural Drop-Off	Ongoing	Ongoing	1 and 2

The District has 24 full-time rural drop-offs open 12 hours every day. The District directly contracts with a private hauler to provide and service the drop-off locations and pays for this service.

Geauga County	Trumbull County
<ul style="list-style-type: none"> FTR1 - Burton Township 14588 Park Street, Burton, Ohio 44021 	<ul style="list-style-type: none"> FTR9 - Bloomfield Township 2063 Kinsman Road, North Bloomfield, Ohio 44450
<ul style="list-style-type: none"> FTR2 - Chardon Township 9949 Mentor Road, Chardon, Ohio 44024 	<ul style="list-style-type: none"> FTR10 - Braceville Township 584 Braceville Robinson Rd, Netwon Falls, Ohio 44444
<ul style="list-style-type: none"> FTR3 - Claridon Township 14000 Mayfield Rd, East Claridon, Ohio 44033 	<ul style="list-style-type: none"> FTR11 - Bristol Township 254 Park Drive, Bristonville, Ohio 44402
<ul style="list-style-type: none"> FTR4 - Huntsburg Township 17085 Mayfield Rd, Huntsburg, Ohio 44046 	<ul style="list-style-type: none"> FTR12 - Farmington Township State Route 534, W. Farmington, Ohio 44491
<ul style="list-style-type: none"> FTR5 - Montville Township 9755 Madison Rd, Montville, Ohio 44064 	<ul style="list-style-type: none"> FTR13- Fowler Township 3364 Youngstown Kingsville, Fowler, Ohio 44418
<ul style="list-style-type: none"> FTR6 - Parkman Township 16295 Main Market Rd, Parkman, Ohio 44080 	<ul style="list-style-type: none"> FTR14 - Gustavus Township 8750 Youngstown Kingsville, Farmdale, Ohio 44417
<ul style="list-style-type: none"> FTR7 - Thompson Township 6565 Madison Rd, Thompson, Ohio 44086 	<ul style="list-style-type: none"> FTR15 - Hartford Township 6901 State Route 305, Hartford, Ohio 44404
<ul style="list-style-type: none"> FTR8 - Troy Township 13950 Main Market Rd, Burton, Ohio 44021 	<ul style="list-style-type: none"> FTR16 - Johnston Township 4424 Greenville, Farmdale, Ohio 44417
	<ul style="list-style-type: none"> FTR17 - Lordstown Village 1491 Salt Springs Rd, Warren, Ohio 44481
	<ul style="list-style-type: none"> FTR18 - McDonald Village 200 Second St, McDonald, Ohio 44437
	<ul style="list-style-type: none"> FTR19 - Mecca Township Park 5333 St Rt 46, Cortland, Ohio 44483
	<ul style="list-style-type: none"> FTR20 - Newton Falls Township 4410 Newton Bailey Rd, Newton Falls, Ohio 44444
	<ul style="list-style-type: none"> FTR21 - Southington Township 3419 State Route 534, Southington, Ohio 44470
	<ul style="list-style-type: none"> FTR22 - Vernon Township 5086 State Route 7, Kinsman, Ohio 44428
	<ul style="list-style-type: none"> FTR23 - Vienna Township 833 Youngstown Kingsville, Vienna, Ohio 44473

Source: These locations are as of February 2018. Locations are subject to change and did change from 2015 as was reported in Appendix B, Table B-2c.

The standard recyclables collected in 2015 were: paper, cardboard, plastic #1 through #7, cartons, metal-cans, and glass. The SWMD expects these materials to be collected throughout the remainder of the planning period, yet markets guide the materials collected.

This program will continue through the planning period. Urban and rural drop-off site locations are subject to change at any time for unforeseen reasons or to maintain performance. See further explanation under Full Time Urban drop-off program. All options are open for operations and implementation of this program. It may include District-serviced and provided programming. A full cost accounting analysis will be conducted of a District-serviced program if drop-off bid costs exceed expenses planned (as presented in Appendix O) and/or the bid costs will impact the District's ability to provide other programming planned.

Name	Start Date	End Date	Goal(s)
Other Drop-offs (previously called Commercial Drop-off Recycling & Source Reduction)	Ongoing	Ongoing	3 and 4

Some private operations of drop-off for specific items are available throughout the District. These include special drop boxes for: paper, clothing, plastic film bags, batteries, scrap metal, etc. These drop-offs operate independently of District programs but are a valuable resource to help divert materials from the landfill. The District will continue to survey these businesses providing the service for data.

Name	Start Date	End Date	Goal(s)
Curbside Feasibility Study	2014	2019	3 and 4

The 2013 Plan planned for the District to conduct a feasibility study of subsidizing a curbside recycling program within one of the larger incorporated areas. Each year the District reaches out via phone and in-person meetings (with City Councilmen and Service Director staff) to the city of Warren to discuss curbside recycling and assistance the District could provide. To date a program has not been implemented. Program will not continue.

Name	Start Date	End Date	Goal(s)
Drop-off Litter	2019	2033	3 and 4

In effort to reduce and deter contamination at drop-offs the SWMD is planning support which includes surveillance cameras (at some site locations), fencing, electric, additional signs, and possible site monitor stipends (at some locations). In 2019, two locations will be identified to improve the site aesthetics, add surveillance cameras, add deterrents such as fencing and signage, and possible agreements with local residents to monitor the site and help keep the site clean. In 2020, two more locations will be targeted. Contamination measurements before and after improvements will be taken, compared and monitored for 1 year. Data will be used to determine if such changes should be planned for other site locations. The District expects to seek Ohio EPA community development grants for purchase of equipment, materials and supplies for on-going litter collection efforts and surveillance cameras for litter law enforcement efforts.

Commercial/Institutional Sector Reduction and Recycling Programs

Name	Start Date	End Date	Goal(s)
Commercial Recycling & Source Reduction	2019	Ongoing	3 and 4

The SWMD offers recycling box containers to schools, government offices or church. The cardboard box style containers are available free of charge. To receive boxes, entities are asked to complete an application which is available online. This program began in 2010. In 2014 the SWMD provided 388 boxes to 26 different entities, 109

boxes to 14 entities in 2015, and 148 boxes to 12 entities in 2016. In 2017, the SWMD assisted in purchasing and providing recycling containers at Lakeview High School to begin a recycling program.

There are 24 schools in the District participating in an office paper-recycling program. Abitibi Consolidated provided the service till 2014. In 2014 and prior, Abitibi Consolidated, Inc. provided and serviced paper only drop-off containers in Geauga County. The program was originally operated as a fundraiser for participating entities. Abitibi provided market share revenues based on volume of material collected. In 2015, Abitibi abruptly ceased operations, fortunately Royal Oak Recycling took over servicing the SWMD’s site locations. In 2016 there were 48 locations including schools, government locations, and non-profits.

Four schools in Trumbull County have cardboard recycling. The District helped facilitate contracts between the schools and Associated Paper Stock.

The District promotes and encourages recycling in the commercial sector. Source reduction information is provided and waste audits offered if requested.

Strengths:

- SWMD provides waste audits to businesses and institutions free of charge.
- Businesses/institutions gain greater waste management understanding.
- Businesses/institutions often reduce their trash disposal cost.

Weaknesses:

- District staff limits the scale of outreach to institutions/businesses and schools.
- Businesses/institutions are not aware of services.
- Low number of businesses/institutions use the service.
- Low response on commercial recycling surveys.
- District has no set targets resulting in the program falling in performance.

The strategy has not produced the desired results thus the program is being re-developed in this Plan. This program will focus on building relationships with commercial/institutional sector. Focus will be placed on the services available to this sector which includes: contract and technical assistance (educations, in-person meetings, presentations, etc.), waste audits (see separate program), and third-party resources. Technical assistance will be provided to businesses, industries, and institutions. The District will focus its efforts on providing technical assistance to set up recycling services in commercial and institutional businesses.

Generating interest and engagement around what the District has to offer is an asset and should organically build links. The District is hopeful building relationships with the commercial/institutional sector will improve return on annual surveys. Institutional and Commercial Business Outreach is described later in this Appendix. Implementation of new service will be described in this program. Outreach to this sector is described with the education and outreach programs.

Name	Start Date	End Date	Goal(s)
Waste Audits	Ongoing	Ongoing	3 and 4

Technical assistance is provided to businesses, industries, institutions, and non-profits. Technical assistance includes waste assessments, education, in-person meetings, presentations, etc. Upon request, District staff evaluates current waste management strategies and makes recommendations for improvements. Data collection surveys distributed annually solicits response for entities interested in waste assessments. About 1 waste assessments/audit a year is performed. In 2015 and 2016, waste audits were not conducted.

Strengths:

- District provides technical assistance free of charge.
- Businesses/institutions gain greater waste management understanding.
- Businesses/institutions often reduce their trash disposal cost.

- District adopts promotion of recycling and waste reduction materials to the institution/business environment and to the particular audience being served.

Weaknesses:

- Businesses/institutions and industries are not always responsive.
- Businesses/institutions and industries may not be aware of service.
- Waste audits are requested.

Technical assistance to area businesses, institutions, and industries includes performing waste audits and assistance in establishing effective recycling programs. This program complements Commercial Recycling & Source Reduction.

Name	Start Date	End Date	Goal(s)
Event Recycling	Ongoing	Ongoing	2

The District loans collection containers for special events for recycling beverage bottles and cans. The ClearStream containers are available for free to borrow. Interested parties can borrow up to two times a week. The District received 5 requests between 2014 and 2015 to lend a total of 24 containers.

Strengths:

- Recycling opportunity for special events where recyclable materials are often substantial.
- Outreach with new audiences.
- All organizations (government, non-profit, schools) have the opportunity to take advantage of this program.

Weaknesses:

- Event organizers must contact the District to request containers.
- The District cannot oversee results or supervise recycling activity.
- High contamination of recycling with trash material.

In this planning period, the District will continue to loan containers to organizations. The District is targeting to work with and implement 1 away from home diversion opportunity a year. The District will technically assist in providing best management recycling plan, suitable set up, and refer private haulers who have the capacity to set up recycling collection stations and remove recyclables for short-term events and programs. If funding is available, the District may potentially assist recycling services in terms of grant funding for service cost and recycling signage. Each year the Policy Committee will make the determination to allocate money towards event recycling grant funds, see Appendix O. Outreach will be to community event organizers and will include in-person meetings.

Industrial Sector Reduction and Recycling Programs

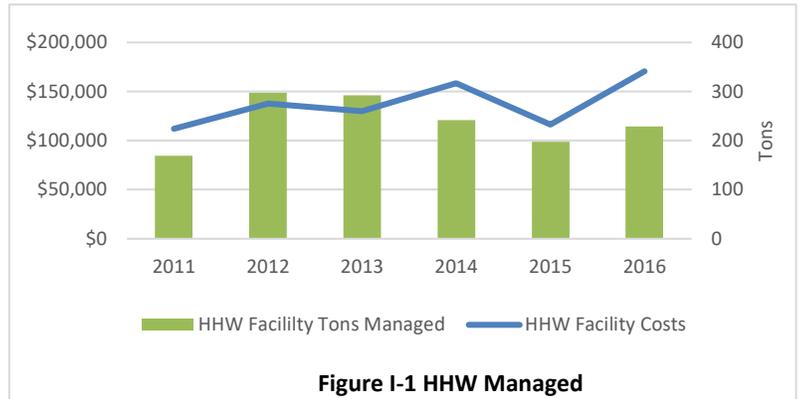
Name	Start Date	End Date	Goal(s)
Waste Audits	Ongoing	Ongoing	3 and 4

Same program as included under heading “Commercial/Institutional Sector Reduction and Recycling Programs”.

Restricted/Difficult to Manage Waste Programs

Name	Start Date	End Date	Goal(s)
HHW Trumbull Recycling Facility	Ongoing	Ongoing	1, 2 and 5

The District operates a seasonal HHW waste recycling drop-off facility to properly dispose of HHW from May through September. The facility is located in Warren, Ohio in the southern portion of Trumbull County. The facility has serviced on average over 3,712 vehicles per season and collected 126 tons of HHW material annually. In 2015 the District collected 198 tons of HHW at this facility. The total cost of this facility averages \$131,517 per year or approximately \$25.43 per vehicle. The current facility in Trumbull County services all District residents, but is at a distance to many residences in Geauga County. For instance, 75 percent of the area of Geauga County is 25 miles or more from the HHW facility. This travel distance may explain the low participation rate in the usage of the HHW facility.



The recycling drop-off area accepted electronics, lead-acid batteries, florescent bulbs, oil, and other HHW. An acceptable material list is maintained on the District’s website. Appliances are accepted during one-day collection events held at the HHW Recycling Facility. In 2017, the District expanded this service accepting appliances whenever the HHW Recycling Facility was open.

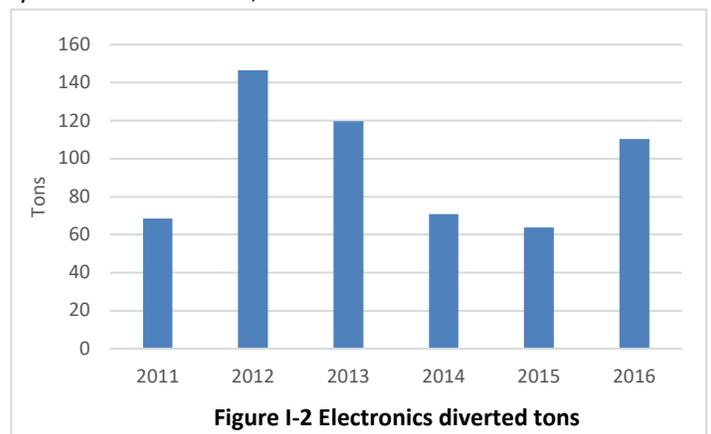
Strengths:

- Long-term availability provides more convenience to residents.
- SWMD data collection.
- Diverts harmful materials from the environment.
- Residents are not charged user fees for the service.
- SWMD competitively bids for contractor services.
- Alternative product information is available on website.
- Additional advertisements in October 2017 increased awareness showing increased tonnages.
- Separate building to collect and manage HHW.
- Permanent opportunity for residents.
- Several months per year availability is convenient.

Weaknesses:

- Program costs to properly manage hard to recycle materials are typically high.
- Volume of latex paint collected is a contributing factor to high program costs.
- Geauga County residents have a longer commute to the facility.
- Alternative product information on website may be difficult to find.

Electronics: Residents can take electronics to the HHW facility in Warren. In 2015, 64 tons of electronics were collected at the facility. In 2016, that amount nearly doubled to 110 tons. The District also maintains a list of retailer take-back, secondhand retailers, and scrap yard outlets where residents may take electronics. Residents are assessed a user fee for the District to manage TVs. In 2017, the District waived the user fee.



Strengths:

- Educates residents to recycling or reuse outlets in the District.
- Diverts harmful materials from the environment.
- Long-term availability provides more convenience to residents.

Weaknesses:

- User fees charged on televisions.
- Not all outlets accept all types of e-waste.
- Data can be difficult to obtain.
- Location of e-waste outlets, such as third-party recyclers or take-back retailers are not identified on website.

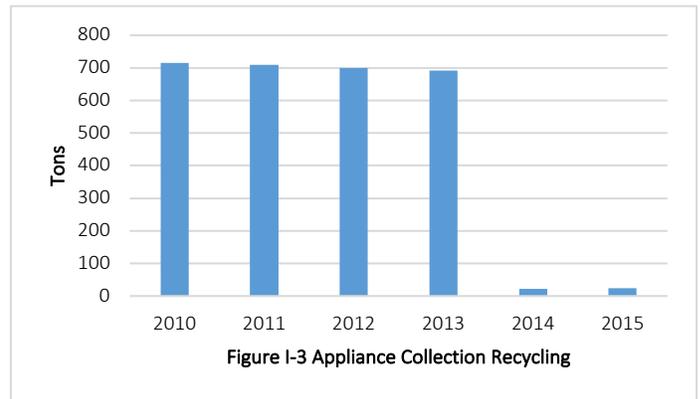
Lead-Acid Batteries: The District accepts lead-acid batteries at the HHW facility. In 2015, three tons of lead-acid batteries were collected at the HHW facility, and four tons were collected in 2016.

Strengths:

- Ohio law.
- Retailer take-back.
- Well-developed infrastructure.
- Residents have the opportunity to use the long-term HHW Recycling Facility to properly manage lead-acid batteries.

Weaknesses:

- Lack of retailer take-back data.
- District data collection and tracking from retailers.
- District website is not a resource for lead-acid battery management information.



Appliances: Residents have an opportunity to recycle appliances through retailer take-back, scrap processors, or one-day collection events (either at the HHW Recycling Facility or a location in Geauga County). In 2015, 24 tons of appliances were recycled. In 2014, 21 tons of appliance recycling was reported. This was a significant decline from 2013 to 2014 which recorded near to 700 tons. The decline is a result of changes in reporting from a broker, recording appliances as ferrous metals instead of appliances. The tonnages reported in 2014 and 2015 only include appliances collected at the HHW Recycling Facility and one-day collection events. In 2017, the District accepted appliances whenever the HHW Recycling Facility was open.

Strengths:

- Long-term availability provides more convenience to residents.
- SWMD receives some revenues from sale of scrap.
- SWMD data collection.
- Residents are not charged user fees for the service.
- Proper management of Freon-bearing appliances.
- List of scrap dealers on website.
- Retailer take-back.

Weaknesses:

- Cost.
- Reliance on SWMD to handle appliances rather than local scrap outlets.
- Lack of retailer take-back data.
- District data collection and tracking from retailers.

The District will continue this program through the planning period. Operations will be evaluated annually to streamline operations for best management utilizing District staff. The District will be exploring ways to reduce program costs and direct non-toxic materials to other outlets. In 2017, the District explored extending services for a longer timeframe and will use the collected data to evaluate the value of extending services.

In 2017, residents were given the opportunity to drop-off appliances anytime the HHW Recycling Facility was open. Providing costs can be maintained, this opportunity will continue through the planning period.

Outreach strategies the District will implement:

Outreach Strategy	Task	Target Date
Website	Add alternative less toxic material education on webpage.	Spring 2018
In-person meetings	Encourage political jurisdictions to communicate recycling opportunities on their webpages and link to District webpage and adopt consistent messaging.	2018
Survey	Conduct a service offerings survey to users/residents using the service.	2018

Name	Start Date	End Date	Goal(s)
HHW Geauga Recycling Facility	2018	Ongoing	2 and 5

The District is committed to operating a HHW Recycling Facility in Geauga County. A search for a suitable property will begin 2018 with an expected open date in 2019. An ideal location will be in the heavier population centers (west and northwest portions of the county). These population areas will provide greater convenience and not be too close to the facility in Trumbull County. However, the location will depend on properties available at the time. Search efforts will include a desk top review of potential sites, coordination with the Geauga County Economic Development Office and local realtors. It is assumed 2 acres are needed. Depending on available property the District may need to build or remodel an existing building. A budget of \$400,000 is estimated to be allocated in 2018.

Once operational the collection facility will be available to residents at least 2 days a week for several months a year. The recycling drop-off area will accept electronics, appliances, lead-acid batteries, florescent bulbs, oil, and other HHW. An acceptable material list will be maintained on the District's website. Outreach via newspapers, District website, utility bill mailers will be published to inform residents of the convenient Geauga County opportunity. HHW operations will be contracted for transportation and processing. To minimize costs SWMD staff will be used when feasible.

Name	Start Date	End Date	Goal(s)
Amnesty day HHW collection event	Ongoing	2015	2 and 5

In Geauga County, the District sponsors satellite single day HHW collection events in various political jurisdictions one or two times a year. From 2010 through 2014, the one-day collection event averaged 728 vehicles per event, and the average cost per vehicle is \$56.93 (HHW contractor cost only). The District contracts with a private service provider to operate and handle the materials at these satellite collection events. In 2015, a total of 21 tons were collected.

Strengths:

- Convenience to Geauga County residents.
- District data collection.
- Residents are not charged user fees for the service.

Weaknesses:

- Limited availability of service offered once or twice a year.
- Cost for one day collection events are high.
- Limited service options at one-day events.

In 2018, the District will conduct a study to determine best management opportunities for HHW in Geauga County.

Name	Start Date	End Date	Goal(s)
Geauga HHW Options Study	2018	2018	2 and 5

In 2018, a study was conducted to explore options available for managing HHW, E-waste and appliances to determine the best management service to Geauga County while ensuring convenience and sustainability. Residents in north end of Geauga County drive up to 76 miles round trip to the HHW recycling facility, resulting in a significant time and financial burden on these residents. The alternative management option for Geauga County are one-day HHW collection events, which do not accept E-waste. The lack of a full-scale facility, availability, and convenience hinders the diversion of these materials in Geauga County.

The study identified management options and weighed them against each other to determine the best management service for Geauga County. A multitude of options are being used across the nation to manage HHW and other hard to recycle materials. Typical HHW and other hard to recycle material management options seen nationally include:

- Alternatives and Proper In-Home Management
- Single Day Events
- Curbside Pickup
- Mobile Collections
- Fixed Site Multi-Day Collections
- Permanent Facilities
- Regional Solutions

It is not uncommon for a variation or hybrid of the options to be a best management option solution and/or a combination of options might point to the best management solution. The study included a high level overview of barriers and benefits of each management option, an inclusive criteria option matrix, high-level analysis of costs, and scoring of each option. The various management system options, variations/hybrids, and different approaches (stand alone or in combination) were explored to find the optimal option for Geauga County.

This study was completed February 2018. The most optimal management option meeting the criteria defined by the stakeholders is locating a permanent facility in Geauga County.

Name	Start Date	End Date	Goal(s)
Document Destruction Day	Ongoing	Ongoing	2

The District began offering one day document destruction events in each County in 2013. Shred events are contracted to a third-party but managed by the District. In 2015, 6 tons of documents were collected at this event from 99 vehicles in Trumbull County and 121 vehicles in Geauga County. In 2016, a total of 6.7 tons of paper were shredded from 106 vehicles in Trumbull County and 145 vehicles in Geauga County.

Strengths:

- Convenience for residents.
- District data collection.
- Residents are not charged user fees for the service.
- Third party operations.

Weaknesses:

- Limited availability of service offered once or twice a year.
- Limited service options at one-day events.

The District will continue this program through the planning period.

Name	Start Date	End Date	Goal(s)
Monitoring/Tracking Yard Waste	Ongoing	Ongoing	2 and 5

The District monitored yard waste being delivered to compost facilities, open dumped, or landfilled by using Ohio EPA compost facility reports. Ohio EPA requires these facilities to submit annual reports. Monitoring could include surveying compost facilities, waste haulers, landfills, residents and landscapers. This strategy can be used to help the District locate illegally disposed of or landfilled yard waste by waste haulers and generators.

Name	Start Date	End Date	Goal(s)
YW Management Technical Assistance	2019	Ongoing	2 and 5

Yard waste management is decentralized. The District does not fund or operate yard waste management collection or facilities. Haulers in the District do not offer curbside separate yard waste collection hauling. The District will provide technical assistance to communities/political jurisdictions that are interested in the development or expansion of current yard waste management programs. Technical assistance includes identifying existing management resources that are available throughout the District and also in the development of programs that will address the needs of a community in managing the yard waste through more efficient and cost saving programs. In 2015, no technical assistance was provided and the District provided no outreach for this service.

To encourage backyard composting, the District offered a one-day sale on rain barrels and compost bins in the summer of 2015.

Strengths:

- Technical assistance is available at no cost to the recipient.

Weaknesses:

- Lack of content on website regarding compost facilities and technical assistance available.
- Lack of outreach to political jurisdictions.

For this planning period, the District is adding a focus towards residents and content available to educate about backyard composting. The District may connect with Geauga and Trumbull County Soil and Water Conservation Departments to explore partnership opportunities because of the potential for shared messaging. The District will organize an in-person share session for all parties to share their approach to outreach for backyard composting and explore if partnerships would be feasible, and what that may look like. Specific opportunities to benefit District residents and outreach education include: adult workshops, compost bin sales, education brochures, and website content.

Outreach strategies the District will implement:

Outreach Strategy	Task	Target Date
Website	Add compost facility options on webpage.	Spring 2018
In-person meetings	Call and meet with Soil and Water Conservation Departments.	Summer 2018
Marketing collateral (print and digital)	Develop backyard composting content. Add content to webpage and technical services available.	2018 and 2019

Name	Start Date	End Date	Goal(s)
Organics Management (previously known as Scrap Food Waste Composting Program)	Ongoing	Ongoing	2 and 5

Diverting food waste continues to be a challenge in the District. With limited infrastructure (hauling and management facilities) in Northeast Ohio the 2009 Plan developed a diversion strategy which included holding an information seminar on digesting food waste in schools followed with grants to incentivize schools to implement these strategies. Following the seminar, no grants were awarded because of lack of interest from schools. The District is unsure why the seminar and grant program did not provide incentive for schools to incorporate digesting into their management models. Perceived barriers include: uncertainty, inadequate staffing to implement alternative handling procedures, landfill disposal costs are more affordable when compared to organic managements costs, or possibly changing the way they do business.

The District was contacted by one composting operation for assistance in 2016. A grant was awarded to purchase an in-vessel commercial composting system (in-situ digester). The District will continue to offer grants to support on-site management of organics.

Strengths:

- Technical assistance is available at no cost to the recipient.
- Grants provide funding to recipient.

Weaknesses:

- Lack of grant awareness.
- Limited outreach.

Costs to develop large scale downstream infrastructure to process food waste composting in-district is a responsibility the District is not able to address at this time. The District supports decentralized upstream and downstream systems. The District will place emphasis on upstream reduction of food waste through targeted education and outreach. Downstream solutions will focus on rescue and on-site decentralized diversion education and outreach. Funding for this program can be used to provide one-time grants to commercial businesses, institutions, retail and restaurants to implement an on-site diversion strategy (upstream or downstream).

