Division of solid and Infectious Waste Management

STATE SOLID WASTE MANAGEMENT PLAN 2001

Ohio Environmental Protection Agency

Division of Solid and Infectious Waste Management

STATE SOLID WASTE MANAGEMENT PLAN 2001

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Director's Comments

November 15, 2001

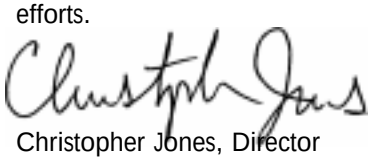
Since the passage of House Bill 592 by Ohio's General Assembly in 1988, Ohio's state government, solid waste management districts, communities, and citizens have worked together to improve the management of solid waste throughout the state. As a result, Ohio's solid waste regulations are more protective of human health and the environment; the state is recycling, composting, and otherwise diverting more waste from landfill disposal than ever before; and programs are in place throughout Ohio to educate our children and our citizens about the importance of reducing, reusing, recycling, and properly disposing of the solid waste they generate.

Despite these successes, however, the generation of solid waste in Ohio has continued to increase; recycling rates have not improved as rapidly as we had hoped; improper disposal continues to be a problem in some areas of the state; and landfilling remains the ultimate destination for most of the waste that Ohio produces. We can do more.

With the adoption of this revised State Solid Waste Management Plan, we are challenging ourselves and all parties involved to find a way to do more. While there continue to be many challenges associated with our efforts to improve the management of solid waste in Ohio, Ohio's solid waste management districts, local governments, and citizens have demonstrated their resourcefulness in achieving the progress that has been made so far. Building from these successes, learning from our mistakes, and working together, we can do more.

The goals contained in this State Plan provide challenging but realistic objectives that will continue to increase recycling, reduce waste generation, and ultimately reduce our reliance on landfills for the disposal of waste, as envisioned by House Bill 592 more than 10 years ago.

With our combined efforts, Ohio can continue to be a leader in solid waste management and waste reduction efforts.



Christopher Jones, Director
Ohio EPA

Forward

On September 24, 2001, the State Solid Waste Management Advisory Council (SWAC) considered and duly approved the State Solid Waste Management Plan (State Plan). On November 15, 2001, the Director of Ohio EPA adopted the State Plan. Before the State Plan was approved and adopted, a comment period and public hearings were held in five cities around the State. Ohio law requires the Director of the Ohio Environmental Protection Agency and SWAC to triennially review the State Plan and to prepare a revised State Plan if conditions warrant such a revision. This State Plan constitutes the second revision to the initial State Plan that was adopted in June of 1989. Any questions or comments concerning the State Plan should be directed to the Division of Solid and Infectious Waste Management, Ohio Environmental Protection Agency, P. O. Box 1049, Columbus, Ohio 43216-1049. The Division of Solid and Infectious Waste can also be reached by telephone at (614) 644-2621 and through the Internet by visiting the Ohio Environmental Protection Agency's web site at: www.epa.state.oh.us.

Acknowledgments

The development of the State Solid Waste Management Plan is the result of many hours of work by many different people. On behalf of the Division of Solid and Infectious Waste Management (DSIWM), I would like to thank all of the people who contributed to the effort. Special appreciation is extended to the members of the State Solid Waste Management Advisory Council (SWAC), whose names are listed in Appendix F, and to former SWAC members Art Haddad, Jane Goodman, and Eddie Paul. I would also like to thank the individuals who provided valuable input during the public comment period.

In addition, there are numerous representatives from Ohio's solid waste management districts who provided valuable input and suggestions during the development of this document. I also appreciate the valuable contributions made by representatives from the Ohio Department of Natural Resources (ODNR). In particular, I would like to thank Mike Canfield, Paul Baldridge, Tom Davis, and Donna Stusek, all of whom provided input on behalf of ODNR.

Finally, there are many employees of the Ohio Environmental Protection Agency's Division of Solid and Infectious Waste Management (DSIWM) who devoted countless hours to this effort. Very special thanks are given to Ernie Stall, principal author and researcher of this document, for his many, many hours of work on this project. Appreciation is also extended to Andrew Booker, for providing leadership and direction. Thanks are also given to Kevin Shoemaker, for providing valuable research and insight, and Britt Bowe, for coordinating the SWAC meetings and general support.

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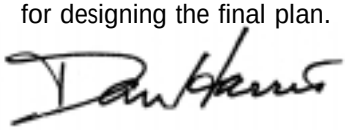

Dan Harris
Chief, Division of Solid and Infectious Waste Management
Ohio EPA

List of Acronyms and Abbreviations Used in This Document

1989 State Plan	First State Solid Waste Management Plan that was adopted in 1989
1995 State Plan	First revision of the State Solid Waste Management Plan that was adopted in 1995
ADR	Annual District Report
DAS	Department of Administrative Services
DHWM	Division of Hazardous Waste Management, a division of Ohio EPA
DRLP	Division of Recycling and Litter Prevention, a division of ODNR
DSIWM	Division of Solid and Infectious Waste Management, a division of Ohio EPA
DSW	Division of Surface Water, a division of Ohio EPA
FGD	Flue Gas Desulfurization waste material which is air pollution control waste that is produced at coal-burning power plants.
Format	Used when referring to the District Solid Waste Management Plan Format which is the document published by Ohio EPA for SWMDs to use when preparing solid waste management plans. The Format contains the instructions for preparing a solid waste management plan. The most recent version of the Format published by Ohio EPA is Version 3.0.
H.B.	House Bill
HDPE	High Density Polyethylene
HHW	Household Hazardous Waste
IAWG	Interagency Workgroup on Market Development
ISW	Industrial Solid Waste
JCARR	Joint Commission on Agency Rule Review
MRF	Material Recovery Facility
MSW	Municipal Solid Waste
NOV	Notice of Violation
OAC	Ohio Administrative Code
ODA	Ohio Department of Agriculture
ODNR	Ohio Department of Natural Resources
ODOD	Ohio Department of Development
ODOT	Ohio Department of Transportation
Ohio EPA	Ohio Environmental Protection Agency
OMEx	Ohio Materials Exchange
ORC	Ohio Revised Code
OPP	Office of Pollution Prevention, an office of Ohio EPA
PETE	Polyethylene Terephthalate
PTE	Passenger Tire Equivalent

List of Acronyms and Abbreviations Used in This Document - continued

PTI	Permit-to-Install
RCRA	Resource Conservation and Recovery Act
S.B.	Senate Bill
SFY	State Fiscal Year
State Plan	Referring to the State Solid Waste Management Plan in general
SWAC	Solid Waste Management Advisory Council
SWANA	Solid Waste Association of North America
SWMD	Solid Waste Management District
TCLP	Toxicity Characteristic Leaching Procedure
USEPA	United States Environmental Protection Agency
WRRR	Waste Reduction and Recycling Rate

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EXECUTIVE SUMMARY

In 1988, Ohio's General Assembly passed House Bill 592, a landmark piece of legislation that dramatically changed Ohio's solid waste management program. This legislation set into motion a comprehensive planning process to ensure that adequate and environmentally sound solid waste management capacity exists in Ohio and to increase efforts to reduce our generation of solid wastes. The statutory provisions established by House Bill 592 require the Director of the Ohio Environmental Protection Agency (Ohio EPA) working with the Solid Waste Management Advisory Council (SWAC) to prepare and adopt a state solid waste management plan (State Plan). These provisions further require Ohio EPA and SWAC to evaluate Ohio's progress towards achieving the goals in the State Plan every three years. If the findings of this triennial review indicate that modifications to the goals in the State Plan are necessary, then Ohio EPA and SWAC are directed to prepare and adopt a revised State Plan.

Ohio's solid waste statute requires the State Plan to:

- Reduce reliance on the use of landfills for management of solid wastes
- Establish objectives for solid waste reduction, recycling, reuse, and minimization and a schedule for implementing those objectives
- Establish restrictions on the types of solid wastes disposed of by landfilling for which alternative management methods are available (such as yard wastes)
- Establish general criteria for the location of solid waste facilities
- Examine alternative methods for disposal of fly ash and bottom ash resulting from the burning of mixed municipal solid waste
- Establish a statewide strategy for managing scrap tires
- Establish a strategy for legislative and administrative actions that can be taken to promote markets for products containing recycled materials
- Establish a program for the proper separation and disposal of hazardous waste generated by households.

The State Plan contains chapters devoted to each of the bullet points listed above.

House Bill 592 also required all 88 counties in Ohio to form solid waste management districts either individually or in conjunction with one or more other counties. Consequently, today there are 52 solid waste management districts in Ohio. Each SWMD is required to prepare a solid waste management plan that demonstrates compliance with the goals established in the State Plan, ratify the solid waste management plan, and submit that solid waste management plan to Ohio EPA for review and approval. SWMDs are required to revise their solid waste management plans on a regular schedule that is established in the statute.

In addition to establishing recycling goals for Ohio's SWMDs, the State Plan also establishes recycling and waste reduction strategies to be implemented at the state government level. These strategies are focused on efforts that Ohio's state agencies can take to further recycling and waste reduction efforts in the state.

The *1989 State Solid Waste Management Plan*, Ohio's first State Plan, was adopted on June 16, 1989. The first revision to the *1989 State Solid Waste Management Plan* was adopted in October of 1995. The *1995 State Solid Waste Management Plan* contained seven goals. These goals were as follows:

- Ensure the availability of reduction, recycling, and minimization alternatives for municipal solid waste (also known as the "Access Goal")
- Reduce and/or recycle at least 25 percent of the residential/commercial solid waste and 50 percent of the industrial solid waste generated by each SWMD, and 50 percent of all solid waste generated statewide by the year 2000
- Provide informational and technical assistance on source reduction
- Provide informational and technical assistance on recycling, reuse, and composting opportunities
- Strategies for scrap tires and household hazardous waste
- Annual reporting of plan implementation
- Market development strategy

This update to the State Plan makes several adjustments and clarifications to the goals from the *1995 State Solid Waste Management Plan*. As a result, this, the *2001 State Solid Waste Management Plan*, does not represent a marked departure from the goals established in the *1995 State Plan*. However, the *2001 State Solid Waste Management Plan* does make two notable changes to the goals:

- it increases the industrial waste reduction and recycling goal

from 50 percent to 66 percent; and

- it adds a goal that directs SWMDs to evaluate the feasibility of incorporating economic incentives into their source reduction and recycling programs.

In addition, the *2001 State Solid Waste Management Plan* established a statewide reduction and recycling goal of 50 percent by 2005.

Each chapter of the *2001 State Solid Waste Management Plan* is summarized below.

Chapter 1
Introduction

In 1988, Ohio faced a combination of solid waste management problems, including declining landfill capacity, ever-increasing generation of wastes to be disposed, environmental problems at many existing solid waste disposal facilities, and an influx of out-of-state waste. Citizen, government, and private sector concern over these pressing problems forged a legislative coalition to create a comprehensive solid waste management program for Ohio. This legislative coalition resulted in the passage of H.B. 592 which, as was explained on page ix, dramatically revised Ohio's solid waste regulatory program and set in motion a comprehensive planning process to ensure that adequate and environmentally sound management capacity exists and to increase efforts to reduce our generation of solid wastes.

Prior to H. B. 592, Ohio's regulations governing solid waste landfill facilities had not been revised since 1976. H.B. 592 required Ohio EPA to draft new, more stringent regulations governing the permitting, siting, design, construction, operation, monitoring, and financial assurance of landfill facilities. These regulations became effective in 1990. In addition, in 1994, new federal regulations governing municipal solid waste (MSW) landfill facilities took effect. Thus, in 1994, Ohio adopted new rules that incorporated the necessary regulatory changes to maintain consistency with the federal rules.

This chapter also contains information regarding the generation of solid waste in Ohio, available capacity for the disposal of solid waste at landfill facilities in Ohio, imports and exports of solid waste, methods that Ohio used to manage its solid waste, the solid waste management planning process, and the requirements for SWMDs.

Chapter 2
Implementing the 1995 State Solid Waste Management Plan

Since adoption of the *1995 State Solid Waste Management Plan*, two thirds of the SWMDs that have obtained solid waste management plans approved in accordance with that State Plan have done so by pursuing Goal #1 (the "Access Goal").