Outreach strategies the District will implement:

Outreach Strategy	Task	Target Date
Food reduction talking points	Research and develop literature on food reduction tips	2021
Marketing collateral (print)	Develop readily available education pieces for handouts.	2021
Webpage Content	Include links to Food Waste Hierarchy and US EPA's Food Recovery Challenge. Include links to backyard composting food waste. Include commercial institutional best management food waste reduction practices.	2021
In-person meetings	Target 2 institutions (schools, hotels, hospitals, etc.) a year for in-person discussion. Discuss food waste, grant program, benefits of reduction, barriers for recovery, and barriers for on-site treatment systems. Provide education about on-site tracking platforms available to measure and reduce waste in institutions. Spotlight food donation and food rescue centers/missions on webpage. Hold quarterly meetings with food rescue organizations to discuss logistical challenges and food safety regulations. Host virtual meetings annually with neighboring Districts to discuss regional opportunities and developments..	2023
Extended outreach	Develop contact list from in-person institution meetings. Deliver grant information on a yearly basis. Compile a list of barriers for organics management in the District.	2023 and annually

Grant Programs

Name	Start Date	End Date	Goal(s)
Christmas Tree Recycling Grants	Ongoing	2016	2 and 5

Grants were offered to all political jurisdictions to manage Christmas Tree Recycling. The District provided a total of \$9,700 in grant funding for Christmas tree drop off recycling to 6 communities in Geauga and 5 in Trumbull Counties. This program was suspended starting in year 2016 and will not continue in the planning period.

Name	Start Date	End Date	Goal(s)
Scrap Tire Grants	Ongoing	Ongoing	1, 2 and 5

The District offers yearly grants to political jurisdictions to assist in disposal of scrap tires. Each year the tire grant applications are mailed to the 56 political subdivisions in March. Grant funds may be used for one or more or a combination of programs; collection drives in conjunction with spring cleanups; curbside collection drives, and/or roadside cleanup of illegally dumped tires. Grant amounts are based on population percentage. No matching financial commitment is required. The dates of community scrap tire collection events are published on the District’s website. The chart below depicts the tons recycled and cost per ton of the scrap tires collected through the collection program. The figure demonstrates the cost per ton to handle the tires has decreased from over \$400 per ton in 2011 to under \$300 per ton in 2015.

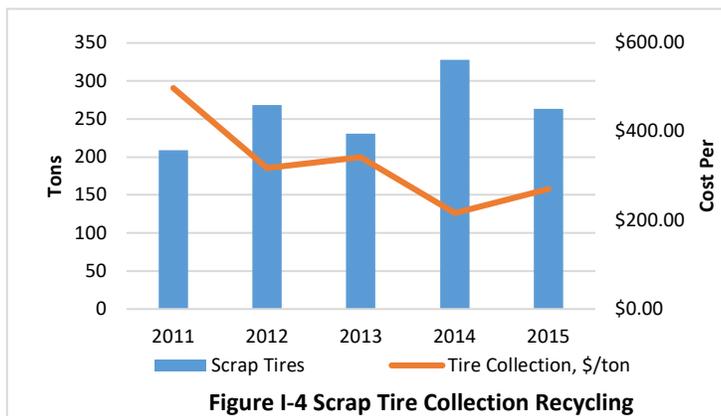
There are many retail outlets accepting unwanted tires throughout the District, however scrap tire collection events offer residents a no-cost or low-cost (depending on community) opportunity to recycle scrap tires. In 2015, 50 of the 56 political jurisdictions applied for and received grants for scrap tire collection events.

Strengths:

- Additional outlet opportunity.
- Service to political jurisdictions to assist with cleanups.
- Data collection and tracking.
- Retailer take-back.
- Retailer take-back provides a year-round outlet.

Weaknesses:

- Collection offered only once a year.
- Retailer take-back businesses charge fees.
- Not all communities offer scrap tire recycling every year because they may not have applied for grant funding.
- Location of scrap tire outlets on website are somewhat hidden and take some navigating.



Adding a list of retailers or scrap tire facilities to the District website would be helpful to residents. The District will compile a list to include by year 2022. The District will continue this program through the planning period.

Name	Start Date	End Date	Goal(s)
Market Development Grants	2019	Ongoing	2

The purpose of this activity is to encourage businesses within the District to develop manufacturing of products using recycled material. The District monitors State and Federal grant programs that become available to aide in the development of this type of funding. The Policy Committee reviews proposals from established businesses and awards funding for local match portions of grant applications. This funding helps “close the loop” in recycling. The District received one proposal in 2015 which was denied by the Policy Committee.

The District will continue this program through the planning period.

Name	Start Date	End Date	Goal(s)
Recycling Incentive Grants	2018	Ongoing	2

Recycling incentive grants will be available to businesses, government entities, non-profit organizations and education institutions interested in implementing a new recycling program or improving an existing program to support long-term recycling goals. Grants will be awarded on a competitive basis with an emphasis of awards towards non-subscription curbside recycling and will begin in 2018.

The District gives priority for grant funding based on the following criteria:

- New curbside recycling programs.
- Demonstration of Need – Applicant clearly defines funding need.
- Strength of Program – Proposed activities are innovative and attempt to enlist new behavior.
- Evaluation – Applicant has the means and mechanisms for tracking results and measuring success.
- Sustainability – Applicant demonstrates a commitment to long-term recycling.

Grants will continue to be offered annually, as long as funding permits.

District staff will facilitate discussion and engagement with political jurisdiction stakeholders encouraging curbside recycling. A target of reaching 2 jurisdictions a year through in-person meetings is set. Outreach and technical assistance promoting curbside recycling requires time and discussions. The District will tailor assistance specific to each community need. Phone calls, meetings, and outreach include discussions around costs, policies, practices, collection, etc.

In 2017, the District contacted the City of Warren to discuss operations and the possibility of grant funding for vehicles and equipment to collect curbside materials. The District will assist Warren in seeking grant funding from Ohio EPA, allocate funding to assist Warren with startup funds, and assist in education and outreach to implement curbside recycling in the next 5-year planning cycle.

Beginning in 2017, the District plans to outreach to schools/institutions as described in Commercial Recycling and Source Reduction program. The Recycling Incentive Grant may be used to assist implementation of programs.

Communities may apply for Recycling Incentive Grant for improving their drop-off site locations with signs, fencing, or other demonstrated benefits to improve recycling at the location.

Other Programs

Name	Start Date	End Date	Goal(s)
Data Collection (aka Industrial Survey)	Ongoing	Ongoing	2

Commercial and industrial businesses are annually mailed survey packets which include cover letter, survey and postage-paid return envelope. Survey recipients are given the option to submit their completed surveys via email or fax. Priority is placed on obtaining responses from entities that have not provided data within the last two surveys that are known to generate a significant quantity of recycling and waste. The District relies heavily on Ohio EPA provided data for MRFs and large box store commercial enterprises.

The District mailed 30 commercial surveys to collect 2015 data and received 15 responses. While the response rate was 50 percent, there are more than 6,000 commercial businesses with NAICS classifications such as wholesale

trade, retail trade, accommodation and food services, arts, entertainment, and recreation, etc. that may be recycling. Surveys from previous years are not included in response rate statistics.

The District mailed 467 industrial surveys to collect 2015 data. Several large manufacturers that previously reported either closed or cut production. The District received 29 responses, a response rate of 6 percent. Surveys from previous years are not included in response rate statistics. To collect 2016 data, the District added the surveys to the website (downloadable) and mailed 460 survey post cards to notify businesses where to find the survey. In addition, 42 of the largest manufacturing businesses in each County were mailed survey packets. The result was a response rate of 29 percent.

Haulers report annually as a requirement for hauling registration. Brokers were contacted via phone calls and faxed or emailed surveys to be completed. All survey efforts took significant follow-up phone calls to receive responses.

Strengths:

- Provides the District with information for planning purposes.
- Connects the District with businesses and manufacturers who could benefit from District programs.

Weaknesses:

- Low response rates.
- Survey costs.
- Significant follow up required to verify reported values.
- Not an accurate account of recycling activity occurring in the District.

Program will continue through the planning period.

Name	Start Date	End Date	Goal(s)
Inventory List (previously called Private Facilities Recycling (scrap))	Ongoing	2018	2

The District maintains a list of scrap dealers available in the District, which can also be found on the webpage. The majority are located in the southern portion of Trumbull County. Maintaining an inventory list is required as part of Ohio EPA’s Goal #3. This program “name” will not continue in the planning period because it is an education element incorporated with the District Website strategy.

Name	Start Date	End Date	Goal(s)
Great American Litter Cleanup	Ongoing	Ongoing	2

For over 28 years, the District has participated in the Keep America Beautiful/Great American Clean Up Program. The cleanup is held in April and May before the weeds grow covering unsightly road litter in ditches parks, and along roadsides. Volunteers are given trash bags for their clean ups along with bottled water and flower seed packets for beautification projects within the community. (Materials provided are dependent on Keep America Beautiful.) This strategy helps to reduce litter and keep the community clean.

	2011	2012	2013	2014	2015
Volunteers	9,710	7,810	6,509	5,590	3,647
Clean up Events	Not recorded	111	100	92	71

Program will continue through the planning period.

Name	Start Date	End Date	Goal(s)
Health Department Enforcement	Ongoing	Ongoing	2

In 1997, the District began providing financial assistance to Ohio EPA approved Health Districts to implement a solid waste enforcement program. The District provided funding to the four Ohio EPA approved Health Districts. Geauga County, Trumbull County, Warren City and Girard City. The Health District enforcement duties consisted of:

- Inspections required by Ohio EPA for the health district to remain on the Director’s approved list.
- Work with the District when solid waste issues arise.

The District also provided funding for a Deputy, a Trumbull County Sheriff Deputy, and a Warren City Police Officer to assist with the enforcement program. Duties were not clearly defined other than to work with the District and Health Districts.

How the program was supposed to be implemented:

- 1.) Health District’s investigate general solid waste/nuisance complaints.
- 2.) Health District’s abate environmental issues.
- 3.) Law enforcement officers received reports to follow up with.
- 4.) Health District’s meet monthly with law enforcement officers to share information and work together for quick resolutions to environmental issues.

The Health Districts were very successful in abating environmental issues. Lack of outlined duties for the law enforcement officers coupled with individual programs not structured, resulted in less than desired enforcement results. Litter crimes and illegal dumping is a top priority for the District but in December 2016, the program was suspended to further analyze the organization, structure and coordination. After years of program implementation, the District took an internal review of the program identifying the following areas needed to make the program successful:

- 100 percent government commitment (health districts, law enforcement, courts, and judges)
- Clearly defined duties and responsibilities for all involved parties
- Reporting procedures
- Partnership between political jurisdictions, enforcement agencies, and regulatory organizations
- Illegal dumping reporting procedures and monitoring

The District will continue to fund the Health District for enforcement and will add a new program Environmental Crimes Task Force.

Name	Start Date	End Date	Goal(s)
Environmental Crimes Task Force (previously called Environmental Enforcement Program)	2019	Ongoing	2

The Environmental Enforcement Program is being redeveloped into the Environment Crimes Task Force (ECTF). The ECTF is a partnership between local municipalities, enforcement agencies, and regulatory organizations. The District is planning to bring the following partners together to collaborate on environmental crimes in the two counties:

- Geauga and Trumbull County Sheriff’s Office
- Geauga and Trumbull County Prosecutor’s Office
- Municipalities (e.g., Code Enforcement, Public Works Departments)
- Local Police Departments
- Geauga and Trumbull County Public Health Departments
- Ohio Environmental Protection Agency
- Ohio Department of Transportation
- Geauga-Trumbull Solid Waste Management District

The District will extend personal invitations to the agencies to hold a facilitated kick-off meeting to discuss and strategize how to better support the enforcement of environmental crime and to deter crime before it happens. Each of the partners will share information and provide knowledge and support to each other.

Schedule of planned activities:

Targeted Year	Activity
2019	Organize kick off meeting. Schedule continued conversations through regular ECTF meetings. Develop a structured ECTF plan with duties and roles for partners. Identify responsibilities such as types of investigations and protocols. Develop a measurement and tracking system and report. Invite partners to discuss ECTF plan. Discuss funding.
2020	Develop an illegal dumping reporting procedure and monitoring. Develop education and outreach using best practices.
2021	Roll out program.

As the program is re-developed, the District needs a level of enforcement to combat issues. Local law enforcement agencies will be reimbursed up to \$500 for each case of littering or open dumping where they file charges. This includes running license plates, filing charges and appearing in court. There are 5 law enforcement jurisdictions in Geauga and 19 in Trumbull. The District will host two meetings, one for Geauga County and one for Trumbull County law enforcement agencies to explain the program and process for reimbursement. An emphasis will be placed on drop-off container sites. A budget of \$25,000 is allocated which will allow for 50 cases in 2019 and 2020.

Education and Outreach Programs

Name	Start Date	End Date	Goal(s)
District Website	Ongoing	Ongoing	2, 3, 4, and 5

The District maintains a website at <http://www.startrecycling.com/>. The webpage provides an inventory of the District's infrastructure. The website offers dedicated pages to residents, businesses, special collections and available education and outreach opportunities.

Strengths:

- Reaches large audiences.
- All-in-one source of information.
- Content is up-to-date.
- Many cities/township webpages offer direct links to the District webpage.

Weaknesses:

- One-way source of information.
- Some items are embedded and not streamlined.
- Website lacks educational content.
- Lacks a web widget for users to clarify what is and is not recyclable as well as identify material outlets.

The District will update menu options focusing on priorities of users needs and add a web widget tool or information list (add yard waste/compost facility outlets). A dedicated Businesses Services webpage will be added and include:

- Waste audits (service provided by District).
- Third-party resource links:
 - Recyclingatwork.org (Keep America Beautiful business toolkit for recycling at work).
 - Recycling and Litter Prevention Grants (Ohio EPA).
 - Ohio Materials Marketplace (Ohio EPA).
 - Encouraging Environmental Excellence (E3) Program (Ohio EPA).

Name	Start Date	End Date	Goal(s)
Reduce, Reuse, Recycle (R3) Directory	2018	Ongoing	4

Program information on the website serves as a comprehensive resource guide as required by the Ohio EPA 2019 State Plan. To accommodate all audiences, those not on the internet, the SWMD is developing a Reduce, Reuse, Recycling Directory in print form. The directory will include: introduction, frequently asked questions, how to prepare recyclables, district programs, listing of outlets by materials, and reuse centers. The directory will be update every other year.

Name	Start Date	End Date	Goal(s)
Education Program	Ongoing	2018	4

The SWMD placed strong emphasis on conventional classroom education programs targeting K through 12 grade students. The Education Specialist developed and continues to update classroom presentations about the environment. In 2015, the Specialist conducted 70 classroom presentations reaching over 2,500 school children. In addition to classroom presentations the Specialist also presented to 12 civic groups reaching 300 adults. Methods utilized as part of the education program include:

- Classroom presentations on various environmental issues
- Locally developed curriculums
- Lending materials and Resource Kits
- Library presentations and summer programs
- Presentations to civic groups and organizations
- Information brochures and pamphlets/teacher newsletters
- District website

Classroom education presentations include take home informational material on the District’s drop-off recycling program. Additionally, the District offers youth group environmental education programs and summer children’s education programs.

Adult education programs can be requested anytime during the year. The program covers the top 10 items to recycle and all the local community collection programs offered by the District.

The SWMD had satisfactory experiences reaching these targeted audiences but as prescribed in the 2009 State Plan, the SWMD must provide for a comprehensive strategy for evolving the SWMD’s education program away from the traditional awareness education towards changing behaviors. The ultimate goal is to get more people to participate in recycling programs and recycle more. To incorporate community based social marketing this program is changing.

Name	Start Date	End Date	Goal(s)
Awareness Program	Ongoing	2018	4

This program promotes and publicizes environmental issues and district sponsored programs to the public. The Director and District staff are all involved with the implementation of this program. A display is used at public events throughout the year with the theme changed to address and promote current programs, events, and services. Promotional items related to recycling and other environmental issues are distributed to the public at the various awareness events.

The District posts a newsletter each year to their website that contains information about the District sponsored recycling programs, HHW collections, scrap tire management, appliance collection, education and awareness programs, and upcoming events. Previously, the District mailed the newsletters. However, the cost of printing and distributing the newsletter was high, and the District opted to direct residents to the online version instead.

The outreach methods to use for this plan update are listed in Appendix L. Since these methods are incorporated into each program the SWMD will not continue a separate program name to track metrics. Instead, metrics will be included and reported in the outreach programs and/or the implemented programs/strategies.

Name	Start Date	End Date	Goal(s)
Resident Outreach	2018	Ongoing	4

The SWMDs goal is to increase educational engagement to this audience and reduce drop-off contamination. The SWMD will develop educational material and marketing propaganda that is cohesive in messaging with a similar look and feel. Once developed, the SWMD will target political jurisdictions to use these materials aiming for at least one-third of the political jurisdictions adopt within the first year. Part of this tactic will include direct contact with haulers and material recovery facilities (MRF) to ensure consistent messaging, if the MRF shed is the same then materials accepted for each hauler should be same.

The practice of community based social marketing for SWMD programs is unexplored. To address environmental issues resident’s need to change their behavior. Community based social marketing uses a variety of tools to achieve behavior change, such as removing barriers, providing incentives and prompts to encourage people to change their behavior, getting people to commit to new behavior, and normalizing the new behavior (McKenzie-Mohr, 1999). The SWMD will utilize community based social marketing for this audience. Appendix L identifies this audience as an outreach priority and outlines a marketing plan to address this audience. The defined problem is illegal dumping and wish-cycling. The marketing plan lists tactics, deliverables and metrics utilizing social marketing tools.

Name	Start Date	End Date	Goal(s)
School Outreach	2018	Ongoing	4

One of the target audiences identified in Ohio EPA’s 2009 State Plan is Schools. This audience encompasses several separate segments that each have their own barriers and messages. This plan update focuses more on developing infrastructure and places emphasis on outreach programs to build recycling programs. Outlined are three segment audiences and outreach objectives with expected implementation dates for those objectives.

1. Students: Much focus has been on classroom education and presentations, moving forward the traditional education will not be a focus.

- The resources developed will be available on the website as lessons and for use to train teachers during workshops, seminars, or conference sessions. Expected in 2018.
- The Public Relations Community Outreach Coordinator (previously Education Specialist) will develop one campaign targeted towards school aged children. The campaign message will develop the use of prompts and commitment to send messages that students can practice and be part of. Examples include using prompts to encourage students to reduce lunch waste. Students would be asked to pledge to a week of no lunch waste. Measurements would be taken at the beginning and end of commitment time to show impact their actions made. Expected in 2020.

2. Teachers: The Public Relations Community Outreach Coordinator will be available to train teachers on lessons and resources available to incorporate in classrooms. The Outreach Coordinator will develop hands-on workshops, seminars, conference sessions and presentations for teachers, youth leaders and non-formal educators. Resources will be available on the website along with other classroom tools for teachers. Expected in 2020.

3. Administrators: Focus will cultivate school administrators and faculty to support establishing and expanding recycling programs and information within school buildings. The SWMD will use phone prospecting to identify at least 4 institutions a year to discuss recycling programs and areas of greatest need. Services the SWMD offer include providing cardboard box containers; educating students, janitorial/custodial staff, school faculty/staff, and

kitchen personnel about how to recycle; conducting presentations; and providing print materials, and custom signage. Expected in 2018.

Various outreach platforms will be used for this sector. Refer to Appendix L 2. Outreach and Marketing Plan for a list of media platforms the SWMD utilizes.

Name	Start Date	End Date	Goal(s)
Institutions and Commercial Business Outreach	2018	Ongoing	4

In this target audience, the SWMD identified a lack of communication toward this audience. Some may not be aware the SWMD has services to assist in source reduction or recycling. Still others may be aware and have no tools or assistance to overcome barriers encountered to recycle. Target audiences and goals include:

- Landlord/property management and tenants - The focus will be placed on setting up recycling services in the business or at the property. The District will use phone prospecting and in-person meetings targeting 4 buildings a year. Assistance includes literature information, technical support, and recycling posters. The District can also provide resource information and assist with grant applications. Expected implementation in 2019.
- Schools/institutions (described in School Outreach Program in Appendix I)– In schools, focus will be school classrooms, cafeterias, and teacher workrooms with an emphasis on educating students and school faculty/staff, kitchen personnel about how to recycle, including presentations, print materials, and custom signage. The District will use phone prospecting and in-person meetings targeting 4 buildings a year. In institutions, focus will be on waste reduction, recycling, and best practices. The District will use phone prospecting and in-person meetings targeting 4 institutions a year. The District offers cardboard box style containers for in-room recycling to schools, government offices or churches and will track the number of boxes provided to the entities. Cardboard box containers are available free of charge. To receive boxes, entities are asked to complete an application (available on the SWMD website). The District may move drop-off containers to schools in jurisdictions that implement non-subscription program. If containers are moved the District may use the Recycling Incentive Grants program to finance/subsidize service for at least 1 year. Expected implementation in 2019.
- Other Businesses – Focus will be developing relationships. SWMD will contact Chamber of Commerce and City planning and zoning departments to obtain updated lists of businesses and research email contacts. Develop a recognition program for businesses and/or assist businesses in applying for Ohio EPA’s Encouraging Environmental Excellence (E3) Program. Expected implementation in 2021.

Utilizing these strategies will identify specific barriers for not recycling and allow the SWMD to offer solutions to remove the barrier, thus developing recycling programs for this audience.

Outreach strategies the District will implement:

Outreach Strategy	Task	Target Date
Website	Add dedicated Business Services menu. Add contract assistance to list of services.	Spring 2018
In-person meetings	Call and meet with Chamber of Commerce and planning departments. Call and meet with businesses/institutions/commercial properties. Part of outreach will ask for the entities to complete the District’s annual survey. Outreach will also introduce Ohio EPA’s Material Marketplace.	2018 and each planning year for the next 5 years
Postcard mailings to Commercial Businesses	Develop a list of businesses and mail 50 postcards a year over the next 2 years to increase traffic to the website. Postcards will be designed to build awareness around the District’s Business Service programs. The District will use analytics to measure the traffic on the website before and after the mailings	2019 and 2020
Business Recognition	Develop recognition program and/or assist businesses in applying for Ohio EPA recognition.	2021

Name	Start Date	End Date	Goal(s)
Community and Elected Official Outreach	2018	Ongoing	4

In evaluating SWMD programs it was perceived that elected officials and community leaders may not understand the operational impacts of policy decisions made about solid waste and recycling. Focus to this audience will help familiarize the audience with the industry but also provide support and offer resources. Specific outreach platforms the SWMD is targeting to use with this sector includes:

- Create a listserv or database of elected officials and community leaders.
- Produce an annual report in print and online form.
- Meet in person with at least 2 to 3 communities per year.
- Produce bi-annual webinars

The SWMD’s goal is to engage this audience because they are influential to their residents and building relationships can facilitate the vision of the SWMD. As with the resident outreach this outreach will utilize community based social marketing to change behaviors. Appendix L identifies this audience as an outreach priority and outlines a marketing plan to address this audience. The defined program is low residential recycling rates possibly due to subscription barriers. The marketing plan lists tactics, deliverables and metrics utilizing social marketing tools. An element to address are service barriers for rural areas in both counties. Partnering with this audience can help the SWMD focus on what each area needs.

In addition to the outreach priority, the SWMD identified a few other messages to communicate to this audience which includes:

- Contamination at drop-offs. The SWMD will communicate the contamination problems, offer education why contamination brings harmful impacts to recycling at material recovery facilities, and suggest solutions. Communication to this audience will strengthen the resident outreach priority. Expected implementation in 2018.
- Build stronger PAYT models. SWMD will target communities currently implementing PAYT programs, develop best practices education for high performing PAYT communities, and offer assist to analyze their programs. Expected implementation in 2020.
- Contract Assistance. SWMD will add contract assistance to the list of services. This includes support to provide materials and documents to help political jurisdictions with recycling contracts. Expected implementation in 2019.
- Best Management Practices. Research shows best management practices improve performance, participation, and recovery. The SWMD will provide materials, documents, and statistics to inform this audience about best practices in curbside recovery. Expected implementation in 2020.

While these are not defined as outreach priorities with detailed marketing plans, these are messages that will strengthen the SWMDs infrastructure and programs and are targeted to be included in the outreach materials developed for this target audience and for inclusion on the website. After implementation of the 2 defined outreach priorities the SWMD may identify one of these messages as an outreach priority later developing a marketing plan.

APPENDIX J: REFERENCE YEAR OPPORTUNITY TO RECYCLE AND DEMONSTRATION OF ACHIEVING GOAL 1

Each SWMD is required to demonstrate achieving either Goal 1 or Goal 2 of the 2009 State Plan at some time during the planning period are encouraged to achieve both goals, but are required to achieve only one or the other. The policy committee declares the SWMD will meet Goal 2 thus does not need to provide a demonstration for meeting Goal 1 in this Plan.

APPENDIX K WASTE REDUCTION AND RECYCLING RATES AND DEMONSTRATION OF ACHIEVING GOAL 2

Goal 2: Waste Reduction and Recycling Rates states the SWMD shall reduce and recycle at least 25 percent of the solid waste generated by the residential/commercial sector and at least 66 percent of the solid waste generated by the industrial sector. The SWMD is demonstrating compliance with Goal 2.

Table K-1 Annual Rate of Waste Reduction: Residential/Commercial Solid Waste

Year	Population	Recycled	Disposed	Total Generated	Waste Reduction & Recycling Rate (%)	Per Capita Waste Reduction & Recycling Rate (ppd)
2015	297,720	81,870	234,088	315,959	26%	1.51
2016	296,547	88,255	233,166	321,421	27%	1.63
2017	295,374	85,468	232,244	317,712	27%	1.59
2018	294,202	85,512	231,322	316,834	27%	1.59
2019	293,029	85,906	230,400	316,306	27%	1.61
2020	291,856	85,923	229,478	315,400	27%	1.61
2021	290,683	85,940	228,556	314,495	27%	1.62
2022	289,510	85,957	227,633	313,591	27%	1.63
2023	288,338	85,975	226,711	312,687	27%	1.63
2024	287,165	85,994	225,789	311,783	28%	1.64
2025	285,992	86,012	224,867	310,879	28%	1.65
2026	284,819	86,031	223,945	309,976	28%	1.66
2027	283,646	86,050	223,023	309,073	28%	1.66
2028	282,474	86,070	222,101	308,171	28%	1.67
2029	281,301	86,090	221,178	307,268	28%	1.68
2030	280,128	86,110	220,256	306,367	28%	1.68
2031	278,955	86,131	219,334	305,465	28%	1.69
2032	277,782	86,152	218,412	304,564	28%	1.70
2033	276,610	86,174	217,490	303,663	28%	1.71

Source(s) of Information
 Appendix C, Table C-1
 Appendix D, Table D-3
 Appendix E, Table E-4 and Table E-5
 Appendix G, Table G-1 and Table G-2

The residential/commercial waste reduction rate in the reference year 2015 is calculated at 26 percent. The approved 2013 Plan Update projected the 2015 waste reduction rate would be 31 percent, and projected annual increases throughout the last planning period because of an increase in predicted recycling and decrease in predicted disposal. This is predicted even though population was projected to decline over the last planning period.

The 2019 Plan is projecting the residential/commercial waste reduction rate will be 27 percent throughout the planning period, and thus the District meets Goal 2. Through the planning period, the waste recycling rate is projected to increase similarly to the 2013 Plan Update with increasing recycling and decreasing disposal. In 2019,

the first year of the planning period, the waste reduction rate is projected at 27 percent. In the last year of planning 2033, the waste and reduction rate is projected at 28 percent.

Table K-2 Annual Rate of Waste Reduction: Industrial Solid Waste

Year	Waste Reduced and Recycled (tons)	Waste Disposed (tons)	Waste Generated (tons)	Waste Reduction and Recycling Rate (percent)
2015	90,056	70,391	160,447	56%
2016	160,156	70,102	230,259	70%
2017	159,500	69,815	229,315	70%
2018	158,846	69,529	228,374	70%
2019	158,195	69,244	227,438	70%
2020	157,546	68,960	226,506	70%
2021	156,900	68,677	225,577	70%
2022	156,257	68,395	224,652	70%
2023	155,616	68,115	223,731	70%
2024	154,978	67,836	222,814	70%
2025	154,343	67,557	221,900	70%
2026	153,710	67,280	220,990	70%
2027	153,080	67,005	220,084	70%
2028	152,452	66,730	219,182	70%
2029	151,827	66,456	218,283	70%
2030	151,205	66,184	217,388	70%
2031	150,585	65,913	216,497	70%
2032	149,967	65,642	215,609	70%
2033	149,352	65,373	214,725	70%

Source(s) of Information
 Appendix C, Table C-1
 Appendix D, Table D-3
 Appendix F, Table F-4 and Table F-5
 Appendix G, Table G-1 and Table G-2

The industrial waste reduction rate in the reference year 2015 is calculated at 56 percent. The approved 2013 Plan Update projected the 2015 waste reduction rate would be 71 percent. The 2013 Plan Update projected waste reduction rate remaining constant for the last planning period. In 2015, the actual waste disposible was around 9,000 tons greater than projected in the last updated plan. However, the reported 2015 recycling tonnage was more than 50,000 tons less than projected tons recycled in the last Plan Update. The main reason the actual waste reduction rate for the reference year is lower than projected is lack of recycling reporting by the industrial sector. The collected 2016 data provides better reporting from the industrial sector. The 2016 and the actual and projected recycled and disposed tonnages are much more similar. In 2016, the industrial waste reduction rate is 70 percent, and the SWMD achieves Goal 2 in that year. The SWMD is projected to maintain a 70 percent waste reduction rate throughout the planning period.

Table K-3 Annual Rate of Waste Reduction: Total Solid Waste

Year	Waste Reduced and Recycled (tons)	Waste Disposed (tons)	Waste Generated (tons)	Waste Reduction and Recycling Rate (percent)
2015	171,926	304,479	476,406	36.1%
2016	248,411	303,268	551,679	45.0%
2017	244,968	302,059	547,026	44.8%
2018	244,358	300,851	545,208	44.8%
2019	244,101	299,643	543,744	44.9%
2020	243,469	298,437	541,906	44.9%
2021	242,840	297,232	540,072	45.0%
2022	242,214	296,029	538,243	45.0%
2023	241,591	294,826	536,418	45.0%
2024	240,972	293,625	534,596	45.1%
2025	240,355	292,424	532,779	45.1%
2026	239,741	291,225	530,966	45.2%
2027	239,130	290,027	529,157	45.2%
2028	238,522	288,830	527,353	45.2%
2029	237,917	287,635	525,552	45.3%
2030	237,315	286,440	523,755	45.3%
2031	236,716	285,247	521,962	45.4%
2032	236,119	284,054	520,174	45.4%
2033	235,526	282,863	518,389	45.4%

Source(s) of Information
Appendix K, Table K-1 and Table K-2

Specific programs to help the residential/commercial sector reach the target waste reduction rate include:

- Curbside Recycling (subscription and non-subscription)
- Drop-off Recycling (urban and rural)
- Data Collection
- Commercial Recycling and Source Reduction
- Recycling Incentive Grants
- Resident Outreach
- School Outreach
- Institutions and Commercial Business Outreach
- Community and Elected Official Outreach

See Appendix I for more discussion regarding programs.

APPENDIX L: MINIMUM REQUIRED EDUCATION PROGRAMS: OUTREACH AND MARKETING PLAN AND GENERAL EDUCATION REQUIREMENTS

A. Minimum Required Education Programs

In accordance with Goal 3 of the 2009 State Plan, each SWMD is required to provide 4 minimum education programs.

1. Website and Resource Guide

Website

The SWMD maintains a website at www.startrecycling.org for Geauga-Trumbull SWMD District. The website is a resource providing much of the information that residents and educational institutions would seek. The homepage is key to user navigation and has the ability to be updated regularly to reflect recycling services, seasonal program info, and simple opportunities. The webpage provides an inventory of the infrastructure, residential curbside collection resources, information about household hazardous waste and tire collection events and available education and outreach opportunities.

Conclusions/Findings:

The website is regularly maintained and updated however, there are opportunities for site improvement and education and outreach consistency. In 2017, the SWMD procured update their website and is in the process of a 2018 website update.

Design Recommendations: Develop unified branding for site

- Colors, fonts, and graphics/photos that create a coherent visual to be carried across all communications. Bold color palettes, simple layouts, and impactful images will create a fresh and modern look and feel that will draw the attention of the audience.

Site structure Recommendations:

- There are currently quite a few sub-pages on the site. Recommend prioritizing the essential content and weeding out or consolidating the rest. Ask, “What are the core questions people have when visiting our site?” and include only pages which answer these questions.
- To effectively plan out the site’s organization, create a visual sitemap.
- Consider a different format for events – perhaps a calendar or interactive list so that each event doesn’t require a separate page.
- The sidebar navigation menus on some of the pages are confusing and seem unrelated to the content on the page – for example, there is a menu for “Teacher Links” that appears on the SWMD Plan page that does not seem relevant. There’s also a “Helpful Links” sidebar on some of the pages that is difficult for users to navigate to. Use sidebar navigation menus sparingly and only when they enhance/simplify the user’s experience.
- The four buttons on the homepage feel like a distraction from the navigation menu. Utilize the navigation menu as the primary way for users to find their way around the site. Having both a navigation menu and buttons that link to the same place is redundant and confusing for users.

Miscellaneous suggestions:

- There are several pages on the site that contain lists of locations - Consider embedding interactive maps (ArcGIS or GoogleMaps).
- Consider updating the format of your surveys to a digital version – there are many different apps/plugins available to achieve this. Downloading a Word doc is not always convenient for users, and not everyone has access to MS Office products. Online surveys provide a quick and easy way to collect and quantify data. Many programs like SurveyMonkey or PollEverywhere are free with options to upgrade.
- Consider removing the weather app – it doesn't seem necessary to site's goals and just adds clutter.
- Font should be consistent throughout website pages. Be aware that text appearing in all capital letters does not coincide with best practices for websites and can be viewed aggressive language. See rules of HHW events.
- Try replacing the rules with a short less than 1-minute video of an HHW event to give attendees an idea of what to expect. Some of the rules could appear on the lower part of the video or in photos of the event.
- Track on-site web analytics.
- Responsive web design.

Content Suggestions:

- Dedicated information targeted to residents, businesses, special collections, education and outreach.
 - The resident page lists recycling representatives in eight communities most residential program contact person
 - All drop off locations are listed it is recommended to consider embedding interactive maps (ArcGIS or GoogleMaps) to make drop-off locations easily searchable based on location.
 - Currently, there is no listing for what multi-family residents or commercial businesses should do with their recyclables assuming that residents work through their facility's hauler or use a drop off site that should be clarified on the website.
- Add a search engine software (Waste Wizard Widget) to allow users to search for material specific outlets.
- Add community recycling opportunities.

Promotional material:

Flyers, ads, postcards etc. should have a consistent recognizable look that ties the resident back to the District.

- Best practices include limited text with a visible call for action, typically to visit the website for more information.
- Colors should be consistent with the branding of the District
- Images should tell the story and compliment the call for action.
- The flyer layout should be easy for the eyes to flow between images and content without overwhelming the user with additional repetitive text. <http://startrecycling.com/images/pdf/2017-events.pdf>

Resource Guide

While a comprehensive resource guide in a print format has not been published; SWMD's website could be considered a resource guide. Residents within the SWMD can find out about waste disposal, recycling drop off areas, learn about HHW and electronics events and regular drop off hours. What is missing is a complete comprehensive list of outside infrastructure including medical takeback program recycling, reuse centers, etc. The information listed on the web meets the minimum requirements but could be optimized in its navigation and wealth of information. In its current form, most of the information that would serve as a resource guide is in set form and is not frequently updated. Many web-users seek multiple ways to contact, easily accessible hours and details. In its current form that is not the case.

To accommodate all audiences, those not on the internet, the SWMD is developing a Reduce, Reuse, Recycling Directory in print form. The directory will include: introduction, frequently asked questions, how to prepare recyclables, district programs, listing of outlets by materials (including third-party or outside infrastructure), and reuse centers.

2. Infrastructure Inventory

The SWMD maintains an inventory of infrastructure for solid waste management and disposal and waste reduction and recycling activities/facilities in the Solid Waste Management Plan. Adding a Waste Wizard to the webpage adds a quick, easy method of finding outlets for disposal and recycling/reuse specific materials.

3. Speaker/Presenter

Any SWMD staff available can serve as speakers/presenters. District Director and Public Relations Community Outreach Coordinator (previously education specialist) are considered the primary speaker/presenters. The Public Relations Community Outreach Coordinator is available to speak or present when needed. The Public Relations Community Outreach Coordinator has presented in schools and maintained a list of school contacts.

A. Outreach and Education – Outreach Plan and General Education Requirements

As prescribed by the 2009 State Plan, each SWMD will provide education, outreach, marketing, and technical assistance regarding education and reuse through an outreach and marketing plan. The outreach and marketing plan needs to have the following components:

- Five target audiences as identified in Ohio EPA Format 4.0.
- Follow basic best practices when developing and selecting outreach programs.
- Outreach priority.
- Education and outreach programs to all appropriate audiences in the context of the priority using social marketing principles and tools.

1. Evaluation, Conclusions, and Actions

Outreach and education are critical to a recycling program's success. Strategic communications campaigns provide the most powerful results in creating behavior change. Geauga-Trumbull SWMD has the potential to be a leader in recycling to encourage appropriate recycling behaviors and avoid illegal dumping at recycling drop-off locations.

Best practices include education campaigns that are simple and engaging with regular consistent messaging across multimedia platforms. Investments should be made in expanded communication programs to target groups and ensure diversion efforts succeed. As the primary hub of information, websites should contain accurate and up-to-date always information. Education also goes hand in hand with operational and programmatic changes. The website and collateral marketing materials should reflect such changes.

On average, a successful education and outreach campaign requires approximately a budget of \$1 a household. Using this guideline, the SWMD would have an education and outreach budget of approximately \$133,000 based on their 2016 household count, according to the US census. In comparison to their current budget, this is a significant increase, however funds do not have to come solely from the SWMD. The SWMD could partner with local resources to better utilize funds and share materials to reach all targeted audiences within the SWMD.

SWMD has the opportunity to be the conduit for recycling education messaging by creating a two-way communication methods and building relationships with target audiences rather than trying to reach a “general

public” about a specific program. The SWMDs fundamental step is identifying and creating relationships with these target audiences.

To construct an outreach and marketing plan as required by Ohio EPA Format 4.0, the existing outreach, education, and technical assistance programs were analyzed in this Appendix. To align with Format 4.0 the SWMD’s existing programs were organized by target audience, compared to best practices, and evaluated for social marketing principles. In this evaluation, when applicable, specific program names are identified. Some of the SWMD programs align with the target audiences; others do not. Otherwise, the type of audience or outreach strategy to target audiences is explained. This Appendix section is a strategic process of evaluating the District’s education and outreach programs. Section 4. Outreach Priorities identifies the education and outreach priorities identified by following this evaluation process. Strategies for implementation are described by target audience in Appendix I.

Education Campaigns By Target Audiences

Target Audience: Residents

- Single-family homes
- Multi-family homes

Description: single-family home dwellers receiving curbside service from a community within the district with and without subscription services for recycling. The target to reach residents would be working through recycling educators and community representatives.

Residential Education Barriers

Challenges/Barriers

- Lack of community-specific recycling data
- Inconsistent messaging from haulers regarding recyclable materials
- Reporting from communities and haulers
- Voluntary programs (subscription) reduce participation
- Lack of direct jurisdiction over municipal residential curbside collection systems
- Availability of curbside services (geographic and rural barriers)
- Lack of District-wide curbside infrastructure
- Low number of residents participating
- Low number of population with service opportunities
- Lack of data regarding bin or cart use for recycling collection
- Largest political jurisdiction does not have curbside.
- Lack of recycling information on political jurisdiction websites.

The operational barrier of the various subscription versus non-subscription services within the SWMD creates an educational barrier for outreach to residents. Currently, under curbside recycling, Geauga-Trumbull’s website www.startrecycling.com lists phone numbers for eight communities with subscription curbside services. Under the “services” menu there is a listing of waste haulers. The SWMD could combine these two pages or simply indicate which haulers also offer recycling to save residents an additional step.

Some communities, like [Newton Township](#) and [Howland Township](#), have links on their website to their recycling information that link back to SWMD’s website. This is a best practice to connect the communities to the District. Likewise the district should link to these recycling information pages for these communities. Other communities like [Liberty Township](#) and [Village of Middlefield](#) have links hauler’s recycling documents; the District should link to these pages as well. However, as previously identified there are 23 communities within the District with subscription services that are not listed here: Aquilla Village, Burton Village, Chardon City, South Russell Village,

[Auburn Township](#), [Bainbridge Township](#), Burton Township, Chardon Township, Chester Township, Claridon Township, [Hambden Township](#), Huntsburg Township, , Middlefield Township, [Montville Township](#), [Munson Township](#), [Newbury Township](#), Parkman Township, [Russell Township](#), [Thompson Township](#), Troy Township, and [Brookfield Township](#)

Considering this operational barrier, strengthening communications relationships with the communities is paramount. A strategic communication campaign to encourage greater recycling participation and subscription to current recycling programs is recommended. This action can unite the District around communication messaging and break down current barriers.

There may be barriers to reaching residents via traditional direct mail approach due to a lack of access to addresses, resident apathy to this form of messaging and the overall cost of direct mail.

Research:

Research is the first step to identify attainable and measurable goals for this target market. Surveys or interviews with each target community to best realize their needs and opportunities is a best practice to reach residents in their community. Also a sample set of quantitative data should be obtained from residents in single-family homes throughout the district to discover a baseline for recycling behavior and current educational knowledge within their community. With this data, a targeted campaign can be effectively endeavored. Though the target market identified within this section discusses residents the research may discover a need to focus more specific topic, demographic or resident behavior change.

Planning

Goal: To unite recycling education messages for single-family home residents throughout the district

Objectives:

- To increase educational engagement by providing customizable materials for each community with a similar look and feel for each residential program to see one-third of SWMD communities adopt and implement educational material within the first year.
- To reduce contamination in the residential stream within the district and promote individual residential programs according to their needs to see a 10 percent reduction in contamination from residential sectors in the first five years.
- To create cooperative relationships with SWMD communities to build trust and credibility for residential recycling education amongst community education partners from each SWMD communities and increasing voluntary annual reporting.

Residential Educational Opportunities/Tactics

The District has the opportunity to be a primary resource for curbside and drop-off recycling education messages. A keen focus on education will also reduce contamination and illegal dumping from both offenders and *wish-cyclers*.

Digital Media

One method Geauga-Trumbull SWMD could reach residents is by using an online widget enabling each community to customize their residential recycling program details to clarify what is and is not recyclable in a given program.



Residents could search for an item that they would like to recycle in a particular zip code or address. A photo and description of the item would appear. Special instructions could be added for items that have specifications to be recycled elsewhere, i.e., drop-off locations, store take-back programs or special waste disposal. The informational widget could be uploaded to each community's website as well as be accessible and searchable by www.startrecycling.com. This widget would also give measurement information about web engagement specific to educational items and could subsequently be linked back to the residential education campaign.

The web widget also goes beyond the curbside collection to cover the events the District most commonly associated with household hazardous waste, paper shredding, tire recycling and other hard-to-recycle options. SWMD could include drop-off locations for HHW when these items are searched for. Most widgets can offer residents to sign up for notifications via e-mail or text for HHW or educational events in their area. This would also expand the reach of educational reach for residents throughout the district.

Geauga-Trumbull can work with each community's staff to introduce simple, online customizable landing web pages, flyers and recycling labels per program. These tools would have a consistent design element but can be easily customized to reflect specific items included or not included in a program by dropping and dragging recyclable materials. Communities can upload their logo and contact information to personalize. Geauga-Trumbull's logo and/or website would be added discretely as an unchangeable feature. This would help to connect SWMD with the communities they represent.



In order to emphasize the importance of reporting yearly recycling tonnage to the District. It would be beneficial if the SWMD installs an electronic form on the website for communities to upload their annual recycling tonnage.

Social Media:

It is common for SWMDs to have a presence on social media such as Facebook, YouTube, Twitter, Instagram to name a few. These media allow for a two-way conversation with residents. However, a plan for regular management of social media should be considered before initiating an account. Often an inactive social media account can pose a greater risk than not having one. Social media also offers an unparalleled way to measure interaction with your target audience through reports on audience engagement. The District can use these

reports to create a baseline and set goal for future online engagement measurement.

Short Educational Videos:

To best reach residents in today’s world of information overload, businesses and schools the SWMD should consider creating short, no more than one-minute, videos to focus on key educational initiatives, i.e., proper recycling to avoid illegal dumping, HHW, and other ways to reduce waste. Videos are more popular than ever and are a worthwhile investment to deliver one-way messages in a variety of media: website, YouTube, social media, etc. These videos could be added to each community’s websites within the District as an additional educational tool to engage their residents and businesses. Videos also provide another communication measure as it is visible how many people the videos reach.

Evaluation

Post-campaign research is also strongly recommended to determine if the educational and outreach tactics reached the target audience and encouraged a sustainable behavior change. Within the first year after implementation of web widget, customizable recycling promotional materials, and social media engagement, the SWMD can run reports on communications analytics and compare these with the previous year’s recycling tonnage and subscription numbers. An audit of SWMD communities’ websites should be performed to discover whether one-third of SWMD communities have adopted and implemented educational material within the first year. This can also be discovered through website analytics, and conclusions can be drawn based on the general areas downloaded or searched for the information. This will give a baseline in which communities need more in-depth targeted communications focus.

A baseline estimate of contamination and illegal dumping reports before an educational campaign and after could be ascertained from MRF manager and visual assessments of drop off sites. There may be current in-house contamination reporting at the MRF that could be acquired. To build ongoing relationships, this will take some time and nurturing of relationships with communities. Some larger communities may have a direct contact for recycling and solid waste while smaller communities may have a staff person where this is a small part of their daily activities. Creating a list of educational partners may mean different things in each community. It may be a city employee in the solid waste department or the head of the chamber of commerce who are passionate about recycling. Either way, the list should contain contacts who are willing to be ambassadors for recycling and waste reduction with a willingness to spread the word about recycling, HHW and amnesty events.

Multifamily Residents-Facility Managers

Description: Managers of multifamily facilities with four or more units without curbside collection service. Multifamily facilities are usually classified under commercial collection as they are often serviced through dumpster collection. Many of the tactics for commercial recycling can be applied for multifamily facilities and vice

versa. To best reach the residents the target audience should be the facility manager rather than the residents themselves.

Research

An incentivized baseline survey to discover the knowledge and interest of facility managers in recycling and proper waste disposal should be distributed. The knowledge gained from this survey can be used to discover barriers the SWMD may have to promoting and even future potential of implementing an in-house recycling program. After communication tactics with managers have been implemented, a follow-up survey should be administered. The baseline survey should be repeated periodically as management changes and recycling infrastructure grows.

Barriers

The biggest educational barrier in a multifamily program is usually the high turnover rate of residents. This creates a challenge for the individual facility management to increase recycling and decrease contamination. For facilities that do not offer on-site recycling, residents can use nearby recycling drop-off centers. However, if education in these facilities is not emphasized illegal dumping at drop off sites is at risk.

Planning

Goal To cooperate with multi-family facilities' management to emphasize current resources for recycling in their area

Objectives:

- To increase educational engagement by providing resources for multifamily facilities with a similar look and feel to see engagement on website's multifamily page receive 150 unique visitors within the first year of launching.
 - To reduce contamination and illegal dumping by 10 percent at drop-off facilities within the district and by promoting recycling resources available for multifamily residents.
 - To create cooperative relationships with communities to offer the resources for multifamily recycling education that best fits the community's multifamily.

Implementation of Multifamily Educational Opportunities/Tactics

It is important to make recycling education simple for management and staff to adopt around their facility. Similar tactics from the residential and commercial educational plans can be applied to the multifamily educational tactics though the focus would be to get the information to management to disseminate to their residents.

Education

The SWMD could create a menu option on their website for multifamily residents. This could link to resources for residents and facility managers like the online widget to clarify what is and is not recyclable in a given program, household hazardous waste programs, toolkit for facility managers and other educational collateral. The informational widget could be provided as a link on each facility's website or be linked from social media as well as be accessible through searchable by community on startrecycling.com website. This widget would also give measurement information about web engagement specific to educational items and could subsequently be linked back to the residential education campaign.

Household Hazardous Waste

Due to communal waste disposal in multifamily facilities household hazardous waste and electronics disposal are particularly important topics for management at multifamily facilities. It is recommended to create a contact list of multifamily facilities to direct mail, email and post on social media about HHW events and general educational material about safe and proper disposal of these items. The modern effective facility manager encourages regular communication with residents. SWMD can begin relationships with multifamily facility managers through periodic communication on issues that will affect their residents and their garbage fees. SWMD could connect facility managers to a link to the web widget that would include drop-off locations for HHW. Most widgets have the ability to offer the ability for residents to sign up for notifications via e-mail or text for HHW or educational events in their area. This would also expand the reach of educational reach for residents throughout the district.

Educational Collateral

SWMD could offer multi-family facility's staff to introduce simple, online customizable flyers and recycling labels per program. The tool would have a consistent design element but can be easily customized to reflect specific items included or not included in a program by dropping and dragging recyclable materials. Communities can upload their logo and contact information to personalize. SWMD's logo and/or website would be added discretely as an unchangeable feature. This would help to connect the SWMD with the communities they represent.

Social media and Digital Communication:

Many modern multifamily facilities have social media pages. The SWMD could perform a social media audit of these facilities throughout the district. Facility management and/or communications staff seek new items to interest their residents on social media platforms. The SWMD could submit samples of educational recycling and HHW disposal posts that could be applied across social media channels. Another option is to work through the realtor's association and chambers of commerce centers to locate these lists.

Evaluation

Using the District's website analytics, conclusions can be drawn based on the general areas downloaded or searched for the information in both multifamily and residential areas. This will provide insights into which communities were reached and which need a deeper targeted communications focus. To measure educational engagement by providing customizable materials for each facility with a similar look and feel to be displayed in 5-10 percent facilities' websites or social media within SWMD.

An estimate of contamination before educational campaign and after could be ascertained from MRF manager. There may be current in-house contamination reporting mechanism at the MRF that could be acquired. Decrease in reports of illegal dumping can also be a measure. Note that drop-off and illegal dumping data cannot be solely attributed to multifamily facilities.

Target Audience: Schools -Primary, secondary, vocational schools

- Students
- Teachers/professors/instructors
- Administrators
- Other staff

Description of target audience(s): School teachers, school faculty (maintenance and cafeteria), and school volunteers.

Research

There are 24 public schools in Geauga County, OH, serving 10,726 students. Trumbull County has 68 public schools serving 27,304 students. The SWMD has several presentation topics, tied to the Ohio Academic Content Standards with an emphasis on Science and Communication, for in-school education programs. Historically the education specialist heavily focused on classroom presentations consistently giving over 300 presentations a year. Available presentations are listed on the District's website. The District has a summer program at libraries throughout the SWMD to engage students kindergarten through sixth grade. Programs are available for scout troops free of charge. In 2017, the District held a popular Earth Day photo contest for grades six through eight. Five winners received a \$50 cash prize. An expanded school communications strategy would include strategic methods to engage students, teachers, faculty, and volunteers to create a sustainable school recycling program.

Lakeview High in Cortland started a recycling program in 2017 November/December. District provided boxes and Republic provides service.

Lordstown school has a science teacher that collects and hauls to containers at village hall.

Research

Baseline research of schools within Geauga and Trumbull counties should be performed to discover what resources currently exist in schools within the counties. Resources could include current recycling programs, methods of collecting/measuring recyclables in public and food preparation spaces, applicable after-school programs, name of headplant operator, principal, and ambassador teachers. This baseline research will help to provide resources to schools that are effective and will best help them set goals for recycling and pinpoint opportunities for waste reduction.

Barriers

Staffing school visits may also propose a barrier to the SWMD. Reaching teachers, faculty and volunteers to train and incorporate SWMD developed lessons. Reaching school administration and custodial staff to implement/expand recycling and waste reduction in schools.