SWMDs have done the following in order to demonstrate compliance with Goal #1 of the *1995 State Plan*:

- at least 96 new drop-off recycling locations have been or will be implemented by SWMDs
- six new, nonsubscription curbside recycling services have been or will be implemented
- seven subscription curbside recycling programs have been or will be upgraded to non subscription programs

In total, these new recycling services and existing service upgrades will provide an estimated 694,000 additional people with access to recycling opportunities.

By 1999, the State achieved an overall waste reduction and recycling rate of 38.9 percent. The waste reduction and recycling rates achieved by the individual SWMDs were quite varied. For the residential/commercial sector, the waste reduction and recycling rates ranged from a low of 1.9 percent to a high of 36.1 percent. For the industrial sector, the waste reduction and recycling rates achieved by the SWMDs ranged from a low of 0.1 percent to a high of 98.6 percent. In all, eight SWMDs achieved a residential/commercial waste reduction and recycling of 25 percent or greater and 38 SWMDs achieved an industrial waste reduction and recycling of 50 percent or greater.

Ohio's 52 SWMDs implemented a wide variety of strategies, programs, and activities to achieve the goals of the *1995 State Plan.* These strategies, programs, and activities are described in Chapter 2 of the 2001 State Plan.

Chapter 3
Goals for Solid Waste Reduction, Recycling, Reuse, and Minimization

This chapter of the *2001 State Plan* establishes eight goals that solid waste management districts (SWMDs) will be required to achieve in their solid waste management plans. These eight goals are as follows:

Goal #1
Access to Alternative Waste Management Opportunities - The SWMD shall provide access to recycling and waste minimization opportunities for municipal solid waste to its residents and businesses. At a minimum, the SWMD must provide access to recycling opportunities to 90 percent of its residential population.

Goal #2
Waste Reduction and Recycling Rates - The SWMD shall reduce and/or 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

Goal #3
Source Reduction - Provide informational and technical assistance on source reduction

Goal #4
Technical and Informational Assistance - Provide informational and technical assistance on recycling, reuse, and composting opportunities

Goal #5
Restricted Wastes and Household Hazardous Wastes - Strategies for managing scrap tires, yard waste, lead-acid batteries, and household hazardous waste

Goal #6
Economic Incentive Analysis - Evaluate the feasibility of incorporating economic incentives into source reduction and recycling programs

Goal #7
Market Development Strategy - This is an optional strategy

Goal #8
Reporting - Annual Reporting of Plan Implementation

This chapter also establishes a statewide recycling and reduction goal of 50 percent by 2005 as well as ten strategies to be implemented at the state government level.

Chapter 4
Restrictions on the Types of Solid Waste Disposed in Landfills and Burned in Incinerators

Restrictions on how certain waste materials can be managed are believed to be a means of preserving scarce landfill capacity and avoid potential environmental problems by routing certain high volume or difficult to manage wastes to more appropriate management options. The result is that there are currently restrictions on how yard waste, scrap tires, and lead-acid batteries can be managed in Ohio. The yard waste restriction under which Ohio currently operates bans only source-separated yard waste from being disposed in solid waste landfill facilities and burned in incinerator facilities. The scrap tire restriction bans all whole and shredded scrap tires from being disposed in landfill facilities (except for landfills specifically designed to accept only scrap tires). The lead-acid battery restriction applies only to incinerator facilities. Current data indicates that few lead-acid batteries end up in landfills and, therefore, a ban on the disposal of lead-acid batteries is not needed.

Based on Ohio's past experiences with banning materials from disposal, this State Plan does not contain recommendations for additional material restrictions. Instead, this State Plan focuses on alternative strategies for waste streams that may be managed more properly by some method other than disposal. Such a focus places a strong emphasis on educating residents regarding alternative management options for specific waste streams (such as major appliances, electronic equipment, and used oil).

Chapter 5
Revised General Criteria for the Location of Solid Waste Facilities

Ensuring that solid waste facilities are sited appropriately was a major focus of not only House Hill 592, but also the *1989 State Plan*. Thus, the *1989 State Plan* contained numerous recommendations for legislative changes to incorporate siting criteria into the process of permitting solid waste facilities. With the exception of criteria for siting scrap tire management facilities, the criteria recommended in the *1989 State Plan* were in place by the time the *1995 State Plan* was adopted. With the establishment of the siting criteria for the scrap tire program in 1996, Ohio now has a comprehensive set of siting criteria that are protective of human health and the environment. As a result, this State Plan does not contain recommendations for changes to the existing or for additional siting criteria. This State Plan does, however, provide support for changes being proposed to the current siting rules.

Communities that host solid waste facilities incur impacts that are associated with those facilities. Ohio's siting criteria do not directly consider those impacts during the permitting process. In order to recognize the affects that solid waste facilities have on the local and regional levels, this chapter contains a discussion of the tools that are available to local communities for addressing these affects.

Chapter 6
Management of Ash Resulting from the Burning of Mixed Municipal Solid Waste

At the time House Bill 592 was passed, the combustion of solid waste was not only a viable waste management option, but it was also expected to provide a means of reducing the volume of waste disposed in Ohio's landfill facilities. As a result, House Bill 592 established provisions in the solid waste statute to require the State Plan to consider alternatives to disposal for managing ash produced from the incineration of municipal solid waste. Since that time, all of Ohio's large, mixed municipal solid waste incinerator and waste-to-energy facilities have ceased operating. The management of solid waste via incineration and waste-to-energy ranged from seven percent of Ohio's total waste stream in 1990 to just 0.2 percent in 1997. In 2001, there was only one incineration facility in Ohio that was licensed to burn solid waste. That facility burns primarily infectious waste with a very small quantity of solid waste. As a result, there is currently only a very small quantity of ash from incinerator facilities that needs to be managed.

Given the absence of large, publicly-owned municipal solid waste incinerators in Ohio, the management of municipal solid waste combustion ash is not a pressing issue for Ohio at this time. Furthermore, Ohio EPA does not expect incineration to become a significant solid waste management option in the future due to the expense of upgrading existing incinerator facilities to meet current air emission standards. Consequently, this State Plan does not contain additional recommendations for developing alternative methods of disposing of municipal solid waste incineration ash.

Chapter 7
A Statewide Strategy for Managing Scrap Tires

Scrap tires pose a substantial management challenge due both to the large number of scrap tires generated each year and the properties built into a tire to ensure its safety and durability. Until 1996, most scrap tires were landfilled, stockpiled, or illegally dumped. The overall objective in the management strategy for scrap tires is to reduce the number of tires in uncontrolled stockpiles and illegal dumps.

Ohio's scrap tire program is funded via a per-tire fee that is collected on the wholesale sale of new tires. Until 2001, that fee was set at $0.50 per tire. In 2001, the fee was increased, by Ohio's General Assembly, to $1.00 per tire.

Ohio's current regulations governing scrap tire management and disposal were adopted in 1996. With the adoption of these rules, virtually anyone involved in managing scrap tires became subject to Ohio's scrap tire regulatory program. As was mentioned earlier, it is illegal to dispose of scrap tires in solid waste landfill facilities. Such a disposal restriction makes it paramount that alternative management options be developed to prevent additional illegal disposal from occurring. Thus, Ohio's solid waste statute contains provisions that earmark some of the revenue collected by the per-tire fee to research and development and grant programs. Those programs are intended to stimulate markets for recycled scrap tires.

A good portion of the revenue generated by the per-tire fee is designated for abatement activities associated with the illegal dumping of scrap tires. To date, Ohio has completely cleaned up five illegal scrap tire dumps consisting of 7,720,373 passenger tire equivalents. In addition, Ohio has made significant progress towards remediating the state's biggest scrap tire dump - Kirby Tire Recycling, Inc. which was originally estimated to contain 16 to 20 million scrap tires. Ohio's SWMDs have also provided resources to clean up numerous scrap tire dumps.

Chapter 8
A Program for Managing Household Hazardous Waste

Household hazardous waste means any material discarded from the home that may, because of its chemical nature, pose a threat to human health or the environment when handled improperly. Although household hazardous waste can have many of the same properties as industrial hazardous waste, because of the low percentage of waste stream generated from each household, it is specifically excluded from regulation as a hazardous waste by both the federal and Ohio's hazardous waste programs.

SWMDs are required, in their solid waste management plans, to provide a strategy geared towards household hazardous waste. The specific strategy chosen is completely left to the discretion of the SWMD. Thus, as would be expected, there is a wide range of strategies being implemented by Ohio's SWMDs. Some SWMDs focus their attention on preparing and distributing literature regarding alternatives to hazardous materials and proper ways of managing household hazardous waste. Other SWMDs provide technical assistance to home owners via telephone hotlines. Still other SWMDs host collection events to which residents can take household hazardous waste to be managed properly. In 1999, 37 SWMDs either hosted or participated in some type of a collection event. Of these, 29 were temporary collection events and four were permanent collection opportunities.

One issue related to household hazardous waste that is receiving greater attention is the management of electronic equipment, such as computer components, televisions, and VCRs. Many electronic components do contain hazardous materials. As technological innovation continues to make more and more electronic equipment obsolete, finding ways to manage that equipment becomes a necessity, not only due to the hazardous nature of the equipment but also due to the sheer volume. As a result, this State Plan directs SWMDs to provide a strategy to address managing electronic equipment. As with the general goal for household hazardous waste, the specific strategy selected by the SWMD will be left to the discretion of that SWMD.

Chapter 9
Recycling Market Development

The need to enhance markets for recyclable materials and for products made with recycled-content materials has long been acknowledged as a critical component in the continued success of recycling programs in Ohio. While the prices that are being offered for recyclable materials certainly help to drive the amount of recycling that occurs, the value of potentially recyclable materials is dependent upon the demand for end products that are made from those materials. Thus, considerable effort has been put forth by a wide variety of entities to publicize the "Buy Recycled" message. This effort is focused on educating consumers, businesses, and governmental agencies to not only recycle their waste, but also to purchase products made from recycled materials.

This chapter of the State Plan contains proposals to facilitate the creation of markets for recyclable materials by supporting the continued development and implementation of the Ohio Market Development Plan. The Ohio Market Development Plan is created by the Interagency Recycling Market Development Workgroup. The plan coordinates state assistance for recycled materials and identifies broad strategies to promote recycling markets statewide. This chapter also contains five other recommendations for supporting the development of markets for recyclable materials.

INTRODUCTION

1
CHAPTER

Current Status

Since the adoption of House Bill 592 (H.B. 592) in 1988, the state of Ohio has made a great deal of progress in the arena of solid waste management. Over the past thirteen years, Ohio has: adopted and implemented comprehensive regulations governing the management of solid waste; developed a network of solid waste management districts (SWMDs) that have incorporated the provision of sound environmental solid waste disposal, reduction, and recycling options to residents and businesses into the functioning of county and local governments; increased publically available, remaining landfill capacity by over 300 percent; successfully integrated practices to divert recyclable solid wastes and other difficult to manage wastes from landfill facilities, and; caused recycling in the state to increase from 25.6 percent of total generation in 1990 to 38.9 percent in 1999. This, Ohio's third state solid waste management plan (State Plan), describes the progress that Ohio has made towards achieving its solid waste management goals and the mechanisms that have been used to achieve that progress. Additionally, this State Plan provides information on the challenges that Ohio still faces as well as recommendations for continued improvement.

Historical Perspective

In 1988, Ohio faced a combination of solid waste management problems, including declining landfill capacity, ever-increasing generation of wastes to be disposed, environmental problems at many existing solid waste disposal facilities, and an influx of out-of-state waste. Citizen, government, and private sector concern over these pressing problems forged a legislative coalition to create a comprehensive solid waste management program for Ohio. The resulting legislation, H.B. 592, dramatically revised Ohio's solid waste regulatory program and set in motion a comprehensive planning process to ensure that adequate and environmentally sound management capacity exists and to increase efforts to reduce our generation of solid wastes.