Planning

Goal To create recycling champions among Geauga and Trumbull County School Districts and private school educators, students, and volunteers.

Objectives

- To create a database of educators and potential recycling education champions for recycling and diversion information, volunteering at least four times per year; recruit 10 champions in the first year of program.
- To create student recycling ambassador program to help lead recycling and anti-dumping initiatives recruit at least one champion per school in 5-7 schools per year.
- To identify and support 5-7 school recycling programs within the SWMD within the first two years of champions network.

Opportunities and Outreach Tactics

Champions Network/Ambassadors

The teacher champion program could provide a unique opportunity to offer an ongoing, impactful experience with tools to create relationships with educators and the District facilitating a recycling and waste reduction message to students and parents. Voluntary student and teacher ambassadors would be asked to complete a commitment card to reduce, reuse, recycle and relay the message. Cards would be two-high on the same sheet of paper ambassadors tear off a copy for SWMD's Education specialist and keep a copy to take home and give to another person to fill out and email to the District. Ambassadors also leave their e-mail address for regular correspondence from SWMD. Ambassadors also receive a badge or button after they sign the commitment form. Those who sign will also receive a second badge or button to give to the person who signs the commitment.

Through student and teacher ambassadors, Geauga-Trumbull could create a database of these recycling champions to help spread recycling and diversion messaging in schools and their communities through regular correspondence from the District. This creates and builds sustainable relationships between the schools and the SWMD beyond a one-time presentation. This could also serve as a volunteer recruitment tool. Since students will most likely bring the form home to their parents and discuss recycling and waste reduction opportunities.

Student ambassadors could be responsible for ongoing tasks such as being classroom recycling monitors, organizing campus or nearby litter cleanups, creating signs or posters to encourage recycling/waste reduction and anti-dumping. In January 2017, a group of motivated high school [students approached the Geauga council in Middlefield](#) to help clean up recycling sites where dumping was an issue. These students show the potential for student-led initiatives anti-dumping and waste reduction efforts. Student ambassadors could earn volunteer hours by adopting a recycling site near their home or school to observe, report findings to the District and possibly clean up the sites nearest to them. The potential exists for maximizing the reach for students, teachers and parents in the District through the creation and management of programs such as these.

The SWMD could offer teacher workshops, seminars or presentations to cover relevant topics that can be taught with lessons. The SWMD could facilitate sessions an in-service days or early release training. Teachers could then take their

knowledge and continued professional development to apply in their classroom. Field trips could be arranged for teachers and classrooms to landfills, material recovery facilities, or compost facilities.

Volunteers

Students, motivated teachers and the Parent Teacher Associations can get involved in this recycling commitment campaign through forming student volunteer green teams. This effort would have to be formally supported by the school and championed by at least one paid staff member to ensure its long-term sustainability. Students can be challenged to “Build a Bin” for their classrooms as a cooperative art or science project. The involvement in creating the containers personalizes recycling for the children. They will point it out to parents and friends drawing attention to the container and the effort behind it. Best practices include every garbage container is accompanied by a recycling container.

To maintain the program student-volunteers create a schedule for servicing the recycling container, design flyers to promote it and discover operational needs like tippable carts or alternate collection containers to bring heavy paper to the outdoor collection container. In an operational plan, it should be noted if a container is too heavy that the student volunteers will ask for assistance. With lighter food and beverage recyclables education on the best way to avoid contamination should be addressed.

Evaluation

The database of educators would help to strengthen these relationships. In the data base management, it should be noted whether educators took action after communication from the District for example volunteering or using education tools on websites. The number of signed commitments could be used as a measure.

Target Audience: Industries

- Manufacturing businesses

Description: Businesses classified as manufacturing

Manufacturing is a principal industry in both Geauga and Trumbull Counties making up about 20 percent of the area’s industry. This sector will often produce a significant amount of pre-and-post-consumer waste with a great potential for recycling. Many companies realize the cost-saving potential for recycling items like cardboard, fibers, scrap metal and other items that could be disposed. The target audience could be engaged in a variety of ways in the future to divert and recycle more items.

Conclusion: At this time, the emphasis on this target audience is to encourage the completion of the industrial surveys. The outreach strategy for commercial businesses could also be used in the manufacturing sector to pinpoint top industries (see Appendix H) and incentivize completion of the survey data. These surveys account for current recycling practices within the District and are reported to the Ohio EPA.

Target Audience: Institutions and Commercial Businesses

- Government offices
- Non-profit organizations
- Commercial businesses
- Hospitals
- Churches
- Non-residential quarters
- Special event/sports venues
- Transportation centers
- Amusement parks and other tourist attractions

Description: Commercial sector entities are defined as commercial businesses, multifamily facilities, schools and universities, government agencies, office buildings, stadiums, amusement parks, event venues (stadiums, concert

halls), hospitals and non-profit organizations that receive dumpster or compactor service for garbage. Target for the commercial facilities will be the administration and facilities maintenance.

Research

Though a formal SWMD-wide commercial recycling program is not currently in place there is still opportunity to reach this potential untapped area. Working through education partners like Chamber of Commerce, and recycling education partners to identify companies that would financially benefit from a diversion program would be an effective way to initiate a successful data collection and business targets.

These contacts could be a good starting point for gaining insight and perspective on the needs for commercial businesses like waste audits, recycling resources and technical assistance. In this strategy it will focus on the commercial sector in general and not a specific business, as each facility will need a specified approach to operational recycling and outreach within their facility.

Barriers

Relationships with the commercial sector will need to be developed as this has not been a targeted strategic focus in the past. Reaching businesses to encourage the cost-savings of landfill diversion may be challenging. The District could work cooperatively with Chamber of Commerce and City Planning and zoning departments and in Geauga and Trumbull County's tax collector records to obtain updated lists of businesses and research e-mail contacts. The research may be a barrier but a worthwhile endeavor for communication on a large scale.

Planning

For purposes of this strategy assume that the promotion of a commercial program would be connecting commercial businesses with resources to assist them in taking the initiative to recycle.

Goal To encourage recycling and waste diversion in the commercial sector by directing them to the useful website resources.

Objectives:

- To create resources for commercial businesses that encourage waste diversion, recycling and waste reduction via the District's website; see 150 visitors to the web pages in the first year.
- To create recognition program for commercial business that are actively reducing and recycling; recognizing five businesses per year and increasing number of businesses completing annual surveys by 10 percent each year.
- To strengthen relationships with the commercial sector by increasing database of businesses recycling within the SWMD by 10 percent within five years.

Opportunities and Outreach Tactics

The SWMD could create a menu option on their website for businesses. This could link to resources for businesses like the online widget to clarify what is and is not recyclable in a given program, household hazardous waste programs, toolkit for commercial recycling and other educational collateral. The informational widget could be provided as a link on each facility's website or be linked from social media as well as be accessible through searchable by community on startrecycling.com website. This widget would also give measurement information about web engagement specific to educational items and could subsequently be linked back to the residential education campaign.

Green Business Award Program

Geauga-Trumbull could begin a Green Business Award program. Potential exists for the District to either nominate businesses in the area that are going above and beyond for recognition or allow businesses to self-nominate via an online nomination process. Businesses submitting and application would also include the recycling and waste recovery data sought in the annual survey as a prerequisite for this program. Using a digital process decreases the amount of legwork required for the project and collecting this annual data more efficiently.

Once the structure is in place to take nominations, Geauga-Trumbull could reach out to media and post advertisements in business and mainstream publications. Once the submissions are received a contest could be endeavored allowing social media followers to select a winner. It will also bring positive attention to businesses doing the right thing and encourage other businesses to do the same. Finally, it would formalize this award opportunity if the winners were announced at a banquet. This gives the District a format to reach community leaders face to face and recognize them for their hard work.

Grants

The District could offer recycling grants for businesses of varying sizes within the District that start recycling initiatives. Recycling grants could be coupled with completing business surveys as a prerequisite to being eligible for grant funds. This method will not only help the business realize the cost savings but also further build relationships with businesses within the district.

Media Since the commercial sector produces half of the District's waste the Green Business Awards and the grant programs can provide newsworthy angles. These news stories can increase exposure to the District's efforts beyond a one-time story. News outlets will often post stories on their website and which can be posted on the startrecycling.com. Even more so if the recognized business post the stories on their site or social media. Enable media opportunities to live beyond their initial publication.

Evaluation

Website analytic reports will determine the popular pages/topics and number of visitors in the business web pages. The Green Business awards program evaluation should also increase in number of businesses reporting for the online surveys annually. Facilitating the delivery of these surveys will be an essential operational tool that will help the District strengthen database contacts and commercial recycling programs. Grant recipient and applicants are another measure of how well the District is reaching the business community. Follow up e-mails with participants to gauge their actions and behavior change would provide a database of recycling contacts to strengthen these relationships and track progress.

Target Audience: Communities and Elected Officials

- Policymakers
- Elected officials
- County Commissioners
- City representatives
- Township trustees
- Community leaders
- Influential members of society
- Community groups

Description: Elected officials should include city, county and state representative who are public sector representatives elected as a public servant. Community leaders are individuals who are influential in communities and can sway public opinion. Both groups will be important to target, but the approach will vary.

Research

Research for elected officials may be best served by an issues audit map to pinpoint areas where recycling and waste reduction policy issues have support from elected officials within the District. Surveying elected officials is often difficult. However the scope could be narrowed to areas with potential recycling, and source reduction initiatives are taking place. It would be beneficial for SWMD to have a list of elected officials who can be champions for recycling and inspire others to do the same. Secondary research can be achieved through public records disclosure requests. Research can be accomplished on community leaders by searching for active

environmental and recycling groups to discover the leaders of these groups or connecting with Keep Ohio Beautiful affiliates.

Planning

Goals: To engage elected officials and community leaders to become more deeply involved in and help expand the District's outreach.

Objectives:

- To actively promote SWMD's initiatives through an annual report in print and online version. Receive 25 additional readers per year from online report.
- To connect with elected officials in at least two to three communities per year regarding recycling, source reduction, and anti-dumping initiatives.
- To begin annual/biannual webinars for elected officials regarding recycling and resource management to create a continuing conversation about recycling.

Barriers

Elected officials and community leaders support issues. Often, they do not understand the operational impacts of policy decisions made about solid waste and recycling. Most are not on the cutting edge of industry knowledge like those who work directly in this arena. To overcome this barrier the District can offer easy ways for leaders to become more familiar with the industry basics will be helpful for the future of the SWMD and its communities.

Opportunities and Implementation

Communication

With so many initiatives that policymakers involved in daily, recycling and waste reduction are not always a top-of-mind issue. Creating a database or listserv of elected officials and community leaders who would like to learn more about recycling and waste reduction issues is a great starting point for the SWMD. Building and maintaining these relationships would not only facilitate the vision of SWMD it will also help progressive initiatives to be accepted by elected officials and community leaders through an easy-to-understand form. It is recommended to create an annual report. An electronic format for an annual report would enable measurement for who read the annual report.

Webinars

Webinars can have numerous benefits when the subject matter is impactful. Webinars are relatively simple to implement. They can offer insight into a specific issue or subject matter that is important to your target audience. For elected officials and community leaders, the subject matter of interest may be policy and technical support related. A webinar helps to feature SWMD's expertise in these areas and highlights the support that SWMD can offer its communities. Webinars also help to create a supporter database. These form of outreach could also help to feature jurisdictions that are doing particularly well according to the annual recycling report card.

Evaluation

Website analytics will help determine whether 25 additional annual report readers per year have been recruited. Quantify the number or personal outreach to elected officials in at least two to three communities per year regarding recycling, source reduction, and anti-dumping initiatives. To begin annual/biannual webinars for elected officials regarding recycling and resource management to create a continuing conversation about recycling. Tracking inquiries with communities on contract assistance and technical questions is also a good measure.

2. Outreach and Marketing Plan

The District needs a multi-layered, multi-faceted marketing and outreach strategy that targets audiences by identifying who they are, where they live, and events going on in their lives. Marketing focuses on each target audience and includes the following marketing efforts:

Media Platform	Comments
Social media (Facebook, Twitter, etc.)	Achieve higher Search Engine Optimization by updating meta tags for search engines, reach appropriate independent blogs, and encourage blog posts and Tweets.
Website	One-stop shop for easy access of information.
Advertising campaigns	Newspaper ads have been used in the past to advertise HHW events and anti-dumping campaigns. A strategic communications campaigns using best advertising practices and target audiences to measure advertising investments better.
Flyers, posters, etc.	Customizable, print, and online materials.
Brochures	Simple easy to read brochures with prioritized content.
Print/digital advertisements	Mainstream marketing and print/digital advertising.
District Annual Report	Research driven, focusing on property owners. Articles highlighting programs and community environmental issues.
Presentations/workshops	Customizable and direct messaging presentations to achieve community-based outreach.
Community Events	Attend local events.
Market Research	Precampaign qualitative surveys to create a baseline measurement and to test key messages

4. Outreach Priorities

Tiers relate tactics to their influencers (target audience) by a level (high, medium, or low). Most important are considered a Tier 1.

Target Audience	Tier	Tactic	Deliverable	Metrics
<p>Political Jurisdictions within Geauga-Trumbull Counties Goal: Increase the District's political jurisdictions recycling rates by five percent over the next five years through ongoing support for residential programs</p> <p>Problem: Residential recycling rates have been low possibly due to subscription barriers. The District recommends focusing on political jurisdictions and curbside recycling participation</p>	1	Provide design support for simple, customizable recycling flyers and stickers	FY 2018: library of customizable collateral material for communities	Adoption of flyers and labels by each or at least 50% of communities
	1	Create a strategy with cities/townships and haulers to make signing up for non-subscription recycling easier	FY 2017: Baseline analytics	Measure hauler subscription household counts; hauler outreach material
	1	Social media advertisements-target by location and homeowner	FY 2018: Increase resident outreach support for each community	Measure web analytics for the District and communities
	2	Release of strategic campaign and action item (Note: Actual campaign materials will be determined using best management practices and benchmark campaigns with successful outcomes. Resources and outside consultant assistance are budgeted a cyr.	FY 2018 - 1 targeted communications campaign: increase resident subscriptions to available recycling services FY 2019 - 1 targeted communications campaign: resident outreach to increase recycling participation FY 2020 - 2 campaign refresh: increase resident outreach	Measure all campaign media engagements methods of delivery and subscription requests, and increased recycling rate numbers.
	2	Host digital contests among each jurisdiction encourage friendly competition in the District to increase recycling requests	FY 2018: Increase resident outreach	Measure participation, recycling request increase, recycling tonnage over a year
	2	Implement web widget tool to help provide unified, interactive communication resources to communities and promote District events.	FY 2018: Increase resident outreach	Measure web analytics and web widget data for common searches and engagement data.
	2	Engage local media, civic groups, and homeowner associations	FY 2018 thru 2021: Increase volunteer support and message ambassadors (behavioral change)	Measure number of volunteers

Target Audience	Tier	Tactic	Deliverable	Metrics
	2	Participate in community events sign up for recycling onsite, if possible	FY 2018 thru 2021: Increase resident outreach	Measure events attended; measure residents reach to subscription requests
	2	Participate in cart/bin distribution events	FY 2018 thru 2021: Partner with haulers to increase resident outreach	Measure events attended; measure residents reach to subscription requests
	2	Consider implementing a community communications grant for jurisdictions that may be struggling to improve recycling subscriptions or increase tonnages	FY 2018 thru 2021: Increase resident outreach	Grant applications, earned media, social media engagements
Residents using drop-off recycling centers Problem: Illegal dumping and wish-cycling is occurring throughout the SWMD Goal: Curb illegal dumping at recycling centers by 10% over the next three years	1	Create baseline measurement on number of sites that have had dumping issues in the past	FY2018 thru FY2020 Observational measurement pre & post campaign	Baseline number to weigh against after communications campaign
	1	Onsite interviews with recycling users at at-risk recycling centers. Determine top contamination material (requires discussion with MRF).	FY2018 Discover incidents barriers and benefits	Baseline number of incidents observed by users to weigh against after communications campaign
	1	Discuss operational changes: policy, enforcement, investments, incentives, etc. to serve as a call for action	FY2018 Determine what can be accomplished with current resources to encourage behavior change	Measurement will depend on recommended operational changes
	1	Based on data, create strategic, anti-dumping communications campaign measurement and tactics. Message specific to barriers.	FY2018 Implement campaign strategy	Using measurement baseline and goals determine campaign success after 6-12 months of implementation
	2	Determine whether a refresh campaign is needed	FY2019 Revisit campaign metrics	Compare baseline metrics
	2	Determine whether a refresh campaign is needed	FY2019 Revisit campaign metrics	Compare baseline metrics to current report

APPENDIX M WASTE MANAGEMENT CAPACITY ANALYSIS

Appendix M provides the SWMD's strategy for ensuring that it has access to solid waste management facilities. While the primary focus of this strategy is ensuring access to adequate disposal capacity, the SWMD will also ensure that it has access to processing capacity for recyclables and, if needed, access to transfer facilities.

A. Access to Publicly-Available Landfill Facilities

Table M-1 Remaining Operating Life of Publicly-Available Landfills

Facility	Location	Years of Remaining Capacity
Lake County Solid Waste Facility	Lake	6.6
Lorain County Landfill LLC	Lorain	11.7
Carbon Limestone Landfill LLC	Mahoning	60.7
Mahoning Landfill, Inc.	Mahoning	45.7
Countywide Recycling & Disposal Facility	Stark	75.6
Kimble Sanitary Landfill	Tuscarawas	30.8
Geneva Landfill	Ashtabula	85.9
American Landfill, Inc.	Stark	84.5
Hancock County Sanitary Landfill	Hancock	33.4
Noble Road Landfill	Richland	8.6
Valley Waste	Pennsylvania	Unknown

Source(s) of Information
Annual District Report Review Forms 2015, 2014, and 2013
2015 Ohio Facility Data Report Tables (Table 13) published by Ohio EPA

Table M-1 lists the landfills where waste from the SWMD was disposed in the reference year and the two prior years. The landfills listed include those that accepted direct-haul and those that accepted transferred waste.

Over the past three years, the SWMD disposed waste in 9 different in-state landfills and one out-of-state landfill. Table M-2 lists the landfill facilities and percentage of SWMD waste accepted in 2015. The landfills identified and percentages include direct hauled and transferred waste.

Table M-2 Tons and Percent Waste Sent to Disposal

Facility	Total Tons Disposed	Percent of Waste Disposed in Landfills
Lake County Solid Waste Facility	15,228	4.8%
Lorain County Landfill LLC	22,133	6.9%
Carbon Limestone Landfill LLC	199,628	62.4%
Mahoning Landfill, Inc.	34,559	10.8%
Countywide Recycling & Disposal Facility	1,609	0.5%
Kimble Sanitary Landfill	1,562	0.5%
Geneva Landfill	11,683	3.7%
American Landfill, Inc.	18,829	5.9%
Valley Waste	8,586	2.7%
Hancock County Sanitary Landfill	-	0.0%

Facility	Total Tons Disposed	Percent of Waste Disposed in Landfills
Noble Road Landfill	6,118	

Source:
 2015 Ohio Facility Data Tables (Table 15) published by Ohio EPA
 Sample Calculation:
 Transferred waste to each landfill was calculated using ratio of total waste hauled to waste reported to each landfill.
 Percentage of waste disposed in landfills = landfill total tons / total landfilled waste x 100%

To demonstrate the SWMD has adequate disposal capacity the landfill that historically took the largest amounts of the SWMD’s waste must have adequate remaining life for the first 8 years of the planning period. As seen in Table M-2, more than half of the Districts disposal, 62.4 percent, went to the Carbon Limestone Landfill in Mahoning County. The second most utilized landfill was the Mahoning Landfill where almost 11 percent of the District’s waste was sent. All landfills that the District sends waste to have more than ten years of capacity remaining (Table M-1), except for two (Lake County and Noble Road). The Carbon Limestone Landfill has 60 years of remaining capacity. Therefore, the District has enough disposal capacity through the planning period of 2033.

B. Access to Captive Landfill Facilities

Captive landfills are not located within the SWMD, thus this section is not relevant to the SWMD.

Table M-3 Remaining Operating Life of Privately-Available Landfills

Facility	Location	Years of Remaining Capacity
none		

C. Incinerators and Energy Recovery Facilities

Table M-5 Incinerators and Energy Recovery Facilities Used by the District in the Reference Year

Facility Name	Location		Type of Facility	Waste Processed from the District
	County	State		
<i>In-District</i>				
none				
<i>Out-of-District</i>				
none				
<i>Out-of-State</i>				
none				
Total				0

Notes: If less than five percent of the solid waste generated was incinerated, then incineration is not accounted for.

APPENDIX N EVALUATING GREENHOUSE GAS EMISSIONS

WARM is a tool that U.S. EPA developed to quantify the effects of waste management methods on greenhouse gas emissions. The model demonstrates the benefits of alternative management technologies over traditional management methods. WARM was applied to the reference year data and data projected for the sixth year of the planning period (year 2024). Both residential/commercial and industrial waste has been included in this analysis. Not all SWMD reported recycling and waste had specific material composition breakdown as identified in WARM’s model material composition categories. Some of the category totals were combined to create corresponding input entries available in WARM.

The comparison of greenhouse gas emissions reductions for the reference year versus year 2024 suggests greenhouse gas emissions will be reduced by 159,738 metric tons of carbon dioxide equivalents (MTCO₂E).

The results from WARM are shown below:

Baseline Data Generation WARM Model for Year 2015

GHG Emissions from Alternative Waste Management Scenario (MTCO₂E):

(335,301)

Material	Tons Source Reduced	Tons Recycled	Tons Landfilled	Tons Combusted	Tons Composted	Tons Anaerobically Digested	Total MTCO ₂ E
Aluminum Cans	-	1,515.0	-	-	NA	NA	(13,798)
Steel Cans	-	68,405.0	-	-	NA	NA	(123,968)
Glass	-	819.0	-	-	NA	NA	(226)
Corrugated Containers	-	25,135.0	-	-	NA	NA	(78,438)
Dimensional Lumber	-	15,232.0	-	-	NA	NA	(37,495)
Yard Trimmings	NA	NA	-	29,793.0	-	-	(5,214)
Mixed Paper (general)	-	3,734.0	-	-	NA	NA	(13,184)
Mixed Metals	-	163.0	-	-	NA	NA	(707)
Mixed Plastics	-	997.0	-	-	NA	NA	(1,020)
Mixed Recyclables	NA	20,519.0	-	-	NA	NA	(57,966)
Food Waste	-	NA	-	1,012.0	-	-	(143)
Carpet	-	668.0	-	-	NA	NA	(1,575)
Personal Computers	-	64.0	-	-	NA	NA	(160)
Tires	-	3,735.0	-	-	NA	NA	(1,405)

Source(s) of Information:

2015 Data from commercial survey, industrial survey, buybacks, scrap yards, processors, and MRFs.

Notes:

Recycled appliances, dry cell batteries and lead acid batteries were counted as ferrous metals.

Any material recycled listed as other was calculated as mixed recyclables.

Recycled textiles were counted as carpet.

Recycled HHW and used oil is not included in model analysis.

Projected Data for Planning Year 2024

GHG Emissions from Alternative Waste Management Scenario (MTCO₂E):

(495,039)

Material	Tons Source Reduced	Tons Recycled	Tons Landfilled	Tons Combusted	Tons Composted	Tons Anaerobically Digested	Total MTCO ₂ E
Aluminum Cans	-	2,237.0	-	-	NA	NA	(20,374)
Steel Cans	-	100,994.0	-	-	NA	NA	(183,028)
Glass	-	1,209.0	-	-	NA	NA	(334)
Corrugated Containers	-	37,110.0	-	-	NA	NA	(115,808)
Dimensional Lumber	-	22,488.0	-	-	NA	NA	(55,357)
Yard Trimmings	NA	NA	-	43,987.0	-	-	(7,699)
Mixed Paper (general)	-	5,513.0	-	-	NA	NA	(19,465)
Mixed Metals	-	240.0	-	-	NA	NA	(1,042)
Mixed Plastics	-	1,473.0	-	-	NA	NA	(1,507)
Mixed Recyclables	NA	30,294.0	-	-	NA	NA	(85,580)
Food Waste	-	NA	-	1,493.0	-	-	(211)
Carpet	-	986.0	-	-	NA	NA	(2,325)
Personal Computers	-	94.0	-	-	NA	NA	(235)
Tires	-	5,514.0	-	-	NA	NA	(2,074)

Source(s) of Information:

2015 Data from commercial survey, industrial survey, buybacks, scrap yards, processors, and MRFs.

Notes:

Recycled appliances, dry cell batteries and lead acid batteries were counted as ferrous metals.

Any material recycled listed as other was calculated as mixed recyclables.

Recycled textiles were counted as carpet.

Recycled HHW and used oil is not included in model analysis.

APPENDIX O FINANCIAL DATA

Ohio Revised Code Section 3734.53(B) requires a solid waste management plan to present a budget. This budget accounts for how the District will obtain money to pay for operating the District and how the District will spend that money. For revenue, the solid waste management plan identifies the sources of funding the District will use to implement its approved solid waste management plan. The plan also provides estimates of how much revenue the District expects to receive from each source.

The District levies a generation fee on District generated waste which provides very stable funding with minimal fluctuation because residential waste is flow controlled to the Montgomery County Transfer Station. The generation fee levied ensures funding for District programs. In addition to the generation fee funding, disposal fees are levied on waste disposed in the landfill located in the District. Funding from disposal fees can vary annually depending on waste disposal at the landfill. Because the District does not own/operate the landfill there is a level of uncertainty in revenues from this source.

For expenses, the solid waste management plan identifies the programs the District intends to fund during the planning period and estimates how much the District will spend on each program. The plan must also demonstrate that planned expenses will be made in accordance with ten allowable uses that are prescribed in ORC Section 3734.57(G).

Ultimately, the solid waste management plan must demonstrate that the District will have adequate money to implement the approved solid waste management plan.

A. Funding Mechanisms and Revenue Generated

1. Disposal Fee

Table O-1 is not applicable. The District does not have an in-District landfill and does not receive revenues from disposal fees.