H.B. 592 required the Director of the Ohio Environmental Protection Agency (Ohio EPA), with the advice of the Solid Waste Management Advisory Council (SWAC), to prepare a State Plan to meet specific mandates established in the statute. A key mandate of the State Plan is to reduce Ohio's reliance on the use of landfills for the management of solid wastes. The first State Plan, the *1989 State Solid Waste Management Plan* (*1989 State Plan*), was adopted June 16, 1989 and established solid waste reduction and recycling objectives for Ohio and for newly created solid waste management districts (SWMDs). These SWMDs, also the result of H.B. 592, were comprised of county governments acting individually or in partnership to address local and regional solid waste management needs.

The objectives set in the *1989 State Plan* included reducing or recycling 25 percent of the generation of solid wastes by the year 1994, an annual per capita increase in the amount of waste recycled, and an annual per capita decrease in the amount of waste disposed.

The solid waste planning provisions of the Ohio Revised Code (ORC), as established by H.B. 592, require Ohio EPA and SWAC to conduct a thorough review of the progress made towards achieving the goals established in the State Plan every three years. This review is designed to examine all of the goals and strategies established in the State Plan in the context of current solid waste management practices in Ohio. If the findings of the triennial review indicate that the State Plan goals and strategies have not been effective or responsive to the solid waste management needs of Ohio, or otherwise need adjustment, then Ohio EPA and SWAC are required to prepare and adopt a revised State Plan.

In late 1994, SWAC determined that the *1989 State Plan* should be revised. Therefore, new goals and strategies were developed for the first revision of the State Plan. The result was the *1995 State Solid Waste Management Plan* (*1995 State Plan*) which was adopted in October 1995. Like the *1989 State Plan*, the *1995 State Plan* contained a goal that was focused on obtaining a recycling percentage. Thus, the *1995 State Plan* established a goal for Ohio to reduce or recycle at least 50 percent of the solid wastes generated within the State by 2000. The 50 percent goal translated into two objectives for SWMDs: reduce or recycle 25 percent of the residential/ commercial waste generated within the SWMD and 50 percent of the industrial waste generated within the SWMD by the year 2000.

With the adoption of the *1995 State Plan*, SWMDs, for the first time, had the option of meeting one of two goals with respect to reducing or recycling the waste generated in their jurisdictions. Instead of requiring SWMDs to demonstrate that they could meet the percentage goals established in the *1995 State Plan*, SWMDs now had the option of providing a certain level of recycling op-

portunities to their residents and commercial businesses. In total, the *1995 State Plan* had seven goals. In addition to the two goals already discussed, there were also goals to:

- provide technical assistance and information on source reduction;
- provide technical assistance and information on recycling, reuse, an composting opportunities;
- provide strategies for managing scrap tries and household hazardous waste;
- submit annual reports of plan implementation to Ohio EPA: and;
- provide market development strategies.

The market development goal was an optional goal, meaning that SWMDs were not required to pursue this goal in their individual solid waste management plans.

In 1998, Ohio EPA and SWAC conducted a review of the *1995 State Plan* and determined that a revision was not necessary at that time as insufficient time had passed to adequately evaluate the progress made in implementing the *1995 State Plan*.

In mid 2000, Ohio EPA began the process of revising the *1995 State Plan*, thus creating the second revision of the original State Plan. The decision was made based on comments that representatives of several SWMDs have brought to Ohio EPA's attention as well as changes that have occurred in the solid waste industry since adoption of the *1995 State Plan*. Unlike the *1995 State Plan*, this second revision does not represent a major departure from the recycling goals established in the previous version. Instead, this State Plan makes several adjustments and clarifications to the existing goals. These modifications are intended to provide more flexibility to the SWMDs and further refine the goals while maintaining the intent of H.B. 592.

The issues that warranted the revision of the *1995 State Plan* are discussed in Chapter II. Specific objectives for the State as a whole and for local SWMDs are described in greater detail in Chapter III. The remainder of this chapter provides additional background information and gives an overview of the changes that have occurred since 1995 in the management of solid waste and in the regulatory program for solid waste management facilities.

Regulatory Definition of Solid Waste

The federal definition of solid waste encompasses more waste streams than Ohio's definition. At the federal level, solid and other types of nonhazardous waste are regulated under Subtitle D of the Resource Conservation and Recovery Act (RCRA). As a result, these wastes are often referred to as Subtitle D wastes. Examples of Subtitle D wastes are identified in Figure I-1. Construction and demolition wastes, liquid oil and gas wastes, and mining wastes are not defined as solid wastes in Ohio. Municipal sludge is rarely managed as solid waste in Ohio. Thus, although these other wastes may occasionally be disposed of in landfills, the state and local planning processes in Ohio focus on managing municipal (MSW) and industrial solid waste (ISW).

MSW is comprised largely of the products, packaging, food, and yard trimmings discarded by residential, commercial, institutional, and industrial generators. ISW is comprised of the non-liquid and nonhazardous wastes generated as a result of an industrial or manufacturing process. To provide for the disposal of these different waste streams, there are two general types of solid waste landfills in Ohio. MSW landfill facilities can receive both MSW and ISW, while ISW landfills can only receive ISW.

Upgrading Regulatory Requirements for Landfills

Like many states at that time, Ohio, in 1968, moved to restrict open burning and open dumping, thereby bringing local landfills under the jurisdictions of health departments and the State. Because many dumps were improperly closed and existing landfills lacked proper environmental health and safety controls, revised regulations were enacted in 1976.

In 1980, Ohio EPA began documenting public health, safety and environmental problems resulting from landfilling practices. Some of the problems documented included:

- Ground water contamination due to lack of proper clay soils or synthetic liners at operating or improperly closed landfills;
- Explosions due to migration of methane gas;
- Poor operating history by some landfill operators and lack of consistent regulation and enforcement statewide;

FIGURE I-1 Municipal and Industrial Solid Wastes in the Universe of RCRA Subtitle D Wastes

Municipal Solid Wastes*

Industrial Nonhazardous Solid Wastes*

Municipal Sludge

Construction and Demolition Wastes

Agricultural Waste

Oil and Gas Waste

Mining Waste

* Waste streams that are the primary focus of the State and local planning process.

Source: US EPA. "Characterization of Municipal Solid Waste

- Lack of planning for new solid waste facilities to offset decreasing disposal capacity; and
- Increasing public opposition to siting additional disposal facilities (both new facilities and expansions at existing facilities).

This information provided part of the impetus for passage of H.B. 592, which in turn required Ohio EPA to draft new, more stringent regulations for landfills. These regulations became effective in 1990. In addition, the current regulatory program for solid waste also includes transfer stations, incinerators, and composting facilities.

H.B. 592 and the more stringent regulations required owners and operators of landfills to upgrade their facilities to meet the new regulations. In addition, in 1994, new federal regulations governing MSW landfills took effect. These new regulations were created under Subtitle D of RCRA. Thus, in 1994, Ohio adopted new rules that incorporated the necessary regulatory changes to maintain consistency with the federal rules. Some of the basic design requirements for new landfills are illustrated in Figure I-2. In addition to the design requirements, Ohio has enacted restrictions on the location of facilities to protect groundwater sources, human health, and the environment. The criteria for the location of solid waste facilities are discussed in Chapter V.

Generation of Solid Waste in Ohio

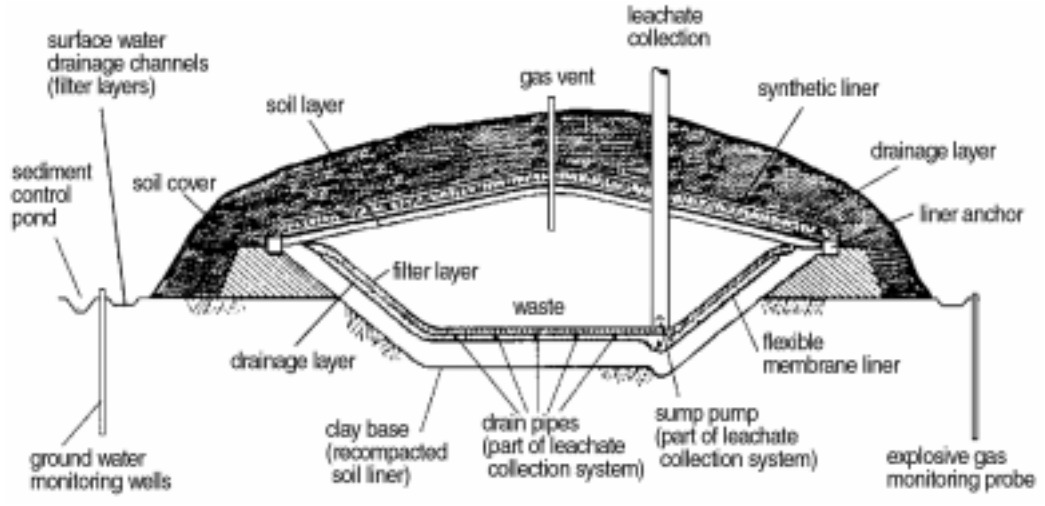
Based on the amount of waste reported as recycled and disposed in Ohio and exported to other states, Ohio EPA estimates that a little more than 33.1 million tons of solid waste were generated in Ohio in 1999. This amount of waste translated to 16.19 pounds per person per day (ppppd) for every person in the state of Ohio. MSW generation in 1999 was slightly greater than 13 million tons, or 39 percent of total solid waste generation. The per capita generation of MSW in Ohio was approximately 6.34 ppppd in 1999. ISW generation was a little greater than 20.1 million tons (61 percent of total solid waste generation). The ISW per capita generation rate for Ohio in 1999 was approximately 9.85 ppppd.

In 1995, when the last State Plan was adopted, Ohioans generated a total of a little more than 26.6 million tons of solid waste, which amounted to approximately 13.23 ppppd. Of this, approximately 43 percent (more than 12.4 million tons) was composed of MSW and 57 percent (slightly more than 15.2 million tons) was composed of IWS. Thus, Ohioans produced approximately 5.68 ppppd of MSW and 7.56 ppppd of ISW in 1995.

From 1995 to 1999, Ohio saw increases in the amount of solid waste generated, not only from the residential/commercial sector, but also from the industrial sector. The increase in the generation rate in the residential/commercial sector was partially due to the inclusion of yard waste diverted from landfill facilities in the calculation of the generation rate. Prior to 1995, yard waste that was diverted from landfill facilities (e.g. composted, land applied, etc.) was not included in the waste generation figure. The increase in the tons of ISW generated is largely attributable to the production of air pollution control waste in the form of flue gas desulfurization (FGD) waste at the coal-burning power plants around Ohio. This waste is the result of improved air pollution control measures at these facilities. As is explained in the following two paragraphs, a portion of the increase is also due to a change in the way that industrial recycling is factored into the generation calculation.

The amount and types of waste generated among counties or SWMDs varies significantly. This variability is the result of many factors including population density, the number of businesses and institutions, and the types of commercial and industrial facilities present. The greatest variability is with respect to ISW. The tonnage of waste generated by the industrial sector is highly dependent on the size and nature of the industrial and manufacturing entities located in an area. An example is the presence or absence of a coal-burning power plant in a

FIGURE I-2 Modern Standards for solid Waste Disposal



SWMD. In the early 1990s, the companies operating these facilities were required to install pollution control devices to eliminate particulates and gases from being emitted to the atmosphere. The result was the production of a new waste material, FGD waste. Unlike the other waste materials generated by coal-burning power plants (i.e. bottom and fly ashes), FGD is solid waste, and more specifically industrial waste. Bottom and fly ashes that are determined to be "non-toxic," as that term is defined in policy, are excluded from being solid waste by virtue of the regulatory definition of solid waste. FGD, however, does not enjoy this exclusion. As a result, the tonnage of FGD produced annually is included in the total amount of solid waste generated both statewide and by individual SWMDs.

For the SWMDs hosting coal-burning power plants, the production and disposal of FGD had a significant, negative effect on their ability to demonstrate compliance with the waste reduction and recycling goal for the industrial sector. In the Gallia, Jackson, Meigs, Vinton Joint County SWMD, the Gavin Residual Waste Landfill facility began operations in 1995. In that first year, more than 2 million tons of FGD were disposed in the company's captive landfill facility. [NOTE: a captive landfill facility is owned by the generator which is typically an industrial/ manufacturing entity. Only those wastes generated by the owner are disposed at a captive landfill facility.] This increased the amount of industrial waste disposed by the SWMD by over one thousand percent in a single year. This caused the SWMD's waste reduction and recycling rate (WRRR) for the industrial sector to plummet from nearly half (47.44 percent) in 1994 to virtually nothing (0.96 percent) in 1995.