2. Generation Fee

Table O-2 is not applicable. The District does not levy generation fees.

3. Designation Fees

In June 2007, in accordance with Ohio Revised Code 343.014, the Board of Directors adopted designation to assure adequate financing to implement the approved solid waste plan. As part of Designation contracts were signed with solid waste facilities accepting SWMD waste to remit a \$5.50 per ton contract fee to the District. The Policy Committee of the Geauga-Trumbull Solid Waste Management District has decided to continue to use/include facility designation fee of \$5.50 per ton to fund the solid waste plan. The contract fee is collected at the first point of disposal by the designated facilities, including landfills, transfer stations, incinerators, and material recovery facilities and remitted back to the District. Table O-3 includes historical as well as future projected revenues expected from the designation contract fee.

Table O-3 Designation Fee Schedule and Revenue

Year	Designation Fee Schedule (\$ per ton)	Total Designation Fee Revenue (\$)
2011	\$5.50	\$1,776,130
2012	\$5.50	\$1,647,389
2013	\$5.50	\$1,902,300
2014	\$5.50	\$1,933,442
2015	\$5.50	\$1,661,844
2016	\$5.50	\$1,608,806
2017	\$5.50	\$1,808,797
2018	\$5.50	\$1,661,428
2019	\$5.50	\$1,661,428
2020	\$5.50	\$1,661,428
2021	\$5.50	\$1,661,428
2022	\$5.50	\$1,661,428
2023	\$5.50	\$1,661,428
2024	\$5.50	\$1,661,428
2025	\$5.50	\$1,661,428
2026	\$5.50	\$1,661,428
2027	\$5.50	\$1,661,428
2028	\$5.50	\$1,661,428
2029	\$5.50	\$1,661,428
2030	\$5.50	\$1,661,428
2031	\$5.50	\$1,661,428
2032	\$5.50	\$1,661,428
2033	\$5.50	\$1,661,428

Historical Revenue (2011 – 2015)

Annual percentage change in revenue collected fluctuates as much as 12 percent, however the 5-year average percent change decreased 1 percent. In 2011 and 2012 the District had several waste haulers under investigation for misidentification of the origin and classification of waste. In 2012, disposal fell to 285,234 tons per year and the District collected \$1,647,389 in designation fees, the lowest in the five-year span. Haulers were not correctly identifying Geauga Trumbull waste delivered to the landfills, thus creating a decrease in District revenues. The District identified and implemented waste hauler registrations in 2013 as part of their rules.

Historical Revenue Analysis (Revenue \$)					
Average revenue received (\$)	Annual change in revenue received		Annual Percentage Change in Revenue Received		Average percentage change in revenue received %
	Year	Revenue	Year	%	
\$1,784,217	2011		2011		-1%
	2012	-\$128,742	2012	-7%	
	2013	\$254,911	2013	15%	
	2014	\$31,122	2014	2%	
	2015	-\$271,578	2015	-14%	

Comparison to Currently Approved Plan

The previously approved plan projected revenue was within 5 percent of actual approved revenue except for in years 2013 and 2014 when actual revenue was 12.0 percent and 13.7 percent higher than

projected, respectively. In 2013 the District’s revenues increased \$227,550 as a result of shale well drilling. Test wells resulted in an increase of well mud being landfilled as well as drilling water and sludge from the process landfilled as industrial waste.

Projected Revenue (2019 – 2033)

Projected revenues are based on historical revenue receipts, changes that happened to revenue sources after the reference year, anticipated changes to funding sources, and other factors that could change the amounts of money the District will earn. These factors are discussed below.

Historical Revenue Receipts

From 2010 to 2015, average revenue received is \$1,784,217. The District collected fees on an average of 324,403 tons per year. Because of exploratory shale well drilling, two years demonstrate inflated revenues that are not anticipated in the planning period. For the most part, shale well drilling has been suspended because of poor production.

This 2019 Plan projects decreasing tons of industrial disposal (and industrial diversion) based on recent surveys indicating an exodus of industry leaving the region. This trend will affect future revenues received through the designation fees.

Anticipated Revenue Changes

Ohio HB 49, introduced in February 2017 and passed June 2017, exempts auto shredder residue from classification as solid waste and requirements and fees applicable to other solid wastes. Excluding auto shredder residue from solid waste fees will impact the Districts revenues in the future. As shown in below, the District averaged 22,325 tons of auto shredder disposal over 3-years.

Year	Tons of Auto Shredder Residue	
2015	25,804	
2016	17,164	Average
2017	24,008*	22,325

*estimated full year from 9 months of data.

Using the average tons of auto shredder residue disposed, calculations estimate a loss of \$122,789 annually (22,325 tons x \$5.50 contract fee = \$122,789) in revenues beginning in 2018.

Projections

Designation Fee Revenue is projected to hold constant at the 5-year average (2011 to 2015) minus the projected auto shredder residue disposal.

Year	Projected Disposal Tonnage	Projected Disposal Tonnage Subtracting Auto Shredder Residue	Projected Revenue
2018	324,403	302,078	\$1,661,428
2019	324,403	302,078	\$1,661,428
2020	324,403	302,078	\$1,661,428
2021	324,403	302,078	\$1,661,428
2022	324,403	302,078	\$1,661,428
2023	324,403	302,078	\$1,661,428
2024	324,403	302,078	\$1,661,428
2025	324,403	302,078	\$1,661,428
2026	324,403	302,078	\$1,661,428
2027	324,403	302,078	\$1,661,428
2028	324,403	302,078	\$1,661,428
2029	324,403	302,078	\$1,661,428
2030	324,403	302,078	\$1,661,428
2031	324,403	302,078	\$1,661,428

Year	Projected Disposal Tonnage	Projected Disposal Tonnage Subtracting Auto Shredder Residue	Projected Revenue
2032	324,403	302,078	\$1,661,428
2033	324,403	302,078	\$1,661,428

Sample Calculation

Projected Disposal Tonnage = average annual revenue received / per ton designation fee amount

324,403 tons = \$1,784,217 / \$5.50

Projected Disposal Subtracting Auto Shredder Residue = 324,403 tons – 22,325 tons = 302,078 tons

Projected Revenue = 302,078 tons x \$5.50 = \$1,661,428

4. Loans

Table O-4 Debt

Year Loan Obtained	Outstanding Balance	Lending Institution	Loan Term (years)	Annual Debt Service (\$)
n/a				

Table O-4 is not applicable. The District does not have outstanding debt due to existing loans and the Policy Committee does not intend to secure loans to finance implementing this 2019 solid waste management plan.

5. Other Sources of District Revenue

The District receives revenues from: interest, sale of recyclable, user fees on e-waste (user fees were suspended in 2017) and contract settlement penalties. Prior to 2016, revenues from sale of recyclables, user fees on e-waste, and contract settlement penalty revenues were not reported on the District Fee Reports to Ohio EPA. The State Auditor report credits \$1,173,976.84 as revenue from these sources. The \$1,173,976.84 is added to the fund balance at 2016 year-end as shown in Table O-5 to reconcile the auditor reports to the quarterly fee reports. Revenues from these sources will be recorded on future quarterly fee reports.

Interest earned is projected assuming a 1 percent annual percentage yield. The District is projecting to receive \$5,000 annual revenue from recycling during the planning period. Recycling revenue fluctuates with the markets. The District sales computers, appliances, and used oil. These markets are not as deeply affected by the China ban of recycling imports.

Table O-5 Other Revenues and Other Revenue Sources

Year	Interest	Recycling Revenue	Revenue Previously not Reported	Total Other Revenue
2011	\$1,118			\$1,118
2012	\$1,571			\$1,571
2013	\$1,391			\$1,391
2014	\$924			\$924
2015	\$2,524			\$2,524
2016	\$19,674		\$1,173,977	\$1,193,651
2017	\$46,065	\$6,823		\$52,888
2018	\$51,367	\$5,000	\$0	\$56,367
2019	\$49,864	\$5,000	\$0	\$54,864
2020	\$47,950	\$5,000	\$0	\$52,950
2021	\$45,718	\$5,000	\$0	\$50,718
2022	\$43,733	\$5,000	\$0	\$48,733
2023	\$41,502	\$5,000	\$0	\$46,502
2024	\$38,833	\$5,000	\$0	\$43,833
2025	\$36,013	\$5,000	\$0	\$41,013

Year	Interest	Recycling Revenue	Revenue Previously not Reported	Total Other Revenue
2026	\$33,304	\$5,000	\$0	\$38,304
2027	\$30,404	\$5,000	\$0	\$35,404
2028	\$27,307	\$5,000	\$0	\$32,307
2029	\$24,008	\$5,000	\$0	\$29,008
2030	\$20,196	\$5,000	\$0	\$25,196
2031	\$16,167	\$5,000	\$0	\$21,167
2032	\$12,216	\$5,000	\$0	\$17,216
2033	\$8,039	\$5,000	\$0	\$13,039

Source(s) of information:

CY 2011-2017 revenues sourced from quarterly fee reports. All other amounts are projections.

Sample Calculations:

Other Revenue Total (2011) = interest + sale of recyclable + user fees on e-waste + contract settlement penalties

6. Summary of District Revenues

Table O-6 Total Revenue

Year	Designation Fees	Other Revenue	Total Revenue
2011	\$1,776,130	\$1,118	\$1,777,248
2012	\$1,647,389	\$1,571	\$1,648,960
2013	\$1,902,300	\$1,391	\$1,903,691
2014	\$1,933,442	\$924	\$1,934,366
2015	\$1,661,844	\$2,524	\$1,664,368
2016	\$1,608,806	\$1,193,651	\$2,802,457
2017	\$1,808,797	\$52,888	\$1,861,685
2018	\$1,661,428	\$56,367	\$1,717,795
2019	\$1,661,428	\$54,864	\$1,716,292
2020	\$1,661,428	\$52,950	\$1,714,377
2021	\$1,661,428	\$50,718	\$1,712,146
2022	\$1,661,428	\$48,733	\$1,710,161
2023	\$1,661,428	\$46,502	\$1,707,930
2024	\$1,661,428	\$43,833	\$1,705,260
2025	\$1,661,428	\$41,013	\$1,702,440
2026	\$1,661,428	\$38,304	\$1,699,732
2027	\$1,661,428	\$35,404	\$1,696,832
2028	\$1,661,428	\$32,307	\$1,693,735
2029	\$1,661,428	\$29,008	\$1,690,435
2030	\$1,661,428	\$25,196	\$1,686,624
2031	\$1,661,428	\$21,167	\$1,682,594
2032	\$1,661,428	\$17,216	\$1,678,644
2033	\$1,661,428	\$13,039	\$1,674,466

CY 2011-2017 revenues sourced from quarterly fee reports. All other amounts are projections (refer to Table O-2 and O-5).

Sample Calculations:

Total Revenue (2015) = Disposal Fees + Generation Fees + Designation Fee + Other Revenue

Total Revenue (2015) = \$0 + \$0 + \$1,661,844 + \$2,524

Total Revenue (2015) = \$1,664,368

Assumptions:

Table O-6 includes all funding mechanisms that will be used and the total amount of revenue generated by each method for each year of the planning period. The District's primary funding mechanism is the designation fee. The District also receives alternate revenues from interest.

B. Cost of Implementing Plan

Table O-7 Expenses – Historical

Line #	Category/Program	2011	2012	2013	2014	2015	2016	2017	2018
1	1. Plan Monitoring/Prep.	\$34,700	\$41,948	\$66,531	\$35,661	\$68,933	\$21,982	\$30,000	\$29,000
1.a	a. Plan Preparation	\$29,700	\$41,948	\$66,531	\$35,661	\$0	\$0	\$27,500	\$27,500
1.b	b. Plan Monitoring	\$5,000	\$0	\$0	\$0	\$68,933	\$21,982	\$2,500	\$1,500
1.c	c. Other	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2	2. Plan Implementation	\$1,122,821	\$1,197,231	\$1,174,402	\$1,137,669	\$1,122,488	\$1,148,356	\$1,287,728	\$1,935,496
2.a	a. District Administration	\$315,686	\$267,226	\$374,972	\$258,056	\$360,304	\$304,237	\$454,318	\$463,267
2.a.1	Personnel	\$182,104	\$179,246	\$266,121	\$163,164	\$275,734	\$196,303	\$294,776	\$324,500
2.a.2	Office Overhead	\$117,199	\$80,485	\$99,878	\$73,328	\$62,831	\$72,503	\$91,036	\$93,767
2.a.3	Other	\$16,384	\$7,495	\$8,973	\$21,564	\$21,740	\$35,431	\$68,506	\$45,000
2.b	b. Facility Operation	\$12,000	\$12,000	\$12,000	\$12,000	\$16,044	\$0	\$0	\$0
2.b.1	MRF/Recycling Center	\$12,000	\$12,000	\$12,000	\$12,000	\$0	\$0	\$0	\$0
2.b.2	Compost	\$0	\$0	\$0	\$0	\$16,044	\$0	\$0	\$0
2.b.3	Transfer	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2.b.4	Special Waste	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2.c	c. Landfill Closure/Post-Closure	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2.d	d. Recycling Collection	\$460,536	\$563,064	\$434,473	\$455,960	\$403,779	\$478,870	\$465,281	\$534,000
2.d.1	Curbside	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2.d.2	Drop-off	\$460,536	\$563,064	\$434,473	\$455,960	\$388,247	\$465,870	\$447,281	\$516,000
2.d.3	Combined Curbside/Drop-off	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2.d.4	Multi-family	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2.d.5	Business/Institutional	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2.d.6	Other	\$0	\$0	\$0	\$0	\$15,532	\$13,000	\$18,000	\$18,000
2.e	e. Special Collections	\$273,948	\$297,326	\$279,363	\$344,288	\$230,943	\$296,706	\$285,076	\$822,875
2.e.1	Tire Collection	\$104,214	\$85,286	\$78,923	\$70,963	\$71,079	\$58,721	\$62,201	\$100,000
2.e.2	HHW Collection	\$151,237	\$188,465	\$174,574	\$258,615	\$147,512	\$198,430	\$178,875	\$678,875
2.e.3	Electronics Collection			\$14,155	\$0		\$21,176	\$25,000	\$25,000
2.e.4	Appliance Collection					\$9,211	\$15,976	\$16,000	\$16,000
2.e.5	Other Collection Drives	\$18,497	\$23,575	\$11,711	\$14,709	\$3,140	\$2,403	\$3,000	\$3,000
2.f	f. Yard Waste/Other Organics					\$10,000	\$0	\$0	\$0
2.g	g. Education/Awareness	\$60,651	\$57,615	\$73,594	\$67,365	\$101,418	\$68,544	\$83,053	\$95,4244
2.g.1	Education Staff	\$57,626	\$46,666	\$65,650	\$55,078	\$65,033	\$63,469	\$71,056	\$73,187
2.g.2	Advertisement/Promotion					\$17,602	\$0	\$0	\$25,000
2.g.3	Other	\$3,025	\$10,949	\$7,944	\$12,287	\$18,783	\$5,075	\$11,997	\$12,237
2.h	h. Recycling Market Development	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2.h.1	General Market Development Activities								
2.h.2	ODNR pass-through grant								
2.i	i. Service Contracts								
2.j	j. Feasibility Studies								\$19,929
2.k	k. Waste Assessments/Audits								
2.l	l. Dump Cleanup								
2.m	m. Litter Collection/Education								
2.n	n. Emergency Debris Management								
2.o	o. Loan Payment								
2.p	p. Other								
3	3. Health Dept. Enforcement	\$44,605	\$44,910	\$51,750	\$44,250	\$35,250	\$48,750	\$50,000	\$50,000
4	4. County Assistance	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
5	5. Well Testing								
6	6. Out-of-State Waste Inspection								
7	7. Open Dump, Litter Law Enforcement	\$181,221	\$181,442	\$157,704	\$170,967	\$154,176	\$21,378	\$3,600	\$3,672
7.a	a. Health Departments					\$8,250		\$0	\$0
7.b	b. Local Law Enforcement	\$181,221	\$181,442	\$157,704	\$170,967	\$145,926	\$21,378	\$0	\$0
7.c	c. Other							\$3,600	\$3,672
8	8. Health Department Training								
9	9. Municipal/Township Assistance	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
10	10. Compensation to Affected Community (ORC Section 3734.35)								
	Total Expenses	\$1,383,348	\$1,465,531	\$1,450,388	\$1,388,547	\$1,380,847	\$1,240,466	\$1,371,328	\$2,018,168

Table O-7 Expenses – Planning Period

Line #	Category/Program	2019	2020	2021	2022	2023	2024	2025	2026
1	1. Plan Monitoring/Prep.	\$1,500	\$1,500	\$1,500	\$1,500	\$29,000	\$19,000	\$1,500	\$1,500
1.a	a. Plan Preparation	\$0	\$0	\$0	\$0	\$27,500	\$17,500	\$0	\$0
1.b	b. Plan Monitoring	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500
1.c	c. Other	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2	2. Plan Implementation	\$1,769,685	\$1,816,449	\$1,800,391	\$1,820,656	\$1,832,976	\$1,829,345	\$1,829,345	\$1,829,345
2.a	a. District Administration	\$535,500	\$547,515	\$559,890	\$572,637	\$585,766	\$585,800	\$585,800	\$585,800
2.a.1	Personnel	\$400,500	\$412,515	\$424,890	\$437,637	\$450,766	\$450,800	\$450,800	\$450,800
2.a.2	Office Overhead	\$90,000	\$90,000	\$90,000	\$90,000	\$90,000	\$90,000	\$90,000	\$90,000
2.a.3	Other	\$45,000	\$45,000	\$45,000	\$45,000	\$45,000	\$45,000	\$45,000	\$45,000
2.b	b. Facility Operation	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2.b.1	MRF/Recycling Center	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2.b.2	Compost	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2.b.3	Transfer	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2.b.4	Special Waste	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2.c	c. Landfill Closure/Post-Closure	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2.d	d. Recycling Collection	\$572,320	\$582,846	\$548,071	\$549,127	\$559,729	\$552,544	\$552,544	\$552,544
2.d.1	Curbside	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2.d.2	Drop-off	\$526,320	\$536,846	\$529,071	\$530,127	\$540,729	\$551,544	\$551,544	\$551,544
2.d.3	Combined Curbside/Drop-off	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2.d.4	Multi-family	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2.d.5	Business/Institutional	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000
2.d.6	Other	\$45,000	\$45,000	\$18,000	\$18,000	\$18,000	\$0	\$0	\$0
2.e	e. Special Collections	\$447,875	\$450,664	\$453,481	\$456,326	\$459,199	\$462,101	\$462,101	\$462,101
2.e.1	Tire Collection	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000
2.e.2	HHW Collection	\$278,875	\$281,664	\$284,481	\$287,326	\$290,199	\$293,101	\$293,101	\$293,101
2.e.3	Electronics Collection	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000
2.e.4	Appliance Collection	\$16,000	\$16,000	\$16,000	\$16,000	\$16,000	\$16,000	\$16,000	\$16,000
2.e.5	Other Collection Drives	\$3,000	\$3,000	\$3,000	\$3,000	\$3,000	\$3,000	\$3,000	\$3,000
2.f	f. Yard Waste/Other Organics	\$18,000	\$18,000	\$18,000	\$18,000	\$18,000	\$18,000	\$18,000	\$18,000
2.g	g. Education/Awareness	\$135,989	\$139,423	\$142,948	\$146,567	\$150,282	\$150,900	\$150,900	\$150,900
2.g.1	Education Staff	\$75,383	\$77,644	\$79,974	\$82,373	\$84,844	\$84,900	\$84,900	\$84,900
2.g.2	Advertisement/Promotion	\$58,607	\$59,779	\$60,974	\$62,194	\$63,438	\$64,000	\$64,000	\$64,000
2.g.3	Other	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000
2.h	h. Recycling Market Development	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2.h.1	General Market Development Activities								
2.h.2	ODNR pass-through grant								
2.i	i. Service Contracts								
2.j	j. Feasibility Studies								
2.k	k. Waste Assessments/Audits								
2.l	l. Dump Cleanup								
2.m	m. Litter Collection/Education								
2.n	n. Emergency Debris Management								
2.o	o. Loan Payment								
2.p	p. Other	\$78,000	\$78,000	\$78,000	\$78,000	\$60,000	\$60,000	\$60,000	\$60,000
3	3. Health Dept. Enforcement	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$50,000	\$50,000	\$50,000
4	4. County Assistance	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
5	5. Well Testing								
6	6. Out-of-State Waste Inspection								
7	7. Open Dump, Litter Law Enforcement	\$35,000	\$110,000	\$102,500	\$104,500	\$106,540	\$106,500	\$106,500	\$106,500
7.a	a. Health Departments	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
7.b	b. Local Law Enforcement	\$25,000	\$100,000	\$100,000	\$102,000	\$104,040	\$104,000	\$104,000	\$104,000
7.c	c. Other	\$10,000	\$10,000	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500
8	8. Health Department Training								
9	9. Municipal/Township Assistance	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
10	10. Compensation to Affected Community (ORC Section 3734.35)								
	Total Expenses	\$1,881,185	\$2,002,949	\$1,979,391	\$2,001,656	\$2,043,516	\$2,004,845	\$1,987,345	\$1,987,345

Table O-7 Expenses – Planning Period

Line #	Category/Program	2027	2028	2029	2030	2031	2032	2033
1	1. Plan Monitoring/Prep.	\$1,500	\$1,500	\$29,000	\$19,000	\$1,500	\$1,500	\$1,500
1.a	a. Plan Preparation	\$0	\$0	\$27,500	\$17,500	\$0	\$0	\$0
1.b	b. Plan Monitoring	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500
1.c	c. Other	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2	2. Plan Implementation	\$1,829,345	\$1,829,345	\$1,829,345	\$1,829,345	\$1,829,345	\$1,829,345	\$1,829,345
2.a	a. District Administration	\$585,800	\$585,800	\$585,800	\$585,800	\$585,800	\$585,800	\$585,800
2.a.1	Personnel	\$450,800	\$450,800	\$450,800	\$450,800	\$450,800	\$450,800	\$450,800
2.a.2	Office Overhead	\$90,000	\$90,000	\$90,000	\$90,000	\$90,000	\$90,000	\$90,000
2.a.3	Other	\$45,000	\$45,000	\$45,000	\$45,000	\$45,000	\$45,000	\$45,000
2.b	b. Facility Operation	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2.b.1	MRF/Recycling Center	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2.b.2	Compost	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2.b.3	Transfer	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2.b.4	Special Waste	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2.c	c. Landfill Closure/Post-Closure	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2.d	d. Recycling Collection	\$552,544	\$552,544	\$552,544	\$552,544	\$552,544	\$552,544	\$552,544
2.d.1	Curbside	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2.d.2	Drop-off	\$551,544	\$551,544	\$551,544	\$551,544	\$551,544	\$551,544	\$551,544
2.d.3	Combined Curbside/Drop-off	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2.d.4	Multi-family	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2.d.5	Business/Institutional	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000
2.d.6	Other	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2.e	e. Special Collections	\$462,101	\$462,101	\$462,101	\$462,101	\$462,101	\$462,101	\$462,101
2.e.1	Tire Collection	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000
2.e.2	HHW Collection	\$237,900	\$237,900	\$237,900	\$237,900	\$237,900	\$237,900	\$237,900
2.e.3	Electronics Collection	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000
2.e.4	Appliance Collection	\$16,000	\$16,000	\$16,000	\$16,000	\$16,000	\$16,000	\$16,000
2.e.5	Other Collection Drives	\$3,000	\$3,000	\$3,000	\$3,000	\$3,000	\$3,000	\$3,000
2.f	f. Yard Waste/Other Organics	\$18,000	\$18,000	\$18,000	\$18,000	\$18,000	\$18,000	\$18,000
2.g	g. Education/Awareness	\$150,900	\$150,900	\$150,900	\$150,900	\$150,900	\$150,900	\$150,900
2.g.1	Education Staff	\$84,900	\$84,900	\$84,900	\$84,900	\$84,900	\$84,900	\$84,900
2.g.2	Advertisement/Promotion	\$64,000	\$64,000	\$64,000	\$64,000	\$64,000	\$64,000	\$64,000
2.g.3	Other	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000
2.h	h. Recycling Market Development	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2.h.1	General Market Development Activities							
2.h.2	ODNR pass-through grant							
2.i	i. Service Contracts							
2.j	j. Feasibility Studies							
2.k	k. Waste Assessments/Audits							
2.l	l. Dump Cleanup							
2.m	m. Litter Collection/Education							
2.n	n. Emergency Debris Management							
2.o	o. Loan Payment							
2.p	p. Other	\$60,000	\$60,000	\$60,000	\$60,000	\$60,000	\$60,000	\$60,000
3	3. Health Dept. Enforcement	\$60,000	\$60,000	\$60,000	\$60,000	\$60,000	\$60,000	\$60,000
4	4. County Assistance	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.a	a. Maintaining Roads							
4.b	b. Maintaining Public Facilities							
4.c	c. Providing Emergency Services							
4.d	d. Providing Other Public Services							
5	5. Well Testing							
6	6. Out-of-State Waste Inspection							
7	7. Open Dump, Litter Law Enforcement	\$106,500	\$106,500	\$106,500	\$106,500	\$106,500	\$106,500	\$106,500
7.a	a. Health Departments	\$0	\$0	\$0	\$0	\$0	\$0	\$0
7.b	b. Local Law Enforcement	\$104,000	\$104,000	\$104,000	\$104,000	\$104,000	\$104,000	\$104,000
7.c	c. Other	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500
8	8. Health Department Training							
9	9. Municipal/Township Assistance	\$0	\$0	\$0	\$0	\$0	\$0	\$0
9.a	a. Maintaining Roads							
9.b	b. Maintaining Public Facilities							
9.c	c. Providing Emergency Services							
9.d	d. Providing other Public Services							
10	10. Compensation to Affected Community (ORC Section 3734.35)							
	Total Expenses	\$1,987,345	\$1,932,144	\$1,932,144	\$1,959,644	\$1,949,644	\$1,932,144	\$1,932,144

The expense line items in Table O-7 are the same as those that the District uses to report expenses for the quarterly fee report. In 2015, Ohio EPA update the expense line items on the quarterly fee report. In some case, the line items used to report expenses historical quarterly fee reports will differ from the line items in Table O-7. Each expense allocated to a line item in Table O-7 is explained here:

1. Plan Monitoring/Prep.

1.a Plan Preparation

2011-2015 – The expense line items shown here and on Table O-7 is not the same line items on the quarterly fee reports prior to 2015. The costs shown for 2011 through 2015 are actual expenses estimated from 20 percent of District staff for plan monitoring.

2017-2033 – The expense line items shown are estimates for consulting fees for plan preparation beginning in 2017 and expected every five years.

1.b Plan Monitoring

2011-2016– The expense line items shown here and on Table O-7 is not the same line items on the quarterly fee reports prior to 2015. The costs shown are actual expenses for consulting services.

2018-2033 - The costs shown are estimations of \$1,500 to be held constant to include expenses for preparing the annual district report and data collection.

2. Plan Implementation

2.a District Administration

2.a.1 Personnel

This is the cost for payroll and benefits for all District personnel (including PERS, Medicare, and insurance).

2011-2016 - The costs shown for 2011 through 2015 are actual expenses for 3 staff – Director, Operations Compliance Coordinator, and Administrative Assistant. In 2016, costs decreased with retirement of the Director. (The District’s education specialist, now referred to as Public Relations Community Outreach Coordinator is included in line item 2.g.1 Education Staff.)

2017 - Budget increased with hiring of a Director (January 2017) and a Compliance Manager (October 2017).

2019- Budget increases to add an assistant director to staff.

2020 - 2033 - In 2017, national inflation rate was 2.2 percent. The District did not increase personnel based on historical data but is budgeting for a 3 percent rate annual rate increase.

2.a.2 Office Overhead

2011-2033 – Office rent, insurance, utilities, supplies (including magazine subscriptions, postage, reproductions, advertising, printing, etc.), office equipment, phone, billing, event registrations, conferences, and travel. Includes maintenance contract costs from Trumbull County Commissioners. The costs shown for 2011 through 2017 are actual expenses. Year 2018 through the remainder of the planning period is inflated at 3 percent annually. Projecting overhead costs at a 3 percent rate increase will allow approximately 0.8 percent of this line item to be set aside to help with building repairs such as driveway repaving, roof replacement, etc.

2.a.3 Other

2011-2017 - Includes legal fees and financial audits. The costs shown for 2011 through 2017 are actual expenses. These costs fluctuate depending on legal service needs. Other costs are held constant through the planning period based on the most recent budget.

2018-2033 - Year 2018 through the remainder of the planning period is inflated at 2.2 percent annually. If expenses are less than budgeted figures the District may re-appropriate to be set aside to help with building repairs such as driveway repaving, roof replacement, etc.

2.b Facility Operation

2.b.1 MRF/Recycling Center

2011-2014 - This is the cost for Howland/Trumbull Recycling Center. The District subsidized the recycling center at \$1,000 per month. In 2015, 2016, 2017 the subsidy was placed in line item 2.d.6 Recycling Collection Other.

2.b.2 Compost

2015 - The District purchased a compost machine for Earth Angel Farms as part of the organics management program. Per Ohio EPA fee report instructions this line item is reserved for expenses related to District facilities owned, operated or contracted. Future expenses for the organics management program will be recorded in line item 2.f. Yard Waste/Other Organics.

2.d. Recycling Collection

2.d.2 Drop-off

2011-2016 - This is the cost to service the drop-off recycling program (provide drop-off bins, collect recyclables, and process recyclables).

2017 - Estimated contract costs based on 9 months of service.

2018 - Contract costs in 2018.

2019-2020 – Contract has a 2 percent automatic contract increase and option renew every 2 years. Annual costs were assumed to increase annually at 2 percent.

2021 – Costs are expected to decrease by roughly \$18,512 (\$22.25 per lift x 16 lifts x 52 weeks) in anticipation of curbside recycling in Warren. Curbside recycling in Warren will allow removal of 7 containers at 3 drop-off sites.

2022 – Costs are expected to decrease by roughly \$9,526 in anticipation of curbside recycling in Niles. Curbside recycling in Niles will allow removal of 4 containers at 1 drop-off site.

2023-2033 – Contract has a 2 percent automatic contract increase and option renew every 2 years. Annual costs were assumed to increase annually at 2 percent.

2.d.5 Business/Institutional

2019-2033 – Estimated costs for special event containers. Boxes are estimated at \$100 per container.

2.d.6 Other

2015-2018 – Expenses to subsidize the Howland/Trumbull Recycling Center. The District subsidized the recycling center at \$1,000 per month. Year 2016 increased to \$1,500 per month. This plan projects subsidies at \$1,500 for the next 5 years.

2019-2023 – This plan projects annual subsidies at \$1,500 for the next 5 years..

2019-2020 – Budgeted \$27,000 in 2019 and 2020 for drop-off program support aimed at reducing litter and deterring contamination. The District is budgeting for surveillance cameras (at some site locations), site improvements to make sites more aesthetically pleasing (fencing, electric, additional signs) and possible site monitor stipends (at some locations). Two locations are targeted in 2019 and another two in 2020. The District expects to seek Ohio EPA community development grants for purchase of equipment, materials and supplies for on-going litter collection efforts and surveillance cameras for litter law enforcement efforts.

2.e. Special Collections

2.e.1. Tire Collection

2011 - 2017 - Expenses for tire collections, management, and processing.

2018 - 2033 –Annual budgeted expenses are held constant at the available grant amount \$100,000.

2.e.2. HHW Collection

2011-2017 - The costs shown are actual expenses for managing HHW collected at the HHW Trumbull Recycling Facility and at the Geauga County one day events.

2018 – Estimated program costs which includes \$500,000 for capital costs for a HHW Geauga Recycling Facility.

2019-2033 – Year 2019 projects a high estimate of an additional \$100,000 operational costs included for management of the HHW Geauga Recycling Facility. Operational costs can vary depending on volumes service availability. The following estimates were used to determine a \$100,000 operation estimate for planning purposes:

- High Estimate

HHW Recycling Facility receives 236,693 pounds of HHW

Trumbull County households is approximately 80,000

Program cost was \$178,875 (includes single day events)

Gauga County households is approximately 37,000

Calculated cost per pound is $\$178,875 / 236,693 \text{ lb} = \$0.72/\text{lb}$

Calculated pounds per household is $236,693 \text{ lbs} / 80,000 \text{ HH} = 3.0 \text{ lb}/\text{HH}$

$3.0 \text{ lb} / \text{HH} \times 37,000 \text{ HH (Gauga County)} = 111,000 \text{ lbs}$

Estimated cost = $\$0.72/\text{lb} \times 111,000 \text{ lbs} = \$80,040$

Note: This estimate could be high estimate because it includes costs for the single day event. It also assumes all users at HHW Recycling Facility are Trumbull County households. Studies conducted by District show approximately 30 percent are Gauga County users. However, a high estimate does account for additional volume that would be expected.

- Low Estimate

HHW Recycling Facility received 3,921 vehicles

Program cost was \$178,875 (includes single day events)

Cost per vehicle is \$46

If 30 percent of vehicles are Gauga County users, assume 1,200 vehicles for a Gauga County facility ($3,921 \times 0.30 = 1,200$), then $1,200 \text{ vehicles} \times \$46/\text{vehicle} = \$54,745$

2020-2023- Projects annual increase at 2 percent. Allows for a 3 percent per pound cost increase on HHW disposal.

2024-2033 – Because of variability, costs are projected to remain flat through the planning period.

2.e.3. Electronics Collection

2013 – Costs shown for managing electronics collected at the HHW Trumbull Recycling facility and at the Gauga County one day event.

2016 - Costs shown for managing electronics collected at the HHW Trumbull Recycling facility.

2017-2033 – A cost increase is expected in 2017 reflective of another increased television per pound cost. Factoring in approximately \$25,000 annually to manage all other electronics in 2018 at HHW Geauga Recycling Facility. Expected expenses are held constant through the planning period.

2.e.4. Appliance Collection

2015-2016 – Costs shown for managing appliances collected at the HHW Trumbull Recycling facility and at the Gauga County one day event.

2017-2033 – Expected expenses are held constant through the planning period. Costs include collection at site, transportation to scrap dealer, and Freon removal. Same arrangement of operations and processing expected at HHW Geauga Recycling Facility.

2.e.5. Other – This recording of program expenses in this line item have been inconsistent. Plus, Ohio EPA updated line item expenses on quarterly fee reports in 2015. Looking through historical records the District did its best to match program expenses with this line item.

2011 - Expenses for the following programs were recorded in this line item:

- Electronic Collection
- Christmas Tree Recycling Grants \$5,402
- Appliance Collection
- Document Destruction Day

2012 - Expenses for the following programs were recorded in this line item:

- Electronic Collection
- Christmas Tree Recycling Grants \$9,800
- Appliance Collection
- Document Destruction Day

2013 - Expenses for the following programs were recorded in this line item (These totals do not match fee report for this line item.)

- Christmas Tree Recycling Grants \$7,133
- Appliance Collection \$11,230
- Document Destruction Day \$1,922

2014 - Expenses for the following programs were recorded in this line item (These totals do not match fee report for this line item.)

- Electronic Collection \$5,527
- Christmas Tree Recycling Grants \$11,230
- Appliance Collection \$10,175
- Document Destruction Day \$4,268

2015-2016 - Expenses for Document Destruction Day.

2017-2033 - Expenses for the Document Destruction Day are held constant through the planning period.

2.f Yard Waste/Other Organics

2015 – Expenses for Christmas Tree Recycling Grants. Program was suspended in 2016.

2019 – Estimated costs to help fund on-site system for managing food waste. Systems are estimated to range between \$15,000 and \$45,000 (in facilities handling less than 300 pounds/day). If the \$18,000 is not disbursed for a project in a given year it will be appropriated for the following year providing a larger budget to implement organic projects.

2.g. Education/Awareness

2.g.1 Education Staff

2011-2017 - The costs shown are actual expenses for one education specialist (including PERS, Medicare, and insurance).

2017 – Education specialist job title was adjusted to Public Relations Community Outreach Coordinator.

2018-2023 - Budgeting for a 3 percent rate annual rate increase.

2024-2033 - Budgeting is held constant.

2.g.2. Advertisement/Promotion

2015 - The costs shown are actual expenses for publications (brochures, flyers, etc.), advertising, school program activities (calendar contest, poetry contest, and recycled sculpture contest), promotional items, and Earth Day Photo contest.

2018 – Estimated costs for produce the Reduce, Reuse, Recycle Directory and development of District education materials that are cohesive in messaging with a similar look and feel. Also includes budget to develop the outreach priority as described in Appendix L to residents to address illegal dumping at drop-offs.

2019 – Education estimated of \$1 per household (117,213 households) would calculate and education budget of \$117,213. For budgeting purposes, the District is unable to commit to that amount annually. Instead the District estimated a budget of half this, \$58,607, to use towards education and outreach as described in Appendix I. In 2019, budgeting is set to the political jurisdiction outreach priority described in Appendix L.

2020-2023 - The costs shown increase at 2 percent annually.

2024-2033 - The costs are held constant.

2.g.3. Other

2011-2016 - The costs shown are actual expenses for website (support, design, management) and education supplies. publications (brochures, flyers, etc.), advertising, school program activities (calendar contest, poetry contest, and recycled sculpture contest), promotional items, and Earth Day Photo contest. Expenses also include budgeted expenses for Great American Cleanup. Description in line item 2.g.2 is similar because prior to 2015 these expenses were recorded in line item 2.g.3. Plus, Ohio EPA updated line item categories on the quarterly fee reports in 2015.

2017 – In addition to the above expenses, a contact to re-design the website is a partial of the expenses shown.

2018 - The costs shown are estimated expenses for completing website re-design and other educational supplies.

2019-2033 - The costs shown are estimated expenses other educational supplies and miscellaneous Great American Cleanup materials. Costs are held constant.

2.j. Feasibility Studies

2018 – Cost to conduct an HHW Options Analysis Study for Geauga County.

2.p. Other

2019-2033 – Budget for Recycling Incentive Grants. The first 4 years of the planning period have earmarked \$78,000 annually with specific targets of curbside recycling startup in the larger population areas. After that \$60,000 annually is held constant.

3. Health Dept. Enforcement

2011-2016 - Expenses to contract with Geauga County, Trumbull County and Warren City Health Districts to conduct inspections and respond to complaints.

2019-2023 – Budget increases to \$75,000.

7. Open Dump, Litter Law Enforcement

7.a Health Departments

2015 - Expenses to contract with Geauga County, Trumbull County and Warren City Health Districts to conduct inspections and respond to complaints.

7.b Local Law Enforcement

2011-2015 – Expenses to Geauga County Sheriff Department, Trumbull County Sheriff Department, and Warren City Police for the Environmental Crimes Task Force.

2016 – Program was suspended

2019 – Budgeted \$25,000 in costs for reimbursement to local law enforcement for costs to run license plate, file charges and court cost. An anticipated cost of \$500 per case is budgeted allowing for approximately 50 cases in the two counties in 2019.

2020-2033 – Budgeted costs for contracting 1 full-time investigator at an hourly rate of \$30.57 is \$64,000. An additional \$36,000 is included to assist with some fringes and benefits. Costs increase to \$104,000. If program does not begin till 2021, then \$25,000 is allocated in 2020 to reimburse local law enforcement \$500 per case.

7.c Other

2017-2033 – Annual estimated costs for prosecutor fees.

Additional revenues are not expected, however, revenues could increase beyond what is projected. In the event additional revenues are received, and projected expenses remain within budgeted allowances, additional revenues will be added to the carryover balance.

Table O-8 Budget Summary

Year	Revenue	Expenses	Annual Surplus/Deficit (\$)	Balance (\$)
2010			Ending Balance	\$838,094
2011	\$1,777,248	\$1,383,348	\$393,901	\$1,231,995
2012	\$1,648,960	\$1,465,531	\$183,429	\$1,415,424
2013	\$1,903,691	\$1,450,388	\$453,303	\$1,868,727
2014	\$1,934,366	\$1,388,547	\$545,819	\$2,414,546
2015	\$1,664,368	\$1,380,847	\$283,521	\$2,698,067
2016	\$2,802,457	\$1,240,466	\$1,561,991	\$4,260,059
2017	\$1,861,685	\$1,371,328	\$490,357	\$4,750,416
2018	\$1,714,547	\$2,018,168	-\$300,373	\$4,450,043
2019	\$1,712,745	\$1,881,185	-\$166,638	\$4,283,405
2020	\$1,709,607	\$2,002,949	-\$290,204	\$3,993,201
2021	\$1,706,690	\$1,979,391	-\$269,784	\$3,723,417
2022	\$1,703,500	\$2,001,656	-\$294,966	\$3,428,451
2023	\$1,699,824	\$2,043,516	-\$340,016	\$3,088,435
2024	\$1,696,525	\$2,004,845	-\$305,021	\$2,783,414
2025	\$1,693,381	\$1,987,345	-\$290,819	\$2,492,594
2026	\$1,690,202	\$1,987,345	-\$293,964	\$2,198,630
2027	\$1,687,586	\$1,932,144	-\$241,942	\$1,956,688
2028	\$1,684,941	\$1,932,144	-\$244,558	\$1,712,130
2029	\$1,681,971	\$1,959,644	-\$274,703	\$1,437,428
2030	\$1,679,076	\$1,949,644	-\$267,673	\$1,169,755
2031	\$1,676,340	\$1,932,144	-\$253,067	\$916,687
2032	\$1,673,574	\$1,932,144	-\$255,804	\$660,883
2033	\$1,714,547	\$1,932,144	-\$258,570	\$402,313

There are a few discrepancies between Table O-8 and the quarterly fee reports, thus Table O-8 will not exactly match past fee reports. The explanation in the table below is to help navigate the errors and reconcile the differences between table O-8 and what is recorded on those fee reports. Fee report errors were made in Section 4, of the Fee Report Form. This section is the summary for the solid waste fund balance. At times addition or subtraction errors were made resulting in a chain or domino of errors on reports that followed. Revenues and expenses reported in the forms are all correct.

		Per Fee Reports Section 4	Check Math on Fee Reports	Actual	Notes
2011	Quarter 1				
	Fund Balance at the End of Last Quarter	\$838,094	\$838,094	\$838,094	
	Revenue Received this Quarter	\$397,655	\$397,655	\$397,655	
	Funds Spent this Quarter	\$265,946	\$265,946	\$265,946	
	Balance Left at the End of this Quarter	\$969,803	\$969,803	\$969,803	
	Quarter 2				
	Fund Balance at the End of Last Quarter	\$969,803	\$969,803	\$969,803	
	Revenue Received this Quarter	\$464,456	\$464,456	\$464,456	
	Funds Spent this Quarter	\$338,590	\$338,590	\$338,590	
	Balance Left at the End of this Quarter	\$1,095,669	\$1,095,669	\$1,095,669	
	Quarter 3				
	Fund Balance at the End of Last Quarter	\$1,095,669	\$1,095,669	\$1,095,669	
	Revenue Received this Quarter	\$469,654	\$469,654	\$469,654	
	Funds Spent this Quarter	\$394,628	\$394,628	\$394,628	
	Balance Left at the End of this Quarter	\$1,170,694	\$1,170,694	\$1,170,694	
	Quarter 4				
	Fund Balance at the End of Last Quarter	\$1,170,694	\$1,170,694	\$1,170,694	
	Revenue Received this Quarter	\$445,483	\$445,483	\$445,483	
	Funds Spent this Quarter	\$384,183	\$384,183	\$384,183	

		Per Fee Reports Section 4	Check Math on Fee Reports	Actual	Notes
2012	Balance Left at the End of this Quarter	\$1,231,995	\$1,231,995	\$1,231,995	
	Quarter 1				
	Fund Balance at the End of Last Quarter	\$1,231,995	\$1,231,995	\$1,231,995	
	Revenue Received this Quarter	\$411,552	\$411,552	\$411,784	Fee report summary in Section 4 excluded 283.40 in interest
	Funds Spent this Quarter	\$264,390	\$264,390	\$264,390	
	Balance Left at the End of this Quarter	\$1,379,157	\$1,379,157	\$1,379,388	
	Quarter 2				
	Fund Balance at the End of Last Quarter	\$1,379,157	\$1,379,157	\$1,379,388	Because of Quarter 1 revenue error, this Balance carried the error
	Revenue Received this Quarter	\$409,869	\$409,869	\$409,869	
	Funds Spent this Quarter	\$298,100	\$298,100	\$298,100	
	Balance Left at the End of this Quarter	\$1,490,926	\$1,490,926	\$1,491,157	
	Quarter 3				
	Fund Balance at the End of Last Quarter	\$1,490,926	\$1,490,926	\$1,491,157	
	Revenue Received this Quarter	\$414,728	\$414,728	\$414,728	
	Funds Spent this Quarter	\$437,965	\$437,965	\$437,965	
	Balance Left at the End of this Quarter	\$1,467,688	\$1,467,688	\$1,467,920	
	Quarter 4				
	Fund Balance at the End of Last Quarter	\$1,467,688	\$1,467,688	\$1,467,920	
	Revenue Received this Quarter	\$412,580	\$412,580	\$412,580	
	Funds Spent this Quarter	\$465,075	\$465,075	\$465,075	
Balance Left at the End of this Quarter	\$1,414,914	\$1,415,192	\$1,415,424		
2013	Quarter 1				
	Fund Balance at the End of Last Quarter	\$1,414,914	\$1,414,914	\$1,415,424	
	Revenue Received this Quarter	\$397,646	\$397,646	\$397,646	
	Funds Spent this Quarter	\$219,763	\$219,763	\$219,763	
	Balance Left at the End of this Quarter	\$1,592,798	\$1,592,798	\$1,593,308	
	Quarter 2				
	Fund Balance at the End of Last Quarter	\$1,592,798	\$1,592,798	\$1,593,308	
	Revenue Received this Quarter	\$515,599	\$515,599	\$515,599	
	Funds Spent this Quarter	\$345,123	\$345,123	\$345,123	
	Balance Left at the End of this Quarter	\$1,763,273	\$1,763,273	\$1,763,783	
	Quarter 3				
	Fund Balance at the End of Last Quarter	\$1,763,273	\$1,763,273	\$1,763,783	
	Revenue Received this Quarter	\$484,546	\$484,546	\$484,546	
	Funds Spent this Quarter	\$523,297	\$523,297	\$523,297	
	Balance Left at the End of this Quarter	\$1,724,523	\$1,724,523	\$1,725,033	
	Quarter 4				
	Fund Balance at the End of Last Quarter	\$1,724,523	\$1,724,523	\$1,725,033	
	Revenue Received this Quarter	\$505,900	\$505,900	\$505,900	
	Funds Spent this Quarter	\$362,206	\$362,206	\$362,206	
	Balance Left at the End of this Quarter	\$1,868,216	\$1,868,216	\$1,868,726	

		Per Fee Reports Section 4	Check Math on Fee Reports	Actual	Notes
2014	Quarter 1				
	Fund Balance at the End of Last Quarter	\$1,868,216	\$1,868,216	\$1,868,726	
	Revenue Received this Quarter	\$389,828	\$389,828	\$389,828	
	Funds Spent this Quarter	\$311,674	\$311,674	\$311,674	
	Balance Left at the End of this Quarter	\$1,946,371	\$1,946,371	\$1,946,881	
	Quarter 2				
	Fund Balance at the End of Last Quarter	\$1,946,371	\$1,946,371	\$1,946,881	
	Revenue Received this Quarter	\$537,319	\$537,319	\$537,491	Did not include \$148.81 of interest and 23.19 of designation fees
	Funds Spent this Quarter	\$296,834	\$296,834	\$296,834	
	Balance Left at the End of this Quarter	\$2,186,857	\$2,186,857	\$2,187,538	
	Quarter 3				
	Fund Balance at the End of Last Quarter	\$2,186,857	\$2,186,857	\$2,187,538	
	Revenue Received this Quarter	\$510,925	\$510,925	\$510,925	
	Funds Spent this Quarter	\$316,031	\$316,031	\$316,031	
	Balance Left at the End of this Quarter	\$2,381,751	\$2,381,751	\$2,382,432	
	Quarter 4				
	Fund Balance at the End of Last Quarter	\$2,389,047	\$2,389,047	\$2,382,432	

	Per Fee Reports Section 4	Check Math on Fee Reports	Actual	Notes
Revenue Received this Quarter	\$495,710	\$495,710	\$496,122	Did not include \$411.87 of interest
Funds Spent this Quarter	\$464,008	\$464,008	\$464,008	
Balance Left at the End of this Quarter	\$2,420,677	\$2,420,749	\$2,414,546	
Quarter 1				
Fund Balance at the End of Last Quarter	\$2,420,677	\$2,420,677	\$2,414,546	
Revenue Received this Quarter	\$373,685	\$373,685	\$373,685	
Funds Spent this Quarter	\$279,434	\$279,434	\$279,434	
Balance Left at the End of this Quarter	\$2,514,928	\$2,514,928	\$2,508,797	
Quarter 2				
Fund Balance at the End of Last Quarter	\$2,514,928	\$2,514,928	\$2,508,797	
Revenue Received this Quarter	\$466,956	\$466,956	\$466,956	
Funds Spent this Quarter	\$278,478	\$278,478	\$278,478	
Balance Left at the End of this Quarter	\$2,703,405	\$2,703,405	\$2,697,274	
Quarter 3				
Fund Balance at the End of Last Quarter	\$2,703,405	\$2,703,405	\$2,697,274	
Revenue Received this Quarter	\$420,722	\$420,722	\$420,722	
Funds Spent this Quarter	\$468,331	\$468,331	\$468,331	
Balance Left at the End of this Quarter	\$2,655,797	\$2,655,797	\$2,649,666	
Quarter 4				
Fund Balance at the End of Last Quarter	\$2,655,797	\$2,655,797	\$2,649,666	
Revenue Received this Quarter	\$403,005	\$403,005	\$403,005	
Funds Spent this Quarter	\$354,604	\$354,604	\$354,604	
Balance Left at the End of this Quarter	\$2,704,198	\$2,704,198	\$2,698,067	
Quarter 1				
Fund Balance at the End of Last Quarter	\$2,704,198	\$2,704,198	\$2,698,067	
Revenue Received this Quarter	\$357,234	\$357,234	\$357,234	
Funds Spent this Quarter	\$326,290	\$326,290	\$326,290	
Balance Left at the End of this Quarter	\$2,735,142	\$2,735,142	\$2,729,011	
Quarter 2				
Fund Balance at the End of Last Quarter	\$2,735,142	\$2,735,142	\$2,729,011	
Revenue Received this Quarter	\$447,839	\$447,839	\$444,839	Recording error
Funds Spent this Quarter	\$273,414	\$273,414	\$273,414	
Balance Left at the End of this Quarter	\$2,909,567	\$2,909,567	\$2,900,436	
Quarter 3				
Fund Balance at the End of Last Quarter	\$2,909,567	\$2,909,567	\$2,900,436	
Revenue Received this Quarter	\$411,631	\$411,631	\$417,043	Did not include \$5,412.01 of interest
Funds Spent this Quarter	\$323,250	\$323,250	\$323,250	
Balance Left at the End of this Quarter	\$2,997,947	\$2,997,947	\$2,994,228	
Quarter 4				
Fund Balance at the End of Last Quarter	\$2,997,947	\$2,997,947	\$2,994,228	
Revenue Received this Quarter	\$409,364	\$409,364	\$409,364	
Funds Spent this Quarter	\$317,512	\$317,512	\$317,512	
Balance Left at the End of this Quarter	\$3,089,800	\$3,089,800	\$3,086,081	
FUND BALANCE AT YEAR END 2016			\$4,260,058	

C. Alternative Budget

The District does not anticipate the need to identify any type of contingent funding or financing that would be necessary to fund any type of program activity in conjunction with Plan implementation efforts.