Variation in the types and amount of solid waste from different generators requires flexibility on the part of SWMDs. MSW is typically less variable than ISW from one area to the next with respect to its composition. The quantity of MSW generated typically varies depending on the population of an area. Solid waste generation may also vary in quantity and composition from one year to the next in response to an expanding or contracting economy. It may also change gradually in response to demographic changes in an area or changes in the types of products or packaging used. Because of the variety of factors that can affect the amount and type of solid wastes that are generated, plans for the management of solid waste must be dynamic and flexible in order to accommodate the variability between local SWMDs and the changes that may take place over time.

From 1995, the generation of solid waste continued to grow in Ohio in absolute terms (five percent per year) and on a per capita basis (two percent per year). If factors like population increase and the recent unprecedented economic growth continue, the trend towards increased solid waste generation will be expected to continue.

Solid Waste Disposal Capacity

Beginning in 1982, Ohio EPA requested that landfill owners and operators complete an annual summary of operations. These annual reports, which today are a regulatory requirement, are used to track landfill use and remaining disposal capacity statewide. From the information provided in the annual reports, the Agency determined that gross landfill capacity was decreasing dramatically as was overall remaining landfill life. By 1990, Ohio had approximately 76 publicly available landfills, less than half as many as in 1971. The remaining capacity at these facilities was estimated to be approximately 176 million cubic yards of gross airspace (volume available for waste disposal) or enough disposal capacity to last for about six and one half years by Ohio EPA estimation methods.

By 1994, at the time the *1995 State Plan* was being written, the capacity situation statewide had changed dramatically. Although the number of publicly available landfills had declined to approximately 57, the remaining capacity as measured in gross airspace had increased to approximately 240 million cubic yards. This brought the estimate for remaining years of available disposal capacity to slightly more than 11 years. This trend of a declining number of landfill facilities providing greater disposal capacity and a movement away from smaller, local facilities to larger, regional facilities is one that would continue throughout the rest of the 1990s.

The *1995 State Plan* predicted that factors affecting local availability and assurance of disposal capacity could shift local government's focus from a strategy centered on providing sufficient disposal capacity for locally - generated wastes to one centered on transporting wastes to more distant yet available landfill facilities. This prediction was based on the increasing costs incurred in siting, designing, and constructing landfill facilities as a result of technological upgrades to siting and design requirements in Ohio's solid waste law and regulations. These costs and stricter requirements have caused Ohio to experience a decline in the number of landfill facilities while at the same time an increase in overall disposal volume.

In 1995, there were 53 publicly available landfill facilities that accepted solid waste during the year. By 1999, 11 of the 53 landfill facilities had ceased accepting waste. Of those 11 facilities, four were publicly owned (i.e. owned by a governmental entity) and seven were owned by private, commercial operations. Three new landfill facilities began accepting waste between 1995 and 1999. Thus, in 1999, the number of publicly available landfill facilities that accepted waste during the year

had decreased to 45.[1] One of the 45 landfill facilities operating in 1999 ceased accepting waste during the year, leaving 44 operating facilities at the end of 1999. Of those 44 facilities, 14 were publicly-owned. By the end of 1999, 20 SWMDs (representing 42 counties) were without publicly available landfill facilities in their jurisdictions.

In terms of disposal capacity, as of December 31, 1999, there were 453,879,748 cubic yards of permitted, available disposal capacity at Ohio's 44 publicly available MSW landfills. The operators of these facilities reported having used 20,832,426 cubic yards of airspace to dispose of the 11,058,942 tons of solid waste accepted during 1999 (1.9 cubic yards used for each ton disposed). Assuming that Ohio continues to dispose of solid waste at 1999 rates and the ratio of cubic yards to tons disposed remains the same in the future, there were 21.79 years of available, permitted disposal capacity at the end of 1999. Of the permitted disposal capacity, there were 56,062,218 cubic yards of constructed airspace at Ohio's publicly available landfill facilities at the end of 1999. At 1999 waste disposal rates, Ohio had 2.7 years of constructed airspace at the end of 1999.

Compared to available capacity in 1995, Ohio had 166 percent more available landfill capacity in 1999 at publicly available facilities than in 1995. At the end of 1995, there were 273,244,066 cubic yards of airspace available at Ohio's publicly available landfill facilities for the placement of solid waste. The operators of these landfill facilities reported having used 20,672,214 cubic yards of airspace to dispose of the 12,925,730 tons of solid waste accepted during 1995 (1.6 cubic yards used for each ton disposed). At 1995 solid waste disposal rates, there were 13.2 years of available, permitted landfill capacity at the end of 1995. [Note: Ohio EPA did not track constructed capacity in 1995, so data regarding the number of years of constructed capacity is not available for 1995.]

Imports and Exports of Solid Waste

One factor affecting available capacity for the disposal of Ohio-generated waste is the amount of out-of-state waste Ohio receives. Waste generated from out-of-state sources and transported into Ohio threatens to reduce remaining disposal capacity and has continually frustrated state and local efforts to manage solid waste responsibly. Out-of-state waste disposed in Ohio landfills increased from 33,000 tons in 1986 to a high of 3.7 million tons in 1989.[2] For seven years, beginning in 1990 and ending in 1996, Ohio experienced steady declines in receipts of out-of-state waste. This trend was reversed in 1997 when out-of-state waste receipts increased over 1996 levels. In every year since, Ohio has experienced small increases in the amount of out-of-state waste accepted for disposal at landfill facilities located in the State.

The volume of interstate waste imported into the State places an additional burden on Ohio's ability to meet its own disposal needs and makes it more challenging for SWMDs to meet the planning requirements of H.B. 592. Furthermore, imports of waste from other states remain a serious problem for implementation of solid waste management plans in Ohio for a number of reasons, including:

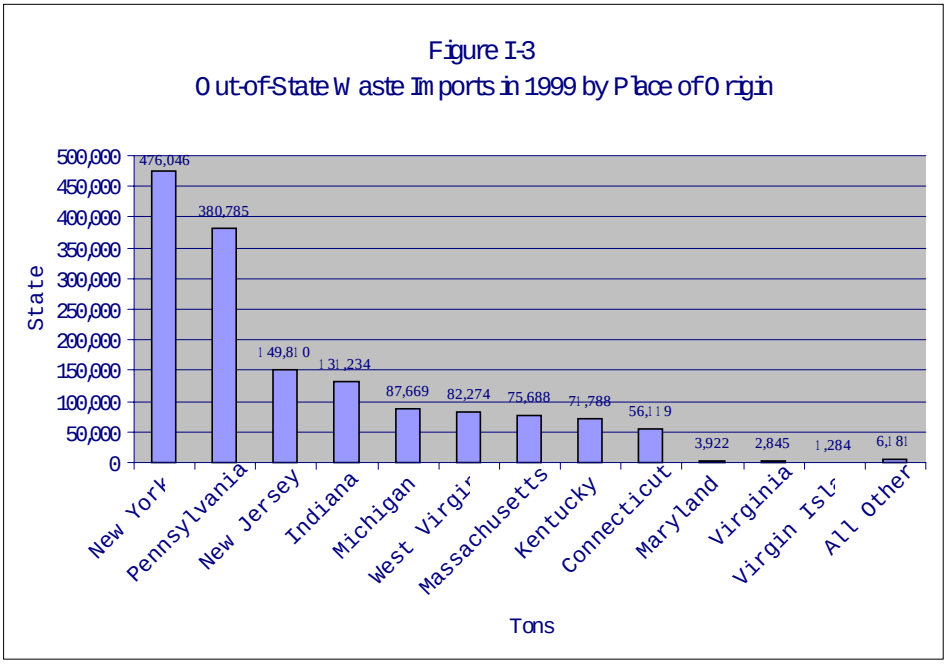
- Citizens oppose landfills that are perceived as servicing primarily out-of-state waste. This opposition is hampering the siting of facilities that are needed to provide disposal capacity for Ohio's own waste.
- Citizens are reluctant to reduce or recycle waste when they believe their efforts will only serve to provide additional space for trash from another state.

Ohio has traditionally received small amounts of solid waste from contiguous counties of its neighboring states (western Pennsylvania, West Virginia, Kentucky, Indiana, and Michigan) and has shipped some waste to neighboring landfills in border counties of those states as well. These local transfers have historically comprised approximately one-half of out-of-state imports and are generally not controversial. However, most of the remaining out-of-state waste disposed in Ohio is from New York, New Jersey, and eastern Pennsylvania. In addition, a number of other states and Canada sent waste to Ohio. Figure I-3 graphically presents the tonnage of waste imported from sending states.

In 1995, the amount of out-of-state waste received at landfill facilities in Ohio totaled approximately 1.3 million tons, and approximately 55 percent originated from states contiguous to Ohio (Indiana, Kentucky, Michigan, Pennsylvania, and West Virginia). In 1999, this tonnage increased to approximately 1.5 million tons of which approximately 49 percent originated from states contiguous to Ohio. In 1995, Pennsylvania was the lead exporter of waste to Ohio. By 1997, New York had become the lead exporter of solid waste to Ohio landfill facilities. In March 2001, the Freshkills Landfill Facility, New York City's only landfill facility and the largest landfill facility in the Country, ceased accepting waste. As a result, it is possible that Ohio will see some

[1]In addition to the 45 publicly-available solid waste landfill facilities that accepted waste in 1999, one other publicly available landfill facility accepted solid waste in 1999. The Envirosafe Hazardous Waste and Industrial Waste Landfill is not licensed or permitted as a solid waste landfill facility; but it is permitted as a hazardous waste landfill facility, and ISW is disposed at the facility. The faciltiy is publicly-available.

[2]Ohio EPA is unable to determine how much of the increase in out-of-state waste receipts is due to an actual increase in tonnage imported into Ohio and how much is attributable to improved reporting on the part of disposal facility owners and operators.



Notable Changes Since Adoption of the 1995 State Plan

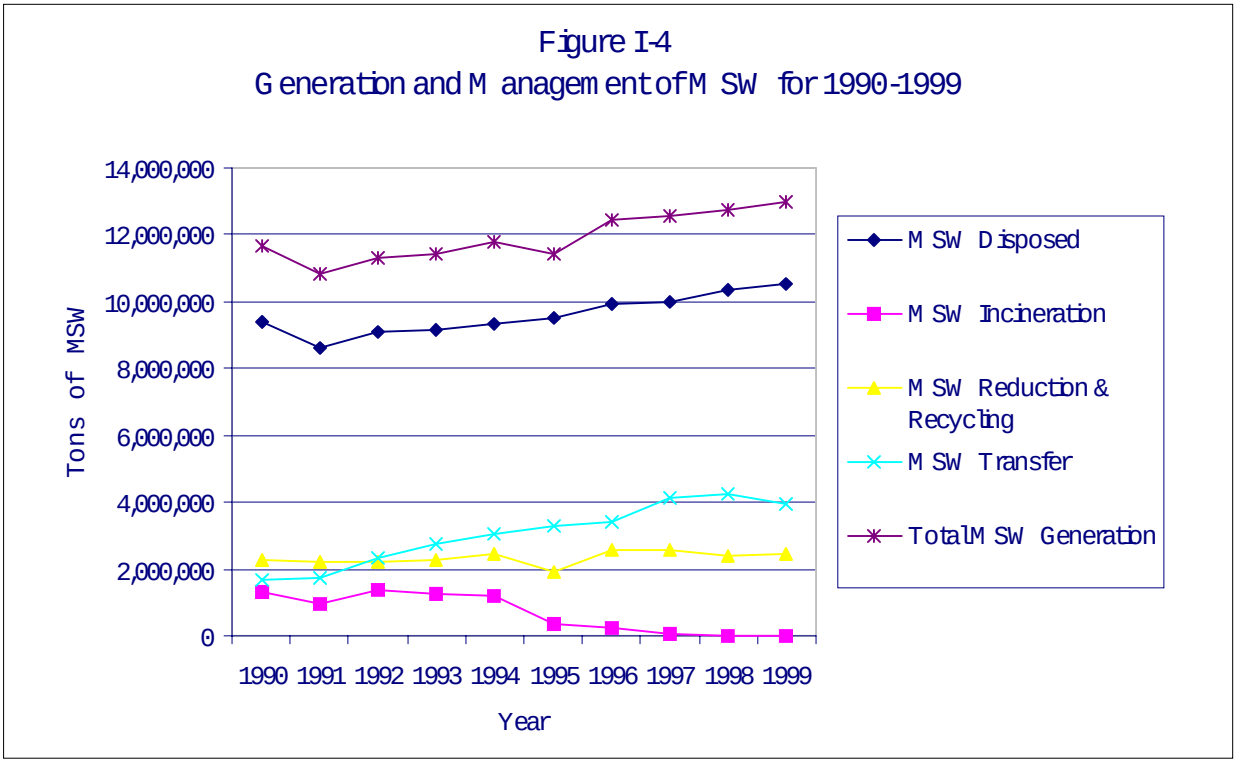
Management of Solid Waste

Two notable changes in solid waste management practices have occurred since the adoption of the *1995 State Plan*. First, the two remaining, large, publicly-owned, solid waste incinerators ceased operation in 1997. The closure of those facilities left Ohio without any operating incinerators accepting mixed MSW[3]. The second change, which was mentioned earlier in this chapter, is increased ISW production at coal combustion power plants as a result of stricter emission control requirements.