A maximum budget of \$600,000 is planned for the drop-off program (beginning in 2020). Should drop-off program costs increase to \$600,000 then the District may utilize monies allocated to line item 2.p and 2.g.2 (these line items combined would provide over \$100,000 for the program) to subsidize increased drop-off program. If drop-off program increases the District reserves the right to reduce the number of drop-off sites as suggested in Appendix I to maintain a reasonable budget cost for services. Table O-11 shows a contingent budget table should drop-off program costs increase to \$600,000 annually.

Table O-11 Contingent Budget Summary

Year	Revenue (\$)	Expenses (\$)	Annual Surplus/Deficit (\$)	Balance (\$)
2019	\$1,714,547	\$1,881,185	-\$166,638	\$4,283,405
2020	\$1,712,745	\$2,066,102	-\$353,357	\$3,930,047
2021	\$1,709,607	\$2,050,319	-\$340,712	\$3,589,335
2022	\$1,706,690	\$2,071,530	-\$364,840	\$3,224,495
2023	\$1,703,500	\$2,062,787	-\$359,287	\$2,865,209
2024	\$1,699,824	\$2,013,301	-\$313,477	\$2,551,731
2025	\$1,696,525	\$1,995,801	-\$299,276	\$2,252,456
2026	\$1,693,381	\$1,995,801	-\$302,420	\$1,950,036
2027	\$1,690,202	\$1,940,600	-\$250,398	\$1,699,638
2028	\$1,687,586	\$1,940,600	-\$253,014	\$1,446,623
2029	\$1,684,941	\$1,968,100	-\$283,159	\$1,163,465
2030	\$1,681,971	\$1,958,100	-\$276,129	\$887,335
2031	\$1,679,076	\$1,940,600	-\$261,524	\$625,812
2032	\$1,676,340	\$1,940,600	-\$264,260	\$361,552
2033	\$1,673,574	\$1,940,600	-\$267,026	\$94,526

D. Major Facility Project

The District is planning to construct or operate a new permanent household hazardous waste facility in Geauga County during this planning period.

Development expenses:

- Facility design plans - \$24,000
- Permitting - \$2,000
- Construction oversight - \$30,000

Size Considerations

Nightingale and Lewry (Handbook and Household Hazardous Waste 2008) suggest a formula to consider for sizing of permanent HHW collection facility. It is suggested to allow for one square foot of operational area for every 200 pounds of anticipated annual throughput with an average of 5 percent of households to participate and volume varying from 60 pounds to 150 pounds per household.

37,054 households times 3 percent participation rate = 1,112

1,112 times 100 pounds throughput per year = 111,200 pounds

111,200 pounds divided by 200 pounds = 556 – square foot needed to service 37,054 households

This calculation suggests 556 square foot is needed to manage expected HHW in Geauga County. Yet, many variables influence actual square footage needs. As learned from the HHW recycling facility in Warren, when e-waste and appliances are included, the 4,728 square foot is not adequate to serve 87,000 households (Trumbull County household count). The facility is large enough to work in but provides inadequate storage capacity for a long-term

solution. Based on this experience, a permanent facility should have a larger footprint (over 5,000 square feet) to include capabilities to accommodate electronic recycling and appliances under the same roof.

A key factor is variability in pounds. It is uncertain how much material will be handled at a facility in Geauga County.

Capital Costs:

- Land - \$100,000
- Building (construction, site grading) - \$300,000
- Utilities - \$23,000

Note: It may be such that a pre-existing building becomes available. If so, property/building improvements may be needed. A combined budget of \$400,000 would accommodate the property and improvements.

Operational Cost Considerations:

Specific budgeting for new HHW management facilities must be developed based upon the actual site conditions and the planned operating plan. It is difficult to determine exact capital costs for each option without lease or sale costs. At the time of this evaluation a quick search identified a low and high range of developed properties for lease or sale. In Geauga County the square foot cost range was found to be \$4.25 to \$56.

The HHW recycling facility in Warren cost approximately \$500,000 to build. Costs in Geauga County will vary depending on property acquisition, lease, existing structures, etc. Typically, permanent facilities have higher capital costs due to the design of the structure and operational standards to meet. As mentioned earlier, existing buildings could be updated to meet permanent facility design standards, or GT SWMD could opt to include pre-fabricated storage lockers or transportation trailers. GT SWMD could also build a simple structure which could include pre-fabricated storage lockers or transportation trailers or be designed to include certain standards.

The estimated costs include disposal costs and labor expenses at the time this evaluation was conducted. If pre-fabricated storage lockers are used, then operational costs may increase because materials would need to be transported to disposal more often (lack of long-term storage).

Estimated Annual Operational Cost Ranges	
Annual Utilities	\$3,000 - \$9,600
HHW Disposal Costs	\$42,000 - \$96,000
E-Waste Disposal Costs	\$1,500 - \$27,000
Appliance Disposal Costs	\$5,000 - \$31,685
Miscellaneous Costs	\$500 - \$1,000
Total Operational Cost	\$52,000 - \$165,285

Assumptions:

HHW Disposal Costs

- 2018 HHW disposal unit costs anticipated to rise 20% over 2016 costs: \$0.864/lb permanent facility (assumes latex paint collection).
- High range volume estimates: 3.0 lbs/HH (110,200 lbs annually) for HHW (based on per household volumes at HHW recycling facility)

HHW disposal costs = 110,200 lbs x \$0.864/lb = \$95,213

- Low range volume estimates: 1.3 lbs/HH (47,753 lbs annually) for HHW (based on single day household volumes, also removing latex paint is roughly 30,000 pounds a year)

HHW disposal costs = 47,753 lbs x \$0.864/lb = \$41,259

E-Waste Disposal Costs

- E-Waste assumed \$0.31/lb. Current GT SWMD contract costs for electronic recycling (includes televisions) is \$0.31 per pound.
- High range volume estimates: 2.32 lbs/HH (84,500 lbs annually) for e-waste
- E-Waste disposal costs = 84,500 lbs x \$0.31/lb = \$26,195
- Low range volume estimates: 0.13 lbs/HH (4,775 lbs annually) for e-waste
- E-Waste disposal costs = 4,775 lbs x \$0.31/lb = \$1,480

Appliance Disposal Costs

- HHW recycling facility pays for transportation only on the scrap roll-off containers. A similar arrangement is expected for Geauga. Long range disposal costs are expected to be \$5,000 annually. High range costs are expected at \$1.10/lb for roughly 28,700 lbs (based on HHW recycling facility recovered volume.)

**Costs for staff labor and education/outreach are not included. Does not include revenues from sale of recyclables. Includes latex paint.

Studies of HHW collection operations at permanent facilities show cost saving economy of scale operations help lower operational costs. Examples of economy of scales implemented in HHW permanent facilities include:

- Adequate storage reducing transportation to processing facility
- Use reconditioned drums (DOT specifications apply) instead of new drums
- Do not lab pack products that can be managed as non-hazardous waste
- Bulk compatible liquids
- Consolidation of materials
- Work with hazardous waste contractor during facility set up
- Consider LEED design elements (recycled oil for facility heating, solar panels, etc.)

The costs show a range because they are variable and dependent on contractor costs, operations/material handling, and volumes. For instance, it has been noted across the state the cost per pound of televisions recycling is increasing. In one Ohio county the per pound price increased 80 percent. Also, some operations and handling of materials at collection can also minimize operation cost. Working to maximize the economy of scale to increase storage and lower transportation. Lastly, volumes collected are variable. The HHW recycling facility data has fluctuated between 285,000 and 440,000 pounds of HHW. Excluding non-hazardous materials such as latex paint are also types of cost saving measures. Further education efforts as suggested in Alternatives and Proper Home Management will also have impacts to reduce the waste volumes.

The risk to the revenues that pay for these services is real. GT SWMD's designation fee funding and best practice operations provides "free" HHW, appliance, and electronic recycling. Managing these materials comes at a cost. However, perception of residents may be that the service is "free". GT SWMD's goal is to provide this service at no charge to the residents for as long as possible. Yet at some point, to continue to provide service GT SWMD may need to balance the rate setting, i.e. charge user fees. At such time, the magnitude of declined revenues, rate stabilization and true costs of services will factor into rates that may be set to cover the costs of services.

Funding: The reserve budget is adequate to purchase and build or remodel a building in Geauga County to accommodate collection of household hazardous waste.

APPENDIX P DESIGNATION

A. Statement Authorizing/Precluding Designation

The Board of Directors of the Geauga-Trumbull Solid Waste Management District is authorized to establish facility designations in accordance with Section 343.013 and Section 343.014 of the Ohio Revised Code.

B. Designated Facilities

In accordance with Rule 2-2012, no person shall deliver, or cause the delivery of, any solid waste generated within the District or transported into the District to any solid waste facility other than a designated solid waste facility by the District.

Table P-1, specifies the facilities where solid waste generated within or transported into the District will be taken for disposal, transfer, resource recovery or recycling.

Table P-1 Designated Facilities

Facility Name	County	State	Facility Type
Environmental Transfer Systems	Trumbull	OH	Transfer Station
Universal Disposal Inc.	Geauga	OH	Transfer Station
A Ten C, Inc.	Trumbull	OH	Transfer Station
Carbon Limestone Landfill	Mahoning	OH	Landfill
Central Waste Landfill	Mahoning	OH	Landfill
Mahoning Landfill	Mahoning	OH	Landfill
Lake County Landfill	Lake	OH	Landfill
Geneva Landfill	Ashtabula	OH	Landfill
Kimble Sanitary Landfill	Tuscarawas	OH	Landfill
Countywide Recycling & Disposal	Stark	OH	Landfill
American Landfill	Stark	OH	Landfill
Lorain County Landfill Inc.	Lorain	OH	Landfill
Coshocton Landfill	Coshocton	OH	Landfill
Suburban Landfill	Perry	OH	Landfill
Pine Grove Regional	Fairfield	OH	Landfill
Athens Hocking Reclamation Center	Athens	OH	Landfill
Apex Environmental, LLC	Belmont	OH	Landfill
Liberty Tire Monofill	Stark, Tuscarawas, Wayne	OH	Landfill
Richland County Transfer	Richland	OH	Transfer Station
Broadview Heights Transfer	Cuyahoga	OH	Transfer Station
Waste Management, Oakwood Transfer	Cuyahoga	OH	Transfer Station
Glenwillow Transfer Station	Cuyahoga	OH	Transfer Station
Harvard Road Transfer	Cuyahoga	OH	Transfer Station
Akron Transfer Station	Summit	OH	Transfer Station
Kimble Transfer & Recycling	Stark	OH	Transfer Station
Hancock County Landfill	Hancock	OH	Landfill
J and J Refuse Recycling	Carroll	OH	Transfer Station
Cambridge Transfer and Recycling	Guernsey	OH	Transfer Station
Noble Road Landfill	Richland	OH	Landfill
Seneca Landfill	Butler	PA	Landfill
Imperial Landfill	Allegheny	PA	Landfill
Tri-County Industries	Mercer	PA	Transfer Station
Valley Waste Services Transfer	Beaver	PA	Transfer Station
Short Creek Landfill	Ohio	WV	Landfill
Ohio Valley Waste proposed Transfer Facility	Trumbull	OH	Transfer Station

Waiver Process for the Use of Undesignated Facilities

Any person or applicant may request a waiver from the Board authorizing the delivery of all or any portion of the solid waste generated within the District to a solid waste facility other than a designated solid waste facility. The Board may grant a waiver from the obligation to deliver solid waste generated within the District to a designated solid waste facility if the Board finds issuance of a waiver for the solid waste, the subject of the waiver request:

- d) is not inconsistent with projections contained in the Plan;
- e) will not adversely affect the implementation and financing of the Plan pursuant to the implementation schedule contained in the Plan; and
- f) assures the maximum feasible utilization of existing in-District designated solid waste facilities.

Any person or applicant who submits a waiver request pursuant to this rule shall submit documents and information for consideration by the Board that support the issuance of the requested waiver. Any waiver granted by the Board shall be the subject of a waiver agreement between the Board and the applicant setting forth the terms of such waiver and waiver fee, if any.

C. Documents

Resolutions included.

APPENDIX Q DISTRICT RULES

A. Existing Rules

In accordance with the Ohio Revised Code Section 343.01(G)(1)(2)(3) and (4), the Board of Directors of the Geauga-Trumbull Solid Waste Management District is authorized to make, publish and enforce rules, to the extent any such rules are determined by the Board of Directors from time to time to be necessary or desirable to implement any provision or to accomplish any objective of this solid waste management Plan or amended Plan. The Board of Directors adopted the following rules:

Rule 1 - 2012: Definitions:

"Applicant" means a person proposing to construct or modify a solid waste facility that requires a determination by the Board that a proposal to construct or modify a solid waste facility complies with the Plan; or a person requesting a waiver by the Board from application of a rule adopted by the Board or from the obligation to deliver solid waste generated with the District to a designated solid waste facility.

"Board" and **"Board of Directors of the District"** means the Board of County Commissioners of Geauga and Trumbull Counties Ohio acting in its capacity as the Board of Directors of the District.

"Charitable Organization" means any tax-exempt religious, educational, veteran's, fraternal, sporting, service, nonprofit medical, volunteer rescue service, volunteer firefighter's, senior citizen's historic railroad education, youth athletic, amateur athletic, or youth athletic park organization as such terms are defined in Revised Code Chapter 2915. An organization is tax-exempt if the organization has received from the Internal Revenue Service a determination letter that currently is in effect stating that the organization is exempt from federal income taxation under subsection 501(a) and described in subsection 501(c) (3), 501(c)(4), 501(c)(8), 501(c)(10), or 501(c)(19) of the Internal Revenue Code.

"Contract Fee" means a fixed charge established by the District and paid by any Designated Solid Waste Facility's receipt of all unwanted material generated within or transported into, the District and accepted by the facility for disposal or transfer.

"Designated Solid Waste Facility" means those solid waste facilities designated in the initial or amended Plan or as may hereafter become designated pursuant to Sections 343.013, 343.014, or 343.015 of the Ohio Revised Code.

"District" means the Geauga-Trumbull Solid Waste Management District operated under the direction of the Board of Directors. Includes all territory of Geauga and Trumbull Counties.

"Electronic Waste" or **"E Waste"** means unwanted electronic appliances and devices, including but not limited to: computers, monitors, fax machines, copy machines, televisions, stereo/audio equipment, phones, cellular phones, personal digital assistants (PDAs), game consoles, video recorders, and electronics from commercial and industrial sources.

"Facility" or **"Facilities"** or **"Solid Waste Facility or Facilities"** means any site, location, tract of land, installation, or building used for incineration, composting, transferring, sanitary landfilling, or other method of disposal of solid waste; the collection, storage, or processing of scrap tires; and includes any solid waste disposal facility, solid waste energy recovery facility, solid waste composting facility, solid waste transfer facility, solid waste

recycling facility, legitimate recycling facility, or resource recovery facility including solid waste facilities as defined in Section 6123.01 of the Revised Code.

"General Plans and Specifications" means that information required to be submitted to the Board for review for the construction or modification of any proposed solid waste facility and includes, but is not limited to, a site plan for the proposed solid waste facility, architectural drawings or artist's renderings of the proposed solid waste facility, the projected size and capacity of the proposed solid waste facility and all other information required by the sighting strategy contained in the Plan.

"Generator" means a person who produces or creates solid waste.

"Hazardous Waste" means solid waste, which, because of its listing, composition, or characteristics is a hazardous waste (as defined in the Resource Conservation and Recovery Act, 42 U.S. Section 6901 et seq., as amended including, but not limited to, amendments thereto made by the Solid Waste Disposal Act Amendments of 1980) and related federal, state, and local laws and regulations pertaining to the identification, treatment, storage, or disposal of toxic substances or hazardous wastes; as any of the foregoing is from time-to time amended or replaced.

"Legitimate Recycling Facility" means an engineered facility or site where recycling of material other than scrap tires is the primary objective of the facility, including: (a) Facilities that accept only source separated recyclable materials, except scrap tires, and/or commingled recyclable materials which are currently recoverable utilizing existing technology; and (b) facilities that: (i) accept mixed or source separated solid waste; (ii) recover for beneficial use not less than sixty percent (60%) of the weight of solid waste brought to the facility each month (as averaged monthly) for not less than eight (8) months in each calendar year, and (iii) dispose of not more than forty percent (40%) of the total weight of solid waste brought to the facility each month (as averaged monthly) for not less than eight (8) months in each calendar year.

"Modify" or **"Modification"** means a change in the operation of an existing in-District solid waste facility that requires the approval of the Director of the Ohio Environmental Protection Agency; or, that involves a change in the type of material, manner of operation, or activities conducted at the solid waste facility.

"Person" means a natural person, partnership, association, firm, corporation, Limited Liability Company, Municipal Corporation, township, government unit, or other political subdivisions.

"Plan" means the solid waste management plan of the District approved by the Director of the Ohio Environmental Protection Agency dated December 1993 and as may be amended or updated from time-to-time.

"Processed Infectious/Pathological and Biologic Waste" means a portion of solid waste consisting of infectious/pathological or biologic waste, which has been rendered noninfectious by sterilization, incineration, or other equally effective processing technique.

"Process" or **"Processed"** means incineration for resource recovery of solid waste or removal of recyclable materials other than source separation at a designated solid waste facility.

"Recyclable Material(s)" means solid waste that is, or maybe, collected, sorted, cleansed, treated, and reconstituted for return to commerce. Recyclable materials include, but are not limited to; corrugated cardboard, office paper, newspaper, glass containers, steel containers, aluminum containers, plastic containers, wood packaging, and pallets, lead-acid batteries, major appliances, electronic devices, and yard waste.

"Recycle" or **"Recycled"** or **"Recycling"** means the process of collecting, sorting, cleansing, treating, and reconstituting solid waste that would otherwise be disposed in a solid waste disposal facility and returning the reconstituted materials to commerce as commodities for use or exchange.

"Recyclable Material Collection Service" means the process, system or **"Recycling Services"** means the collection, transportation, and delivery for processing of solid waste recyclable materials.

"Rule" means the action of the Board in promulgating, adopting, and publishing such action as a rule of the authority as reserved in the Plan and authorized by Sections 343.01 (G) and 3734.53 of the Revised Code, as now existing or hereafter amended.

"Sanitary Landfill" means a permitted and licensed sanitary landfill approved by the Director of the Ohio Environmental Protection Agency to accept solid waste.

"Solid Waste" shall be defined as having the same definition as set forth-in Ohio Revised Code Section 3734.01 as it currently exists and as it may be amended hereafter. Notwithstanding the foregoing, the term SOLID WASTE shall include but is not limited to industrial, commercial, and residential garbage, tires, combustible and non-combustible material, street dirt and debris, and shall include construction and demolition debris and other exempt.

"Solid Waste Collection Service" means the process, system, or service, of collecting solid waste and/or recyclables from a generator.

"Solid Waste Collection Facility" means any site, location, tract of land, installation, or building used for collection of solid wastes including recyclable materials.

"Solid Waste Composting Facility" means any site, location, tract of land, installation, or building used for composting solid wastes where the owner or operator has met all registration, licensing, or permitting requirements of rule 3745-27-41 of the Administrative Code.

"Solid Waste Disposal Facility" means any site, location, tract of land, installation, or building used for incineration, composting, sanitary landfilling, or other approved methods of disposal of solid waste.

"Solid Waste Energy Recovery Facility" means any site location, tract of land, installation, or building where solid waste is used as, or the owner or operator of the solid waste energy recovery facility intends to use solid waste as a fuel to produce energy, heat, or steam.

"Solid Waste Facilities" include solid waste disposal facilities, energy recovery facilities, resource recovery facilities, composting facilities, transfer facilities, legitimate recycling facilities, recycling facilities, and collection facilities.

"Solid Waste Recycling Facility" means any site, location, tract of land, installation, or building used for recycling solid waste including collection, processing, and/or storage.

"Solid Waste Resource Recovery Facility" means solid waste energy recovery facilities, legitimate recycling facilities, and solid waste recycling facilities.

"Solid Waste Transfer Facility" means any site, location, tract of land, installation, or building that is used or intended to be used primarily for the purpose of transferring solid wastes that were generated off the premises of the facility from vehicles or containers into other vehicles for transportation to a solid waste disposal facility.

"Source Separate" or "Source Separation" means the process of separating, or the separation of solid waste, including yard waste or recyclable materials by the generator at the location where generated for recycling.

"Source Separated Recyclable Materials" means solid waste recyclable materials that are separated from other solid waste at the location where generated.

"Special Handling Waste" means a portion of solid waste which consists of sludge, processed infectious/pathological or biologic waste, ash residue, contaminated soil, and other materials requiring additional handling or treatment prior to disposal.

"Solid Waste Transporter (SWT)" shall be defined as a person or company who engages in the enterprise of collection, transportation by truck, or other hauling vehicle that uses the public roadways, and unloading of solid waste, and recyclables, and who possesses all required licenses and registrations from local, state, and federal governmental entities and authorities as appropriate and relevant.

"White Goods" means a portion of solid waste consisting of large appliances (i.e. weighing more than fifty (50) pounds) including the following: (i) air conditioners; (ii) clothes and drying machines; (iii) dish washers; (iv) furnaces and electric heaters; (v) hot water heaters; (vi) refrigerators and freezers; (vii) stoves, ovens, cook surfaces, and microwave ovens; and (viii) residential trash compactors.

"Yard Waste" means all garden residues, leaves, grass clippings, shrubbery, and tree pruning or cuttings less than one-quarter inch in diameter, and similar material.

Rule 2 - 2012: Delivery of Solid Waste to Designated Facilities

Except as otherwise permitted by Rule, no person shall deliver, or cause the delivery of, any solid waste generated within the District or transported into the District to any solid waste facility other than a designated solid waste facility by the District.

Rule 3 - 2012: Delivery of Recyclable Materials Generated Within or Transported into Jurisdiction of the District

All source separated recyclable materials shall be delivered for recycling to a designated solid waste recycling facility, designated legitimate recycling facility, or designated resource recovery facility.

Rule 4 - 2012: Acceptance of Source Separated Recyclable Materials

No person, other than a person operating a solid waste recycling facility, legitimate recycling facility, or resource recovery facility, may accept source separated recyclable materials from a generator unless such solid waste recycling facility, legitimate recycling facility, or resource recovery facility is designated by the Board. This rule shall not apply to a charitable organization.

Rule 5 - 2012: Prohibition on Disposal of Source Separated Solid Waste Recyclable Material

No person shall deliver source separated recyclable materials for disposal at a solid waste disposal facility without the prior written consent of the Board.

Rule 6 - 2012: Prohibition on Disposal of Processed Solid Waste Recyclable Material

No person, without the prior written consent of the Board, shall deliver for disposal at a solid waste disposal facility, solid waste recyclable material that has been separated, processed, or recycled at a solid waste recycling facility, legitimate recycling facility, or resource recovery facility.

Rule 7 - 2012: Delivery of White Goods

No person shall deliver any white goods for disposal or recycling except as in compliance with the Code of Federal Regulations, 40 CFR 82.152-156.

Rule 8-2012: Waiver from Designation

Any person or applicant may request a waiver from the Board authorizing the delivery of all or any portion of the solid waste generated within the District to a solid waste facility other than a designated solid waste facility. The Board may grant a waiver from the obligation to deliver solid waste generated within the District to a designated solid waste facility if the Board finds issuance of a waiver for the solid waste, the subject of the waiver request: (a) is not inconsistent with projections contained in the Plan; (b) will not adversely affect the implementation and financing of the Plan pursuant to the implementation schedule contained in the Plan; and (c) assures the maximum feasible utilization of existing in-District designated solid waste facilities. Any person or applicant who submits a waiver request pursuant to this rule shall submit documents and information for consideration by the Board that support the issuance of the requested waiver. Any waiver granted by the Board shall be the subject of a waiver agreement between the Board and the applicant setting forth the terms of such waiver and waiver fee, if any.

Rule 9-2012: Registration of Solid Waste Transporters

All solid waste transporters, as defined in district definitions doing business within the borders of the Geauga-Trumbull Solid Waste Management District shall register with the District on an annual basis. Registration will be on forms provided by the District and must be completed in full. Solid waste transporters shall update registration information annually or as requested by the District.

Rule 10-2012: Commingled Loads Hauled by Registered Solid Waste Transporters

Registered solid waste transporters shall not combine waste or recyclables generated within the jurisdiction of the Board with any other solid waste districts as defined by the ORC 343.

Rule 11 - 2012: Enforcement

The violation or threatened violation by any person, municipal corporation, township, or other political subdivision of any rule promulgated by the Board pursuant to this Plan or amended Plan shall be referred to the Geauga or Trumbull County Prosecuting Attorney who shall take such action as may be authorized by Ohio law including, but not limited to, Sections 343.03 and 343.99 of the Ohio Revised Code.

Rule 12 - 2012: Adoption: Savings Clause

- A) Following the adoption by the Board and upon the effective date of the Rules, all rules incorporated herewith shall be in effect
- B) Notwithstanding (A), this Rule shall have no effect on existing litigation or on any action or proceeding pending on the effective date of these Rules, or any enforcement involving violation of previous rules.
- C) If any Rule, or part thereof, shall be adjudged or declared by any court of The United States to be unconstitutional or invalid, such judgment shall not affect the validity of the remaining Rules. Should any Rule, or part thereof, be rendered invalid due to any existing or subsequent enacted legislation, such invalidation of any Rule, or part thereof shall not affect the validity of the remaining Rules.

B. Proposed Rules

The Geauga-Trumbull Solid Waste Management District Board of Directors reserves the right to promulgate rules in accordance with ORC 343.01(G) to assist in the implementing any or all strategies necessary to achieve the management of goals of this amended plan. The Board of Directors does not intend to adopt additional rules during this planning cycle. However, in the event it is determined necessary, the Policy Committee upon recommendation to the Board of County Commissioners, reserves the right to adopt any such rules as authorized by ORC 3734.53 that will support implementation of the Plan.

APPENDIX R BLANK SURVEY FORMS AND RELATED INFORMATION



Dear Commercial Business,

Thank you for completing this survey. The information you provide for your company is crucial to monitoring the Geauga-Trumbull Solid Waste Management District's progress towards achieving Ohio's recycling goals. Your information will be combined with information submitted by other businesses and used to calculate the amount of material commercial businesses recycled in the Geauga-Trumbull Solid Waste Management District and Ohio in 2016. Your company's survey response **will not** be reported individually; all data will be summarized by the North American Industry Classification System (NAICS) category.

For assistance completing this form or any questions related to the survey, please contact Greg Kovalchick at greg@startrecycling.com or (330) 675-2673 ext 103.

Please complete and submit this survey no later than 4/3/2017.

Options for Returning the Completed Survey

- Email directly to Greg Kovalchick at greg@startrecycling.com, Subject Line: 2016 Commercial Survey
- Fax to (330) 675-2672, Attention: Greg Kovalchick
- Mail to Greg Kovalchick at 5138 Enterprise Boulevard, Warren, Ohio 44481-8705

Instructions for Table A:

Please provide all information requested in **Table A** below. Even if your business does not currently recycle or is unable to report quantities of materials recycled, please complete **Table A**. Doing so will allow the Geauga-Trumbull Solid Waste Management District to contact you in the future to discuss your recycling needs.

Table A: Company Information		
Name:	County:	Store I.D.
Address:	City:	Zip:
Contact Person:	Title:	
Email:	Telephone Number (include area code): () -	
Primary NAICS:	Secondary NAICS:	Number of full-time employees:
Would you like to be contacted by your local solid waste management district for recycling assistance? <input type="checkbox"/> Yes <input type="checkbox"/> No		

Instructions for completing Table B:

Table B provides a list of common materials that are recycled by commercial businesses in Ohio. Please indicate the unit of each quantity of material that is reported (pounds, tons or cubic yards). Provide any comments related to each material as necessary. Please do not report any liquid waste, hazardous waste or construction & demolition debris.

The list in **Table B** is not all-inclusive. If your business recycles a material that is not listed in **Table B**, please enter the name and quantity of that material on a line labeled **"Other."** Some materials may not apply to your operation. Some of the listed materials are broad categories. For example, "Plastics" includes plastics #1-7, plastic films etc. Please refer to the **"Materials Cheat Sheet"** attached to this document for examples of materials and definitions.

If you do not currently track this information internally, your solid waste hauler or recycling processor may be able to provide it upon request. The Geauga-Trumbull Solid Waste Management District may also be able to provide you with assistance.

Table B: Quantities of Recycled Materials			
Recyclable Material Category	Amount Recycled in 2016	Units	Name of hauler or processor that takes the material/ other Comments
Lead-Acid Batteries		<input type="checkbox"/> lbs. <input type="checkbox"/> tons <input type="checkbox"/> yd ³	
Food		<input type="checkbox"/> lbs. <input type="checkbox"/> tons <input type="checkbox"/> yd ³	
Glass		<input type="checkbox"/> lbs. <input type="checkbox"/> tons <input type="checkbox"/> yd ³	
Ferrous Metals		<input type="checkbox"/> lbs. <input type="checkbox"/> tons <input type="checkbox"/> yd ³	
Non-Ferrous Metals		<input type="checkbox"/> lbs. <input type="checkbox"/> tons <input type="checkbox"/> yd ³	
Corrugated Cardboard		<input type="checkbox"/> lbs. <input type="checkbox"/> tons <input type="checkbox"/> yd ³	
All Other Paper		<input type="checkbox"/> lbs. <input type="checkbox"/> tons <input type="checkbox"/> yd ³	
Plastics		<input type="checkbox"/> lbs. <input type="checkbox"/> tons <input type="checkbox"/> yd ³	
Textiles		<input type="checkbox"/> lbs. <input type="checkbox"/> tons <input type="checkbox"/> yd ³	
Wood		<input type="checkbox"/> lbs. <input type="checkbox"/> tons <input type="checkbox"/> yd ³	
Rubber		<input type="checkbox"/> lbs. <input type="checkbox"/> tons <input type="checkbox"/> yd ³	
Commingled Recyclables		<input type="checkbox"/> lbs. <input type="checkbox"/> tons <input type="checkbox"/> yd ³	
Yard Waste		<input type="checkbox"/> lbs. <input type="checkbox"/> tons <input type="checkbox"/> yd ³	
Other:		<input type="checkbox"/> lbs. <input type="checkbox"/> tons <input type="checkbox"/> yd ³	
Other:		<input type="checkbox"/> lbs. <input type="checkbox"/> tons <input type="checkbox"/> yd ³	
Other:		<input type="checkbox"/> lbs. <input type="checkbox"/> tons <input type="checkbox"/> yd ³	
Other:		<input type="checkbox"/> lbs. <input type="checkbox"/> tons <input type="checkbox"/> yd ³	
Other:		<input type="checkbox"/> lbs. <input type="checkbox"/> tons <input type="checkbox"/> yd ³	
Other:		<input type="checkbox"/> lbs. <input type="checkbox"/> tons <input type="checkbox"/> yd ³	
Other:		<input type="checkbox"/> lbs. <input type="checkbox"/> tons <input type="checkbox"/> yd ³	
Other:		<input type="checkbox"/> lbs. <input type="checkbox"/> tons <input type="checkbox"/> yd ³	
Other:		<input type="checkbox"/> lbs. <input type="checkbox"/> tons <input type="checkbox"/> yd ³	

Table C: Please provide any additional information, comments, suggestions, questions etc.

Thank you again for taking the time to complete this survey. Please contact Robert Villers with any questions.

Greg Kovalchick
 Geauga-Trumbull Solid Waste Management District
 Phone: (330) 675-2673 ext 103
 Email: greg@startrecycling.com



Dear Industrial Facility,

Thank you for completing this survey. The information you provide for your company is crucial to monitoring the Geauga-Trumbull Solid Waste Management District's progress towards achieving Ohio's recycling goals. Your information will be combined with information submitted by other businesses and used to calculate the amount of material industrial businesses recycled in the Geauga-Trumbull Solid Waste Management District and Ohio, in 2016. Your company's survey response **will not** be reported individually; all data will be summarized by each North American Industry Classification System (NAICS) category.

For assistance completing this form or any questions related to the survey, please contact Greg Kovalchick at greg@startrecycling.com or (330) 675-2673 ext 103.

Please complete and submit this survey no later than 4/3/2017.

Options for Returning the Completed Survey

- Email directly to Greg Kovalchick at greg@startrecycling.com, Subject Line: 2016 Industrial Survey
- Fax to (330) 675-2672, Attention: Greg Kovalchick
- Mail to Greg Kovalchick at 5138 Enterprise Boulevard, Warren, Ohio 44481-8705

Instructions for Table A:

Please provide all information requested in **Table A** below. Even if your business does not currently recycle or is unable to report quantities of materials recycled, please complete **Table A**. Doing so will allow the Geauga-Trumbull Solid Waste Management District to contact you in the future to discuss your recycling needs.

Table A: Company Information		
Name:		County:
Address:		City: Zip:
Contact Person:		Title:
Email:		Telephone Number (include area code): () -
Primary NAICS:	Secondary NAICS:	Number of full-time employees:
Would you like to be contacted by your local solid waste management district for recycling assistance? <input type="checkbox"/> Yes <input type="checkbox"/> No		

Instructions for completing Table B:

Table B provides a list of common materials that are recycled by industrial facilities in Ohio. Please indicate the unit of each quantity of material that is reported (pounds, tons or cubic yards). Provide any comments related to each material as necessary. Please do not report any liquid waste, hazardous waste or construction & demolition debris.

The list in **Table B** is not all-inclusive. If your facility recycles a material that is not listed in **Table B**, please enter the name and quantity of that material on a line labeled "Other." Some materials may not apply to your operation; simply enter "0" for those materials. Some of the materials are listed in broad categories. For example, "Plastics" include plastics #1-7, plastic films, etc. Please refer to the "Materials Cheat Sheet" attached to the end of this document for examples of materials and definitions.

If you do not currently track this information internally, your solid waste hauler or recycling processor may be able to provide it upon request. The Geauga-Trumbull Solid Waste Management District may also be able to provide you with assistance.

Table B: Quantities of Recycled Materials			
Recyclable Material Category	Amount Recycled in 2016	Units	Name of hauler or processor that takes the material/other comments
Food		<input type="checkbox"/> lbs. <input type="checkbox"/> tons <input type="checkbox"/> yd ³	
Glass		<input type="checkbox"/> lbs. <input type="checkbox"/> tons <input type="checkbox"/> yd ³	
Ferrous Metals		<input type="checkbox"/> lbs. <input type="checkbox"/> tons <input type="checkbox"/> yd ³	
Non-Ferrous Metals		<input type="checkbox"/> lbs. <input type="checkbox"/> tons <input type="checkbox"/> yd ³	
Corrugated Cardboard		<input type="checkbox"/> lbs. <input type="checkbox"/> tons <input type="checkbox"/> yd ³	
All Other Paper		<input type="checkbox"/> lbs. <input type="checkbox"/> tons <input type="checkbox"/> yd ³	
Plastics		<input type="checkbox"/> lbs. <input type="checkbox"/> tons <input type="checkbox"/> yd ³	
Textiles		<input type="checkbox"/> lbs. <input type="checkbox"/> tons <input type="checkbox"/> yd ³	
Wood		<input type="checkbox"/> lbs. <input type="checkbox"/> tons <input type="checkbox"/> yd ³	
Rubber		<input type="checkbox"/> lbs. <input type="checkbox"/> tons <input type="checkbox"/> yd ³	
Commingled Recyclables		<input type="checkbox"/> lbs. <input type="checkbox"/> tons <input type="checkbox"/> yd ³	
Ash (recycled ash only)		<input type="checkbox"/> lbs. <input type="checkbox"/> tons <input type="checkbox"/> yd ³	
Non-Excluded Foundry		<input type="checkbox"/> lbs. <input type="checkbox"/> tons <input type="checkbox"/> yd ³	
Flue Gas Desulfurization		<input type="checkbox"/> lbs. <input type="checkbox"/> tons <input type="checkbox"/> yd ³	
Other:		<input type="checkbox"/> lbs. <input type="checkbox"/> tons <input type="checkbox"/> yd ³	
Other:		<input type="checkbox"/> lbs. <input type="checkbox"/> tons <input type="checkbox"/> yd ³	
Other:		<input type="checkbox"/> lbs. <input type="checkbox"/> tons <input type="checkbox"/> yd ³	
Other:		<input type="checkbox"/> lbs. <input type="checkbox"/> tons <input type="checkbox"/> yd ³	
Other:		<input type="checkbox"/> lbs. <input type="checkbox"/> tons <input type="checkbox"/> yd ³	
Other:		<input type="checkbox"/> lbs. <input type="checkbox"/> tons <input type="checkbox"/> yd ³	
Other:		<input type="checkbox"/> lbs. <input type="checkbox"/> tons <input type="checkbox"/> yd ³	

Table C: Please provide any additional information, comments, suggestions, questions etc.

Thank you again for taking the time to complete this survey. Please contact Greg Kovalchick with any questions.

Gret Kovalchick
 Geauga-Trumbull Solid Waste Management District
 Phone: (330) 675-2673 ext 103
 Email: greg@startrecycling.com

APPENDIX S SITING STRATEGY

The District does not plan to site any new facilities throughout this planning period.

APPENDIX T MISCELLANEOUS PLAN DOCUMENTS

During the process of preparing a plan, the policy committee signs three official documents certifying the plan. These documents are as follows:

1. *Certification Statement for the Draft Solid Waste Management Plan* –The Policy committee signs this statement to certify that the information presented in the draft solid waste management plan submitted to Ohio EPA is accurate and complies with the Format 4.0.

2. *Resolution Adopting the Solid Waste Management Plan* (adopted prior to distributing the draft plan for ratification) – The policy committee signs this resolution to accomplish two purposes:

- Adopt the draft solid waste management plan
- Certify that the information in the solid waste management plan is accurate and complies with the Format 4.0.

The policy committee signs this resolution after considering comments received during the public hearing/public comment period and prior to submitting the solid waste management plan to political jurisdictions for ratification. The policy committee should not make any changes to the solid waste management plan after signing the resolution.

3. *Resolution Certifying Ratification of the Solid Waste Management Plan* – The policy committee signs this resolution to certify that the solid waste management plan was ratified properly by the political jurisdictions within the solid waste management district. The policy committee signs this resolution after the solid waste management plan is ratified and before submitting the ratified plan to Ohio EPA)

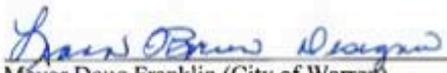
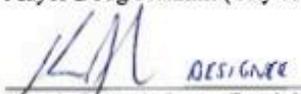
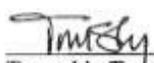
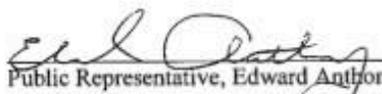
Other documents to include in Appendix T include:

- Public notices
Copies of notices sent to:
 - adjacent SWMDs;
 - the director of Ohio EPA;
 - the 50 industrial, commercial or institutional facilities that generate the largest quantities of solid waste within the SWMD; and
 - the local trade associations representing the industrial, commercial or institutional facilities generating the largest quantities of solid waste in the SWMD.

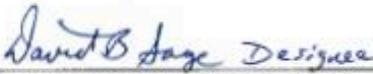
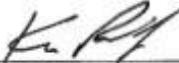
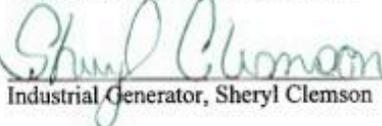
Certification Statement for the Draft Plan

We as members of the Geauga-Trumbull Solid Waste Management District Policy Committee do hereby certify that to the best of our knowledge and belief, the statements, demonstrations and all accompanying materials that comprise the draft District Solid Waste Management Plan Update (2019-2033), and the availability of and access to sufficient solid waste management facility capacity to meet the solid waste management needs of the District for the fifteen year period covered by the Plan Update are accurate and in compliance with the requirements in the Ohio EPA District Solid Waste Management Plan Format, version 4.0.

TRUMBULL COUNTY REPRESENTATIVES:

Commissioner Daniel Polivka	Date signed
 Mayor Doug Franklin (City of Warren)	2-5-18 Date signed
 Health Commissioner, Frank Migliozi	2/5/18 Date signed
 Township Trustee Representative, Tom Shay	2-5-18 Date signed
 Public Representative, Edward Anthony	2-5-18 Date signed
 Citizen Representative, Ken Kubala	2-5-18 Date signed
Member at Large, Mark Finamore	Date signed
Industrial Generator Sector	Date signed

GEAUGA COUNTY REPRESENTATIVES:

 Commissioner Walter "Skip" Claypool	<u>2/5/18</u> Date signed
 Mayor City of Chardon	<u>2-5-18</u> Date signed
 Health Commissioner, Robert Weisdack	<u>2/5/18</u> Date signed
 Township Trustee Representative, Kristina O'Brien	<u>2.5.18</u> Date signed
Public Representative,	Date signed
 Citizen Representative, Ken Radtke	<u>2/5/18</u> Date signed
 Industrial Generator, Sheryl Clemson	<u>2/5/18</u> Date signed

Resolution Adopting the Draft, Amended Solid Waste Management Plan

Resolution # 01-2019

The policy committee for the Geauga-Trumbull Solid Waste Management District (District) passed a resolution adopting the amended solid waste management plan for the District.

WHEREAS, the policy committee completed the draft, amended solid waste management plan and submitted it to the Ohio Environmental Protection Agency for review and comment on March 2, 2018. The Ohio Environmental Protection Agency provided comments in a non-binding advisory opinion issued on April 20, 2018.

WHEREAS, the policy committee reviewed the non-binding advisory comments received from the Ohio Environmental Protection Agency and took into consideration these comments and incorporated changes into the draft, amended solid waste management plan where necessary.

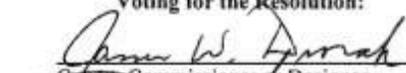
WHEREAS, the policy committee conducted a 30-day public comment period and held a public hearing on December 13, 2018 to provide the public an opportunity to have input into the draft, amended solid waste management plan.

NOW, THEREFORE, BE IT RESOLVED, that the policy committee for the Geauga-Trumbull Solid Waste Management District:

1. Adopts the draft, amended solid waste management plan for the Geauga-Trumbull Solid Waste Management District; and
2. Certifies to the best of its knowledge and belief, the statements, demonstrations, and all accompanying materials that comprise the District's draft, amended solid waste management plan, and the availability of and access to sufficient solid waste management facility capacity to meet the solid waste management needs of the Authority for the planning period covered by the Plan, are accurate and are in compliance with the requirements in the *District Solid Waste Management Plan Format*, version 4.0, the *2009 State Solid Waste Management Plan*, and the Ohio Revised Code.

The resolution shall be in effect immediately upon its adoption.

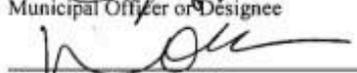
Voting for the Resolution:



County Commissioner or Designee



Municipal Officer or Designee



Township Representative

Gauga

Voting against the Resolution:

County Commissioner or Designee

Municipal Officer or Designee

Township Representative

David B. Sage
Health Commissioner or Designee

Health Commissioner or Designee

Solid Waste Generator Representative

Solid Waste Generator Representative

Ken Puff
Member Representing General Interests
of Citizens

Member Representing General
Interests of Citizens

Public Representative

Public Representative

Voting for the Resolution:
Maria C. Hammer
County Commissioner or Designee

Trumbull

Voting against the Resolution:

County Commissioner or Designee

Municipal Officer or Designee

Municipal Officer or Designee

Thomas D. ...
Township Representative

Township Representative

K.J. Webster
Health Commissioner or Designee

Health Commissioner or Designee

Solid Waste Generator Representative

Solid Waste Generator Representative

Ken Kubala
Member Representing General Interests
of Citizens

Member Representing General
Interests of Citizens

... ..
Public Representative

Public Representative

Mark S. ...
Member at Large

Member at Large

This is to certify that the foregoing is a true and correct copy of the resolution passed by the policy committee for the Geauga-Trumbull Solid Waste Management District on the 14th day of January, 2019, and recorded in the minutes of solid policy committee under the date of January 14, 2019.

January 14, 2019
Date

Christina Smith
Secretary of the Policy Committee

RESOLUTION # 2-2019

RESOLUTION CERTIFYING RATIFICATION OF THE SOLID WASTE MANAGEMENT PLAN

A resolution declaring that the amended Solid Waste Management Plan for Geauga Trumbull Solid Waste Management District has been ratified in accordance with Section 3734.55 of the Ohio Revised Code.

WHEREAS the District held a written public comment period from November 13 through December 12, 2018 and a public hearing December 13, 2018; and

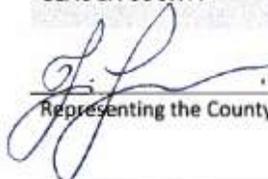
WHEREAS the District received only no comments. The Policy Committee adopted the Solid Waste Management Plan Update on January 14, 2019 and issued the Solid Waste Management Plan Update for ratification for the period February 1, 2019 through May 1, 2019; and

WHEREAS the Solid Waste Management District Policy Committee has received copies of resolutions and ordinances approving the amended Plan from the board of county commissioners, the legislative body of the largest municipality within the District, and from elected officials in legislative jurisdictions representing at least 60% of the population within the District;

NOW THEREFORE be it resolved that the Solid Waste Management District Policy Committee of the Geauga Trumbull Solid Waste Management District declares the amended Plan for Geauga and Trumbull Solid Waste Management District to be ratified in accordance with Section 3734.55 of the Ohio Revised Code, and shall cause the amended Plan to be submitted to the Director of the Ohio Environmental Protection Agency for review.

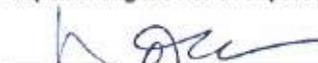
This resolution shall be in effect immediately upon its adoption.

GEAUGA COUNTY

 Timothy C. Leamon 5/20/19
Representing the County Commissioners Date Signed

Representing the Largest City Date Signed

 David B. Sege 5/20/19
Representing the Health Department Date Signed

 5-20-19
Representing Townships Date Signed

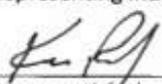
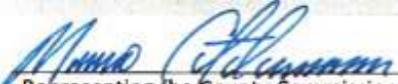
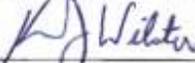
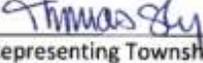
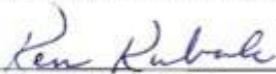
Representing Industrial Generators	Date Signed
	5-20-2019
Representing the Public	Date Signed
Representing Citizen	Date Signed
 Representing Townships at Large	5-20-19
TRUMBULL COUNTY	
	5/20/19
Representing the County Commissioners	Date Signed
Representing the Largest City	Date Signed
	5/20/19
Representing the Health Department	Date Signed
	5/20/2019
Representing Townships	Date Signed
Representing Industrial Generators	Date Signed
	5-20-19
Representing the Public	Date Signed
	5-20-19
Representing Citizen	Date Signed
 Representing Twp at Large.	5-20-19
Public at Large	Date Signed

Table U-1 Ratification Results				Trumbull			
Board of County Commissioners		Approved	Rejected	Date Resolution Adopted	Board of County Commissioners		Date Resolution Adopted
					Approved	Rejected	
Community		Population		Date Resolution Adopted	Community		Date Resolution Adopted
		Approved	Rejected		Approved	Rejected	
Geauga				Cities			
Board of County Commissioners		X		2/5/2019	Cities		
Community		Population		Date Resolution Adopted	Cities		
Community		Approved	Rejected		Cities		
Cities				Townships			
Chardon City	5,190			2/14/2019	Townships		
Townships				Villages			
Auburn Township	6,555			2/4/19	Villages		
Bainbridge Township	11,585			3/11/19	Villages		
Burton Township	3,005			4/29/19	Villages		
Chardon Township	4,652			3/20/19	Villages		
Chester Township	10,413			3/20/19	Villages		
Claridon Township	2,893			3/18/19	Villages		
Hambden Township	4,693			3/20/19	Villages		
Huntsburg Township	3,702			3/6/19	Villages		
Middlefield Township	4,526			4/8/19	Villages		
Montville Township	2,018			4/2/19	Villages		
Munson Township	6,727			4/9/19	Villages		
Newbury Township	5,624			3/20/19	Villages		
Parkman Township	4,194			3/5/19	Villages		
Russell Township	5,271			4/3/19	Villages		
Thompson Township	2,290			2/20/19	Villages		
Troy Township	2,827			3/19/19	Villages		
Villages				Total			
Aquilla Village	342			3/12/19	Total		194,321
Burton Village	1,470			3/25/19	County Population		198,495
Middlefield Village	2,709			3/14/19	Ratification percentage		98%
South Russell Village	3,849			4/8/19	County Population		94,534
Total		94,535	0		Ratification percentage		100%
County Population				Geauga and Trumbull Ratification			
Ratification percentage				99%			

Geauga-Trumbull Solid Waste Management District Hearing

The Geauga-Trumbull Solid Waste District (District) is holding a public hearing on the Geauga-Trumbull Solid Waste Management Plan (2019-2033). The District is an agency of the State of Ohio and is independent in politics. The District's mission is to provide solid waste management services to its residents and businesses. The District is currently reviewing the Geauga-Trumbull Solid Waste Management Plan (2019-2033) and is seeking public input on the plan. The District is currently reviewing the Geauga-Trumbull Solid Waste Management Plan (2019-2033) and is seeking public input on the plan. The District is currently reviewing the Geauga-Trumbull Solid Waste Management Plan (2019-2033) and is seeking public input on the plan.

STATE OF OHIO
 TRUMBULL COUNTY

PROOF OF PUBLICATION
 SS CONNIE FACEK

BEING DULY SWORN, UPON OATH STATES THAT SHE IS AN AUTHORIZED REPRESENTATIVE OF THE TRIBUNE CHRONICLE, (A DIVISION OF EASTERN OHIO NEWSPAPERS INC) A DAILY NEWSPAPER PRINTED IN THE CITY OF WARREN, COUNTY OF TRUMBULL, STATE OF OHIO AND OF GENERAL CIRCULATION IN THE CITY OF WARREN, TRUMBULL COUNTY, OHIO AND IS INDEPENDENT IN POLITICS.

THAT THE ATTACHED ADVERTISEMENT WAS PUBLISHED IN THE TRIBUNE CHRONICLE EVERY
 SUNDAY FOR ONE
 CONSECUTIVE WEEKS AND THAT THE FIRST INSERTION WAS
 ON SEPTEMBER THE 10TH DAY
 OF NOVEMBER 2019

SWORN TO BEFORE ME AND SUBSCRIBED IN MY PRESENCE ON THIS
 16TH DAY OF NOVEMBER 2019

Lawrence J. Kovach
 NOTARY PUBLIC

LAWRENCE J. KOVACH, Notary Public
 STATE OF OHIO
 MY COMMISSION EXPIRES SEPTEMBER 23, 2022

SEAL

ADVERTISING COST \$ 420.34

Tribune-Chronicle Legal Ads Print Ad Proof

ADNo: 3911 Customer Number: W37513
Company: GEAUGA TRUMBULL SOLI
Customer Name:
Address: 5138 ENTERPRISE BLVD
City/ST/Zip: WARREN OH 44481
Phone: (330) 675-2673 Solicitor: 153
Category: 9000 Class: 9005 Rate: LE-0 Start: 12-7-2018 Stop: 12-7-2018
Lines: 26 inches: 2.51 Words: 132

Credit Card: Expire:

Order Number:
Cost: 164.56 Extra Charges: .00 Adjustments: .00
Payments: .00 Discount: .00
Balance: 164.56

PUBLIC NOTICE
Notice of Public Hearing given that the Geauga-Trumbull Solid Waste Management District Board of Directors, pursuant to RC 3734.55(A) of the Ohio Revised Code in order to amend the contract for the purchase of the public hearing at the following time and location:
December 12, 2018
Gaugua-Trumbull Solid Waste District office
5138 Enterprise Blvd.
Warren, Ohio 44481
The public is invited to attend the public hearing, the draft plan is available for review from 12:00 p.m. to 4:00 p.m. on December 12, 2018 at the following location:
December 12, 2018
5138 Enterprise Blvd Warren, Ohio 44481
The District website and www.geaugartrumbullgreen.org
#391-17-December 12, 2018 #2018