The amounts of MSW managed by recycling, incineration, transfer, and landfilling for 1990 through 1999 are shown in Figure I-4[4].

increase in the amount of waste that it receives from New York. It is also possible that solid waste generated in other states that has historically been disposed in facilities outside of Ohio will be displaced by waste coming from New York and be disposed in Ohio, further increasing the tonnage of out-of-state waste.

In 1999, Ohio exported approximately 1,039,876 tons of solid waste to the states with whom the State shares borders. The state receiving the greatest volume of Ohio- generated solid waste was Michigan with 400,047 tons. In 1995, Ohio exported approximately 707,734 tons to bordering states.



[3]Mixed MSW is MSW that is not segregated into specific components, such as yard waste, combustibles, etc.

The Development of Ohio's Regulatory Review Process

By 1995, Ohio had a very comprehensive set of regulations governing all aspects of solid waste management. With the exception of the scrap tire rules, there haven't been major changes to Ohio's solid waste regulations since 1994, when Ohio adopted revised regulations that complied with Subtitle D of RCRA. In 1996, Ohio's General Assembly passed House Bill 473 (H.B. 473), which required all agencies of the state of Ohio to institute processes to review their regulations once every five years. Codified as ORC Section 119.032, H.B. 473 directed state agencies to determine which rules need to be amended, rescinded, or continued without change. In addition, ORC Section 119.032, as created by H.B. 473, specifies that the following criteria are to be considered during the review of each rule:

- Does the rule meet the purpose, scope and intent of the law that authorized the rule?
- Can changes be made to the rule to allow more flexibility at the local level?
- Can changes be made to the rule that would eliminate unnecessary paperwork?
- Does the rule duplicate, overlap, or conflict with other rules?

During the rule review process, Ohio EPA must consider the continued need for the rule, any complaints or comments received regarding the rule, and any relevant factors that have changed in the subject matter affected by the rule. The Ohio General Assembly's Joint Committee on Agency Rule Review (JCARR) oversees the rule review process to assure that the procedures stipulated in ORC Section 119.032 are followed.

Ohio EPA conducted a review of Rule 3745-27-90 (Standards for Solid Waste Management Districts) of the Ohio Administrative Code (OAC) in 2000. OAC Rule 3745-27-90 is the rule that codifies and expands upon the requirements of the State Plan. The revised rule became effective on May 10, 2001 and incorporated requirements to codify a policy and made minor changes to the existing language to correct grammatical errors and incorporate new standards imposed by the Legislative Services Commission.

In addition, Ohio EPA is in the process of reviewing the rules governing the siting of solid waste facilities, the management of scrap tires, the rules governing the design and operation of solid waste landfills, and the rules governing composting operations.

Existing Infrastructure for Alternative Management of Solid Wastes

Throughout the State, new activities and facilities to reduce, recycle and compost solid wastes have been initiated since the adoption of the *1995 State Plan*. As expected, a shift in the focus of SWMDs from gathering recycling data to providing recycling opportunities has occurred as many SWMDs have opted to provide access to recycling opportunities instead of achieve a numeric recycling and reduction goal. As a result, there are many more opportunities to participate in recycling programs being offered to residents around the State. This is exemplified by a significant increase in the number of drop-off recycling locations being offered by SWMDs. Exactly what effect this will have on Ohio's waste reduction and recycling rate cannot be determined yet as many of the drop-off locations have not been in existence long enough to appreciably affect the tonnage of recyclables being collected. [See Chapter II for more detailed descriptions of the activities implemented by the State and SWMDs.]

Activities to manage specific wastes have also increased. For example, Ohio now has more than 521 registered sites for the composting of yard wastes and other organic wastes. New regulations governing the management of scrap tires have resulted in registered and permitted facilities to manage scrap tires. [See Chapter VII.] In addition, the number of SWMDs providing collection opportunities for household hazardous wastes is at an all-time high. [See Chapter VIII.]

We have learned a great deal in six years, and the learning process will continue as the planning process shifts fully into the implementation stage and as we strive to continue to reduce, reuse, recycle and minimize our wastes. Ohioans can be very proud of the comprehensive programs in the State, and of the efforts underway that will benefit ourselves and future generations.

Fees and Flow Control

When H.B. 592 was passed in 1988, it was expected that a small number of large solid waste management districts would carry out the planning efforts required by the law. Initially, however, 48 SWMDs were formed, 32 single-county and 16 multi-county solid waste districts. As planning proceeded, several SWMDs districts underwent reconfigurations, so that there are now 52 SWMDs statewide.

It was also expected that each SWMD would include at least one solid waste landfill, and disposal fees from that facility would cover the costs of the planning effort. However, as landfill regulations were upgraded and older facilities reached capacity and closed, a number of SWMDs were left with no active disposal facilities from which to receive disposal fee revenues (20 SWMDs at the end of 1999). The waste disposal industry expressed

[4]Ohio EPA does not have data for the tonnage of MSW reduction and recycling for 1991. Thus, the tonnage provided for 1991 in Figure 1-4 was interpolated using the tonnages for 1990 and 1992.

concern that differences among SWMD fees were affecting the ability of facilities to compete fairly with one another. Municipal and industrial generators have been concerned with the overall cost of solid waste disposal. In response to these and other concerns, the disposal fee structure set out in H.B. 592 has now been legislatively revised a number of times, most recently in 1993 when disposal fees were capped within a specific range, and a generation fee mechanism was established to fund SWMDs with no active disposal facility.

H.B. 592 also included mandatory control over the flow of solid waste: each SWMD was required to designate a list of disposal and recycling facilities in its plan, and no one was allowed to deliver district waste to a facility that was not designated. H.B. 592 also gave SWMDs the authority to pass rules restricting the receipt of solid waste from outside of the district. Flow control has been the subject of controversy in many parts of the country as well as Ohio. Facility designations may direct waste to one facility while disposal and transportation costs, the local fee structure, and liability concerns may cause the generator to want to send waste to a different facility. Generators and transporters of solid waste have expressed concerns about limitations on their disposal choices. As a result, Ohio's statute was revised in 1993 to make flow control permissive for solid waste districts rather than mandatory and to incorporate more provisions for public notice and involvement before flow control is initiated.

A U.S. Supreme Court decision in 1994 overturned a local flow control ordinance in New York on constitutional grounds, bringing into question the legality of flow control laws in general and other laws that could restrict the importation of out-of-state waste. As a result, Ohio, along with other states, has advocated for many years for the U.S. Congress to address both the flow control and interstate waste issues.

More recent court decisions have suggested that certain types of limited flow control may be able to pass the constitutional question. However, it is clear that due to the legal issues involved, the broad, unrestricted ability of SWMDs to both control where solid waste is disposed and restrict the receipt of solid waste from outside the district, as originally contemplated in H.B. 592, has been significantly diminished, if not eliminated, at least until the issue is addressed by Federal legislation.

Summary of the Requirements of the Solid Waste Management Planning Process

The purpose of the State Plan and local SWMD Plans is to ensure that adequate management capacity at environmentally sound facilities is available and that effective and practical solutions to reduce our generation and disposal of solid wastes are implemented. The State Plan is to be prepared by the Ohio EPA, with the advice of SWAC.

As stipulated by ORC Section 3734.50, the State Plan must address eight specific mandates:

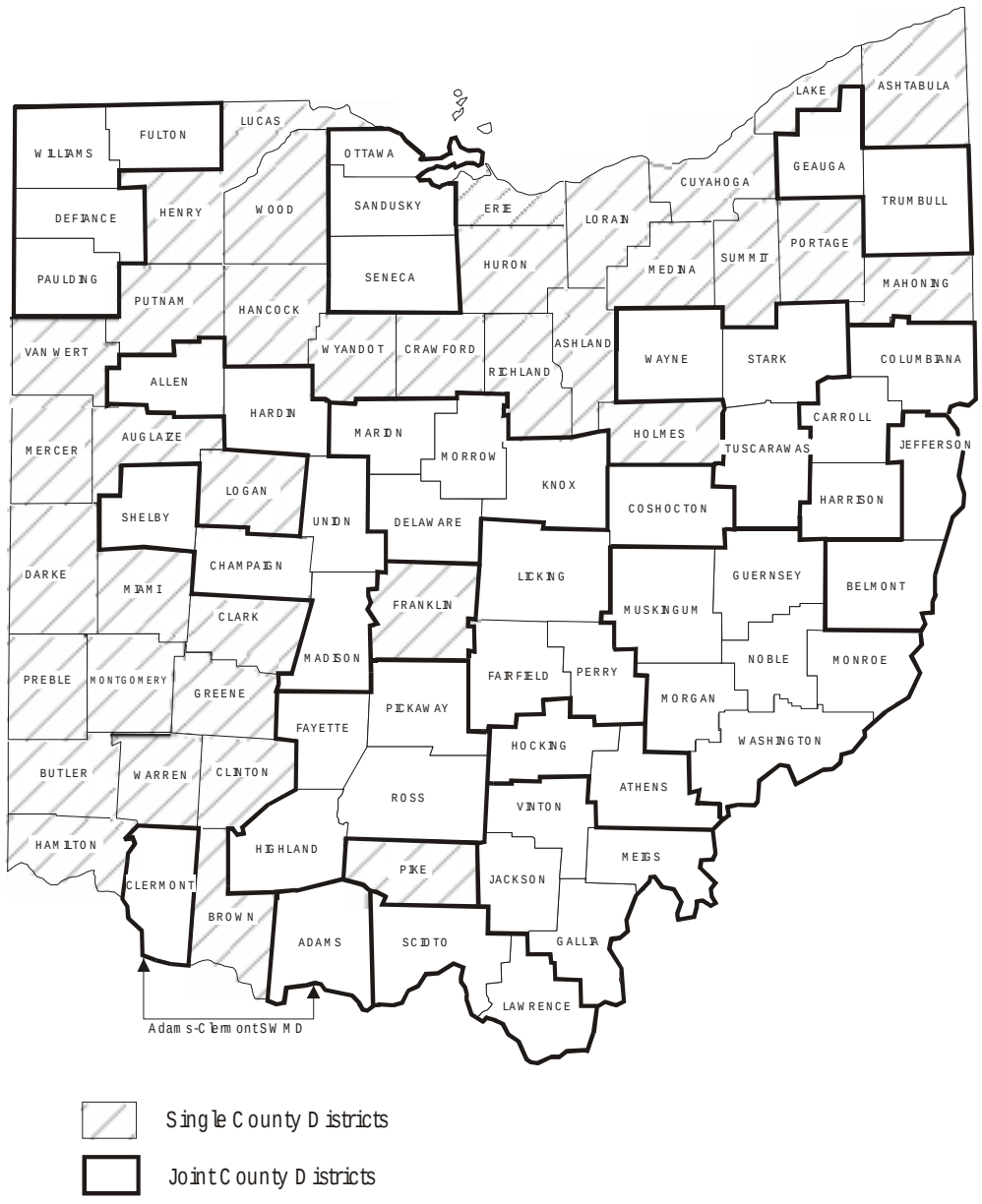
- Reduce reliance on the use of landfills for management of solid wastes;
- Establish objectives for solid waste reduction, recycling, reuse, and minimization;
- Establish restrictions on the types of solid waste disposed of by landfilling for which alternative management methods are available;
- Establish revised general criteria for the location of solid waste facilities;
- Examine alternative methods for the disposal of fly ash and bottom ash resulting from the burning of mixed municipal wastes;
- Establish a statewide strategy for managing waste tires;
- Develop specific recommendations for legislative and administrative action to promote markets for products containing recycled materials and to promote the use by state government of products containing recycled materials; and
- Establish a program for the proper separation and disposal of hazardous waste generated by households.

The objectives for reducing, recycling, and minimizing solid wastes established in the State Plan become mandatory elements of solid waste management plans for SWMDs.

H.B. 592 required Boards of County Commissioners of each county in Ohio to become part of a SWMD, either independently or in conjunction with one or more other counties. A total of 52 such SWMDs, encompassing all 88 Ohio counties, currently exist. Of these, 37 are single-county SWMDs and 15 are joint-county SWMDs.[5] Ohio's SWMDs do not necessarily correspond to local "wastesheds," or disposal routes and markets. The State's major cities are all located within single-county SWMDs (See Figure I-5).

[5]Counties actually had the option of forming either a SWMD or a regional solid waste management authority (Authority). Ohio EPA generally uses SWMD when referring to both SWMDs and Authorities. Of the 52 SWMDs in Ohio, five are actually Authorities. The major difference between a SWMD and an Authority is the composition of the governing body. A SWMD is governed by a Board of Directors which consists of the county commissioners from all of the counties comprising the SWMD. An authority is governed by a Board of Trustees which consists of the following from each county: president of the board of county commissioners, the chief executive officer of the largest municipality, a township trustee, a health commissioner, and a public representative.

Figure I-5 Ohio's Solid Waste Management Districts



Each SWMD is required to form a policy committee which in turn must prepare, adopt, and submit a solid waste management plan to Ohio EPA.[6] The solid waste management plan must provide for the safe and sanitary management of solid wastes generated within the SWMD for a minimum of 10 years. The SWMD's solid waste management plan must also show how the SWMD will meet the requirements of the State Plan. Solid waste management plans are prepared in accordance with the *Format* and the requirements contained in OAC Rule 3745-27-90.

The planning process involves extensive research, expense, and discussion among various levels of government. A SWMD's solid waste management plan is prepared by the policy committee and, for an Authority, by the board of trustees. The policy committee is composed of representatives of counties, municipalities, townships, health districts, industrial and solid waste generators, and the public (see footnote 5 for an explanation of the composition of a

[6]In the case of an Authority, it is the Board of Trustees that prepares, adopts, and submits the solid waste management plan.

board of trustees). The solid waste management plan must be ratified by the board of county commissioners in each county within the SWMD or Authority, the largest city in each county in the SWMD or Authority, and legislative jurisdictions representing 60 percent of the SWMD's or Authority's population. Ratification must occur prior to submitting the plan to Ohio EPA for final review. Solid waste management plans with a ten-year planning period are required to be amended every three years, and solid waste management plans with a fifteen-year planning period (or longer) must be amended every five years.

Requirements for Solid Waste Managemet District Plans

In order to demonstrate access to adequate solid waste management capacity for 10 years and achieve compliance with the mandates in the State Plan, ORC Section 3734.53 specifies that solid waste management plans contain:

- Projections of waste generation in the SWMD, broken down by residential/commercial and industrial composition of the waste;
- an inventory of existing disposal, resource recovery and recycling facilities, as well as open dumps, tire dumps, and captive industrial disposal facilities;
- an inventory of existing collection systems, routes, and transfer facilities;
- projections of population changes for the planning period;
- identification of future solid waste facilities needed, their costs, and a siting strategy;
- a plan implementation schedule, including identification of facilities that will receive waste from the SWMD;
- strategies to meet the goals and objectives established in the State Plan for reducing, recycling and minimizing solid wastes;
- strategies to manage household hazardous waste generated in the SWMD;
- methods of financing facilities and programs; and
- an allocation of local disposal fees to the uses authorized by the ORC.

IMPLEMENTING THE 1995 STATE SOLID WASTE MANAGEMENT PLAN

CHAPTER 2

ORC Section 3734.50 requires the Director of Ohio EPA to "...establish objectives for solid waste reduction, recycling, reuse, and minimization and a schedule for achieving those objectives..." To meet these requirements, the Director of Ohio EPA and SWAC adopted the first State Plan in 1989. In 1995, SWAC and Ohio EPA adopted the first revision to the initial State Plan, the *1995 State Plan*, which established seven objectives designed to further the waste reduction and recycling goals for Ohio. These objectives, referred to as goals, were intended not only to continue to reduce Ohio's reliance upon landfills as a solid waste management option, which was the primary focus of the *1989 State Plan*, but also to increase available recycling opportunities and participation in those opportunities. The seven goals, as set forth in the *1995 State Plan* were as follows:

Goal #1
Program standards for SWMDs: ensure the availability of reduction, recycling, and minimization alternatives for municipal solid waste

Goal #2
Reduce and /or Recycle at least 50 percent of the total generation of solid waste statewide by the year 2000

Goal #3
Provide informational and technical assistance on source reduction

Goal #4
Provide informational and technical assistance on recycling, reuse, and composting opportunities

Goal #5
Strategies for scrap tires and household hazardous waste

Goal #6
Annual reporting of plan implementation

Goal #7
Market development strategy (optional)

The seven goals listed above were established not only for Ohio as a whole, but also for each individual SWMD. Each SWMD that was to begin preparing an amended solid waste management plan on or after August 1, 1996 was required to do so in accordance with the criteria discussed in Chapter I and include strategies, programs, and activities designed to meet the goals listed above.[1]

In order to provide SWMDs with some flexibility in terms of demonstrating compliance with waste reduction and recycling goals, the *1995 State Plan* allowed SWMDs to demonstrate compliance with either Goal #1 or Goal #2. Although SWMDs were encouraged to attempt to achieve both goals, they were required to demonstrate compliance with only one or the other. With the exception of Goal #7, which was a voluntary goal, the remaining goals were mandatory. As a result, SWMDs were required to demonstrate compliance with a minimum of five of the seven goals.

The waste reduction percentage established in Goal #2 was a statewide goal. Goal #2 was, however, comprised of two objectives for individual SWMDs:

Objective #1
25 percent MSW objective for SWMDs: reduce, reuse, recycling, or minimize 25 percent of the generation of municipal solid waste by the year 2000.

Objective #2
50 percent industrial objective for SWMDs: reduce, or recycle 50 percent of the generation of industrial solid waste by the year 2000.

In addition to the seven goals listed previously, the *1995 State Plan* contained eight state strategies intended to be implemented by state of Ohio agencies. These strategies were geared towards efforts that state agencies could make to foster recycling efforts and opportunities in Ohio.

The remainder of this chapter reviews Ohio's efforts and experiences towards meeting the seven goals and eight state strategies established in the *1995 State Plan*. This narrative includes a discussion regarding the status of recycling and waste reduction in Ohio and the problems faced by SWMDs as they attempted to comply with these goals.

Progress Made Towards Achieving Goal #1

One of the intents of the *1995 State Plan* was to offer SWMDs an option of meeting a goal focused on the pro-

[1]Fewer than half of the 52 SWMDs have obtained approved, amended solid waste management plans in accordance with the provisions of the *1995 State Plan*. As of April of 2001, 21 SWMDs had solid waste management plans that were prepared and approved in accordance with the requirements of the *1995 State Plan*. The remaining 31 SWMDs were operating under solid waste management plans prepared and approved under the *1989 State Plan.*

vision of management strategies for residential/commercial solid waste that are alternatives to landfilling (e.g. recycling drop-offs, curbside recycling, etc.) instead of achieving a numerical recycling goal. It was anticipated that Goal #1 would result in: (1) an emphasis on program implementation and providing access to recycling opportunities; and (2) indirectly reducing the resources devoted to data collection, as SWMDs choosing to meet Goal #1 may be less likely to conduct surveys and other data collection activities when preparing a solid waste management plan update.

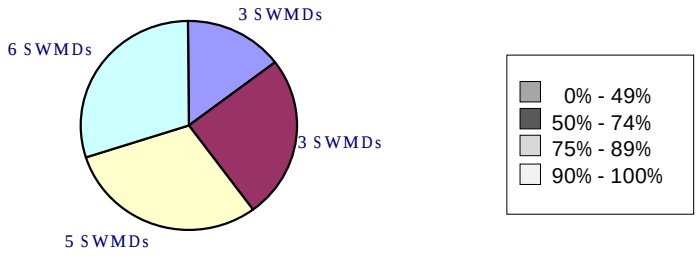
While the *1995 State Plan* provided a goal focused on providing access to recycling opportunities, it did not provide a methodology for evaluating compliance with Goal #1. Thus, the *1995 State Plan* obligated Ohio EPA to develop access and participation standards for SWMDs. Ohio EPA with the advice and participation of the Ohio Department of Natural Resources (ODNR), Division of Recycling and Litter Prevention (DRLP), SWMDs, and other interested parties developed these standards. The standards were submitted to SWAC and were approved at the January 10, 1996 meeting. SWMDs were required to meet these standards in their solid waste management plans in order to demonstrate compliance with Goal #1. The standards were incorporated into OAC Rule 3745-27-90 and the *Format*. (Note: For a more in-depth discussion of the access and participation standards, please see Chapter III of this document.)

To determine the effect that Goal #1 has had on the number and types of recycling opportunities being offered by SWMDs and to determine the relative burden Goal #1 has placed on SWMDs, Ohio EPA reviewed all of the solid waste management plans that have been approved in accordance with the requirements of the *1995 State Plan*. As of April 2001, twenty-one SWMDs had obtained approved, amended solid waste management plans under the authority of the *1995 State Plan*. Of these, fourteen SWMDs, representing twenty counties, had obtained approved solid waste management plans by demonstrating compliance with Goal #1 of the *1995 State Plan*. (Note: SWMDs were required, via the *Format*, to complete the demonstration for compliance with Goal #1 for each county in the SWMD's jurisdiction. Thus, a SWMD comprised of four counties had to conduct the demonstration for each of the four counties separately. SWMDs representing counties that were providing access to recycling opportunities for less than 90 percent of the counties' population were then required to implement new programs and activities to increase the access percentage to at least 90 percent in those counties. For this reason, the proceeding discussion is focused on counties rather than SWMDs).

Figure II-1 illustrates, for the twenty counties that comprise the SWMDs demonstrating access, how those counties fared in terms of the residential population that had access to recycling opportunities in the reference year of their solid waste management plans.[2]

Figure II-1

Range of Access Percentages Achieved in the Reference Year



As can be seen from Figure II-1, there were six counties that met Goal #1 in the reference year. Provided that the recycling opportunities available in the reference year were still offered in 2000, the SWMDs representing those counties ordinarily would not have needed to add any recycling opportunities for the residents and businesses of those counties in order to meet Goal #1. However, one of those SWMDs, a single county SWMD, experienced a decline in the percentage of the population that had access to recycling opportunities between the reference year and year 2000. As a result, recycling opportunities had to be added to that county in order to demonstrate compliance with Goal #1. Another of the SWMDs, again a single county SWMD, opted to add additional recycling opportunities even though those opportunities were not necessary for the SWMD to demonstrate compliance with Goal #1.

Of the remaining 14 counties:

- six had recycling opportunities available to between 75 percent and 89 percent of the residents in those counties in the reference year
- five were providing access to recycling opportunities to between

[2]In their solid waste management plans, SWMDs establish a reference year and gather data related to the generation, disposal, and reduction of solid waste for that calendar year. This data serves as the baseline data from which all subsequent projections in the solid waste management plan are derived. The reference year typically is the year prior to the year in which the SWMD begins preparing its amended solid waste management plan.

50 and 74 percent of the residents in those counties in the reference year

- three were providing access to recycling opportunities to less than 49 percent of the residential population in the reference year.

As can be deduced from the previous analysis:

- In general, the majority of counties either already met Goal #1 in the reference year or had to implement programs for a relatively small number of people to achieve Goal #1.
- 60 percent of the counties (twelve counties) had to provide recycling opportunities to an additional 15 percent or less of their residential population in order to achieve Goal #1.
- Only 15 percent of the counties (three counties) had to provide recycling opportunities to more than 41 percent of their residential population to achieve Goal #1.

The bullet points above suggest that Goal #1 is challenging but not overly burdensome to most of Ohio's SWMDs.

Of the counties for which recycling opportunities have been added in order to achieve Goal #1, sixteen committed to adding new or expanded drop-off recycling opportunities and five committed to providing new or expanded curbside recycling programs. In total, at least 96 additional drop-off recycling locations have been or will be implemented by SWMDs for purposes of demonstrating compliance with Goal #1. In terms of curbside recycling services, six new, non-subscription curbside recycling services have been or will be implemented by SWMDs for purposes of demonstrating compliance with Goal #1.

In addition, seven subscription curbside services offered in three counties have been or will be upgraded to non-subscription service, and one county will expand its existing non-subscription service. In total, these new recycling services and existing service upgrades will provide an estimated 694,000 additional people with access to recycling opportunities. More than likely, many of these people would not have been provided these new recycling services in the absence of Goal #1. This information suggests that the *1995 State Plan* has been successful in moving SWMDs away from an emphasis on a numerical recycling goal and toward ensuring that recycling opportunities are available to their residents.

SWMD Profiles: Meeting Goal #1

When comparing the SWMDs that obtained approved solid waste management plans by demonstrating compliance with Goal #1 of the *1995 State Plan*, Ohio EPA found that there was a great deal of disparity in the number of programs that SWMDs had to implement in order to provide access to recycling opportunities to 90 percent of their residential populations. Some SWMDs didn't have to implement any new recycling programs to demonstrate compliance with Goal #1, while other SWMDs had to propose significant additions to their available recycling opportunities to meet the requirements of Goal #1. Although not technically at either extreme, the experiences of the Erie County SWMD and the Lucas County SWMD illustrate the relative magnitude of difficulty associated with demonstrating compliance with Goal #1.

The Erie County SWMD was offering access to recycling opportunities to 76.5 percent of its residential population in the reference year chosen for their solid waste management plan update. The recycling opport unities offered in the reference year consisted of one non-subscription curbside program, four subscription curbside programs, two full-service drop-offs in urban areas and seven full-service drop-offs in rural areas. In order to demonstrate compliance with Goal #1, the Erie County SWMD needed to provide access to recycling opportunities to an additional 25,308 people. To do this, the SWMD implemented two new full-service, rural drop-offs and upgraded one of the existing subscription curbside programs to a non-subscription curbside service. The upgraded curbside service provided an additional 22,628 people with access to curbside service. In total, these changes allowed the Erie County SWMD to provide access to recycling opportunities to 100 percent of its residential population.

The Lucas County SWMD was offering access to recycling opportunities to 41 percent of its residential population in the reference year chosen for the solid waste management plan update. The recycling opportunities being offered consisted of nine non-subscription curbside recycling programs, 12 subscription curbside recycling programs, ten full-service, urban drop-offs, and six full-service, rural drop-offs. In order to demonstrate compliance with Goal #1, the Lucas County SWMD needed to provide recycling opportunities to an additional 266,600 people. To accomplish this, the Lucas County SWMD will implement five new full-service, urban drop-offs, two new full-service, rural drop-offs, and the City of Toledo will expand the existing non-subscription curbside service to provide another 236,600 people with curbside service. In total, these changes will allow the Lucas County SWMD to provide access to recycling opportunities to 98 percent of its residential population.

Problems Encountered With Goal #1

Although the majority of SWMDs that pursued Goal #1 did not report significant difficulties associated with achieving the goal, a few SWMDs have indicated that, in order to make the necessary demonstration in their solid waste management plans to achieve approval from Ohio EPA under Goal #1, potentially redundant or unnecessary recycling opportunities will need to be provided. In particular, these SWMDs assert that adding new recycling drop-offs locations, which is frequently the easiest method of increasing available recycling opportunities, will not appreciably increase the tonnage of material collected and will be an unnecessary drain on their resources. These SWMDs have also suggested that the credit they receive for drop-off locations sometimes understates the true number of people serviced by these opportunities. As a result, these SWMDs suggest that Goal #1 creates an incentive to establish unnecessary drop-off locations in an effort to obtain solid waste management plan approval from Ohio EPA.

The affected SWMDs have requested that they be allowed to utilize population credits other than the default credits stipulated in the *Format*. The *Format* currently provides a recommended, alternative methodology for calculating the number of individuals that have access to a particular drop-off location. It is difficult to obtain greater than the default population credit for a drop-off location using the methodology in the *Format*. SWMDs have, therefore, requested that they be allowed to use alternative evaluations to make the determination. Ohio EPA and SWAC recognize the need to provide more flexibility in calculating access to recycling opportunities. Thus, as is explained in Chapter III, this revised State Plan will provide for the use of alternative methodologies.

Another deficiency brought to Ohio EPA's and SWAC's attention by SWMDs relates to the criteria used to evaluate recycling opportunities provided to achieve Goal #1. In particular, SWMDs have suggested that certain criteria used to demonstrate compliance with Goal #1 are unnecessarily inflexible. An example is the criterion from the *1995 State Plan* that required all recycling opportunities being used to demonstrate compliance with Goal #1 to collect the same four materials. These SWMDs assert that these criteria restrict the number of available opportunities that can be used to demonstrate compliance with Goal #1. Ohio EPA and SWAC recognize the need to modify some of these criteria. These revisions are reflected in Chapter III.

Lastly, Ohio EPA has encountered some problems with the existing definitions for several of the types of opportunities that SWMDs use to demonstrate compliance with Goal #1 in their solid waste management plans. In particular, the definitions for non-subscription and subscription curbside services and clean and dirty materials recovery facilities have led to complications in implementing the *1995 State Plan* as initially intended. Ohio EPA will provide additional clarification to reduce these misunderstandings in the *Format* when that document is revised.

Progress Made Towards Achieving Goal #2

Statewide

Table II-1 presents data regarding waste reduction and recycling in Ohio for 1995 through 1999. As Table II-1 shows, Ohio's total WRRR increased fairly significantly from 31.7 percent in 1995 to 38.9 percent in 1999. Thus, Ohio's overall WRRR is higher today than when the revised State Plan was adopted in 1995. However Ohio actually achieved its highest WRRR in 1996, when SWMDs reported having recycled 41.8 percent of the solid waste that was generated during that year. A large portion of the increase in the percentage of solid waste reduced/recycled over the last five years is attributable to greater tonnages of materials reported from the industrial sector. However, the State experienced an increase in the amount of

Table II-1 Statewide Reduction/Recycling for Ohio-Generated Waste for Calendar Years 1995 Through 1999

	Tons Reduced/Recycled			Percentage of Tons Reduced/Recycled		
Year	Residential/ Commercial	Industrial	Total	Residential/ Commercial	Industrial	Total
1995	1,942,000	6,523,000	8,465,000	17.0	42.8	31.7
1996	2,553,000	11,284,000	13,837,000	20.5	54.7	41.8
1997	2,589,000	10,287,000	12,876,000	20.6	52.1	39.9
1998	2,373,000	10,856,000	13,229,000	18.6	51.3	39.0
1999	2,461,194	10,439,358	12,900,552	18.9	51.8	38.9

materials reported from the residential/commercial sector as well.

For the residential/commercial sector, SWMDs reported that approximately 2,461,194 tons of waste were reduced or recycled in 1999. This tonnage allowed Ohio to achieve a statewide WRRR of 18.9 percent for the residential/commercial sector in 1999. This represents an increase over the 17.0 percent that was achieved in 1995. For the industrial sector, SWMDs reported that approximately 10,439,358 tons of industrial waste were reduced and recycled in 1999, giving a statewide WRRR for the industrial sector of 51.8 percent. Again, this represents an increase over the WRRR calculated for the industrial sector for 1995 of 42.8 percent.

The increases in the WRRRs achieved for both sectors are due, in large part, to changes in State policy regarding the materials that can be credited towards the WRRR. These changes were implemented with the adoption of the *1995 State Plan* that eliminated the use of the "pre-1985 industrial recycling policy" in calculating the WRRR and allowed yard waste to be credited towards overall recycling tonnages.[3] The *1995 State Plan* directed Ohio EPA to revise the *Format* and to include, in the revision, a list of materials which cannot be credited towards the industrial waste reduction and recycling goal. Ohio EPA, with the advice and participation of ODNR, SWMDs, and other interested parties, developed an updated version of the *Format* in the spring of 1996. This new version of the *Format, Version 3.0*, incorporated the goals of the *1995 State Plan*. To replace the pre-1985 industrial recycling policy, the *Format, Version 3.0*, prohibited the tonnages associated with the following waste streams from being included in the calculation of the WRRR:

- train boxcars;
- metals from demolition activities; and
- ferrous metals resulting from salvage operations conducted by licensed motor vehicle salvage dealers.

1996 was the first year that the WRRR was calculated based on the *1995 State Plan*. As a result, the reduction and recycling amounts for 1996 include yard waste as well as industrial waste that was recycled through programs initiated prior to 1985. Neither of these categories of materials were included in the WRRR calculations for prior years. To illustrate the effect that including these materials in the calculation had on the resulting WRRR, in 1996, SWMDs reported having recycled 495,000 of yard waste. This tonnage accounts for 81% of the increase in the tonnage of material reported for the residential/commercial sector from 1995 to 1996. Regardless of the changes in how the WRRR is calculated, Ohio did experience an overall net increase in the amount of material reduced/recycled even without the inclusion of yard waste tonnages.

Although Ohio EPA does not have data for calendar year 2000 (this data will not be available until late 2001, at the earliest), it is safe to assume that, based on the trend towards a flat statewide WRRR that has occurred over the last couple of years, Ohio will not achieve the goal of reducing/recycling 50 percent of the waste generated by the year 2000. Nonetheless, Ohio has made great strides towards increasing the amount of waste that is recycled/reduced instead of disposed. In 1900, the statewide WRRR was 25.6 percent. By 1999, the WRRR had increased to 38.9 percent. This increase occurred during a period of unprecedented economic activity which resulted in Ohio's waste generation rate skyrocketing from 8.77 pounds per person per day in 1990 to 16. 19 pounds per person per day in 1999.

Many of the recycling opportunities that have been implemented in the last couple of years have not been in place long enough to have a significant affect on the overall tonnage of waste recycled. Ohio EPA fully expects that the presence of these recycling opportunities will have a positive effect on Ohio's WRRR and that this effect will be documented in future reporting cycles. The waste industry in Ohio has also experienced a great deal of fluctuation in the past several years which has affected the availability of existing recycling programs. Given all of these factors, Ohio appears to continue to make progress in the recycling arena. As was mentioned earlier, one of the intents behind Goal #1 of the *1995 State Plan* was to shift the focus of SWMDs' energy from surveying and reporting to actual implementation of recycling and waste reduction programs. It is quite possible that Ohio's WRRR is reflecting this shift as fewer SWMDs perform comprehensive surveying efforts. Thus, it is possible that the flat WRRR that Ohio is reporting is due more to incomplete data than to a real reduction in the tonnage of recyclables being collected.

When comparing the WRRR from one year to the next, there are several things to keep in mind regarding the composition and accuracy of the data that goes into the calculations. To begin with, incremental changes from one year to the next may stem more from errors or omissions in the data and less from a real change in the level of recycling. There is a high margin of error associated with the WRRR due to the nature of the data collection process. Thus, incremental changes in the WRRR from one year to the next more than likely fall within acceptable margins of error for the calculations. The data used to calculate the WRRR is obtained through

[3]As was mentioned in Chapter I, The *1989 State Plan* did not allow industrial waste recycled due to progams that were initiated prior to 1985 to be included int eh calculation of the industrial sector WRRR. This prohibition was referred to as the "pre-1985 industrial recycling policy." In addition to "pre-1985" recyclables, the *1989 State Plan* did not allow yard waste to be included in the calculation of the WRRR for the residential/commercial sector.

surveys of entities that actually handled the recycled materials. As a result, the omission or inclusion of one entity's responses can have a significant effect on the ultimate calculation.

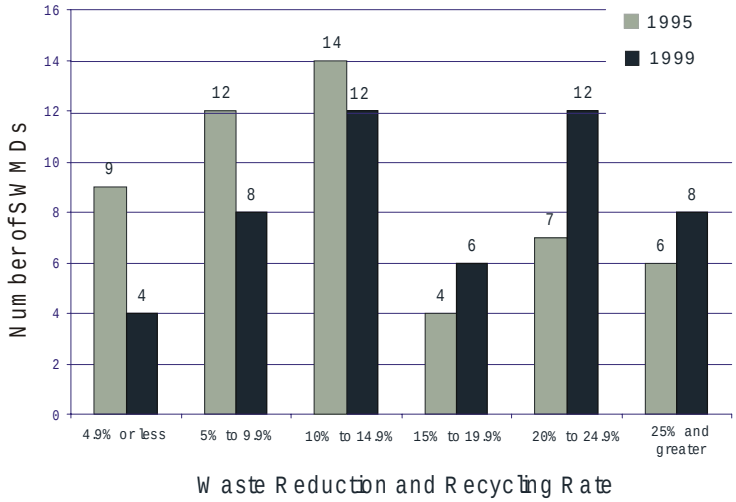
The extent to which the person administering the survey is able to obtain responses from initial non-respondents, the level of experience of the person completing the survey, the accuracy of the information provided by those surveyed, and the use of actual weights versus estimated weights or conversion from volume to weight can all affect the outcome. Another large source of variability involves the potential for the double counting of materials. Inconsistent application of adjustments to the numbers from one year to the next also adds inaccuracy to the data.

In addition to the inaccuracies inherent in the gathering of data, there are events around the State that have contributed to changes in the WRRR. As an example, Ohio's major solid waste incineration and waste to energy facilities began closing in the mid 1990s. By mid-1997, all of the mixed solid waste incinerators and waste to energy facilities had ceased accepting waste, and 1998 was the first year that no volume reductions due to incineration were available. Ohio's methodology for calculating waste reduction allows SWMDs to credit volume reductions due to incineration of solid waste. Therefore, it is highly likely that the decrease in the WRRR experienced from 1997 to 1998 is due, in part, to the absence of volume reduction due to incineration. Furthermore, it is likely that had levels of incineration commensurate to those in the early 1990s been occurring in the mid and late 1990s, the WRRRs for those years would be higher than reported. Coincidentally, the major decreases attributable to the closure of Ohio's incinerators occurred during the time when yard waste was included in the calculation of the WRRRs. Thus, at least for 1996, the inclusion of yard waste offset the declining tonnage of waste reduction due to incineration.

As a result of the factors identified above, Ohio EPA focuses on trends that occur over several years when evaluating changes in statewide recycling rates rather than changes that occur from one year to the next.

Figure II-2

Range of SWMD Residential/Commercial Sector WRRRs for 1995 and 1999



Progress Made by SWMDs

Goal #2, Objective #1: 25 percent MSW objective for SWMDs: Reduce, recycle, or minimize 25 percent of the generation of municipal solid wastes by the year 2000.

While Ohio's overall WRRR for the residential/commercial sector was 18.9 percent in 1999, the rates achieved by Ohio's 52 SWMDs were extremely varied. As can be determined from Table A-1 in Appendix A, the WRRRs achieved by the individual SWMDs in 1999 ranged from a low of 1.9 percent to a high of 36.1 percent.[4] As can be seen from Figure II-2 for 1999:

- eight SWMDs reported residential/commercial WRRRs of 25 percent or greater;
- fourteen SWMDs reported residential/commercial WRRRs of between 20 percent and 24.9 percent;
- six SWMDs reported residential/commercial WRRRs of between 15 percent and 19.9 percent;
- twelve SWMDs reported residential/commercial WRRRs of between 10 and 14.4 percent;
- eight SWMDs reported residential/commercial WRRRs of between five percent and 9.9 percent; and
- four SWMDs reported residential/commercial WRRRs of 4.9 percent or less.

For 1995, the WRRRs achieved by the individual SWMDs ranged from a low of 0.6 percent to a high of 45.5 percent (see Table A-1 in Appendix A for a complete listing of the WRRRs for the residential/commercial sector). As can be seen from Figure II-2 for 1995:

- six SWMDs reported residential/commercial WRRRs of 25 percent or greater;

[4]One SWMD reported a WRRR of 46.0 percent. It is highly likely that the tonnage reported for this SWMD and used in the calculation is erroneous.

- seven SWMDs reported residential/commercial WRRRs of between 20 percent and 24.9 percent;
- four SWMDs reported residential/commercial WRRRs of between 15 percent and 19.9 percent;
- fourteen SWMDs reported residential/commercial WRRRs of between 10 percent and 14.9 percent;
- twelve SWMDS reported residential/commercial WRRRs of between five and 9.9 percent; and
- nine SWMDs reported residential/commercial WRRRs of 4.9 percent or less.

From 1995 to 1999, two additional SWMDs reported having surpassed the 25 percent waste reduction and recycling goal for the residential/commercial sector. Of the six SWMDs that had achieved the residential/commercial WRRR goal in 1995, one experienced a decline in the WRRR by 1999, although the WRRR for that SWMD remained above 25 percent.

In all, 34 SWMDs experienced increases in their residential/commercial sector WRRRs between 1995 and 1999, while one SWMD maintained the same WRRR for the residential/commercial sector and 17 SWMDs experienced decreases in the WRRR for the residential/commercial sector during that same time period. It is interesting to note that, while the WRRR for the residential/commercial sector did not increase appreciably for the State, the median WRRR and the average WRRR both increased from 1995 to 1999. In 1995, the median WRRR for the residential/commercial sector was 12.8 percent and the average WRRR was 14.2 percent. In 1999, the median WRRR for the residential/commercial sector was 16.2 percent and the average WRRR was 17.3 percent.

It is not surprising that the WRRRs for the individual SWMDs should have increased from 1995 to 1999 given that yard waste was included in the figures for 1999 but not for 1995.

Goal #2, Objective #2: 50 percent industrial goal for SWMDs - Reduce or recycle 50 percent of the generation of industrial solid wastes by the year 2000.

SWMDs in Ohio reported that a total of 10,439,358 tons of industrial waste was reduced/recycled in 1999. This represents 51.8 percent of industrial waste generation statewide. The industrial WRRRs for each SWMD are presented in Appendix A, Table A-2. As shown in Figure II-3 for 1999, of Ohio's 52 SWMDs:

- 44 SWMDs reported industrial WRRRs of 50 percent or greater;
- two SWMDs reported industrial WRRRs between 35 percent and 49.9 percent; and
- six SWMDs reported industrial WRRRs of 34.9 percent or less.

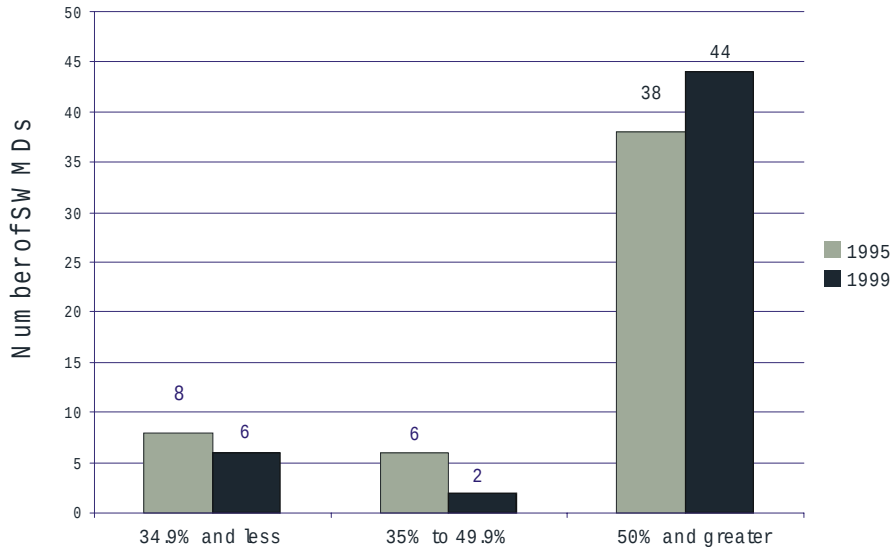
In 1995, the overall Statewide industrial WRRR was 42.8 percent. Individually, as is presented in Figure II-3 for 1995, of Ohio's 52 SWMDs:

- 38 SWMDs reported industrial WRRRs of 50 percent or greater in 1995;
- six SWMDs reported industrial WRRRs between 35 percent and 49.9 percent; and
- eight SWMDs reported industrial WRRRs of 34.9 percent or less.

See Table A-2 in Appendix A for the rates for each SWMD.

From 1995 to 1999, six additional SWMDs reported having surpassed the 50 percent waste reduction and recycling goal for the industrial sector. 38 SWMDs experienced increased industrial WRRRs between 1995 and 1999 while 14 SWMDs experienced decreased industrial WRRRs in that time frame. In 1999, the highest WRRR reported by a SWMD was 98.6 percent whereas the lowest rate reported was 0.1 percent. In 1995, the highest industrial WRRR reported by a SWMD was 95.0 percent while the lowest was reported rate was 0.0 percent.

Figure II-3
Range of SWMD Industrial Sector WRRRs for 1995 and 1999



SWMD Profile: Meeting Goal #2

The Geauga-Trumbull Joint County Solid Waste Management District (District) received approval of its five-year solid waste management plan update (Plan) from Ohio EPA on December 20, 2000. In the Plan, the District elected to demonstrate compliance with Goal #2 of the *1995 State Plan*. The Plan indicated that the District would achieve WRRRs of 25.40 percent and 51.11 percent for the residential/commercial and industrial sectors, respectively, in 2000.

The District relies on four major sources of recyclables to achieve the residential/commercial WRRR. By far, the majority of the tonnage is reported from privately owned, drop-off recycling facilities. In 2000, the Plan projected that 37,451 tons of material would be recycled through private recycling facilities. The Plan projected that 20,737 tons of yard waste would be diverted from landfill facilities in 2000 as a result of registered compost facilities. The District has an extensive program of drop-off recycling locations that are operated by the District. In total, the District operates 47 full-time, fixed-site recycling bins throughout the two counties. Residents can recycle newsprint, #1 and #2 plastics, steel and aluminum cans, and glass at any of the sites. In addition, magazines are collected at eight of the sites. For 2000, the District's Plan projected that 3,642 tons of recyclables would be collected via the drop-off program. There are also several communities served by waste haulers that offer subscription curbside recycling services to the residents. For 2000, the Plan projected that 595 tons of recyclables would be collected via curbside services.

To encourage participation in available programs, the District has an extensive education and awareness program.

Problems Encountered with Goal #2

As can be seen from the data presented previously, while it is likely Ohio will not achieve the 50 percent overall WRRR in 2000, progress has been made towards achieving the goal. However, several problematic issues related to the goal have been identified.

Probably the most problematic aspect of Goal #2 is the lack of reporting requirements for entities involved in the recycling process. SWMDs are legally required to submit, to Ohio EPA, annual reports that summarize the recycling activities and tonnages of materials recycled during the previous year. In order to obtain this information, the SWMDs must survey the businesses and organizations who collect, process, and use recyclable materials. Such reporting by most of these entities is done strictly on a voluntary basis, and SWMDs have no legal recourse in the event that an entity does not submit data. As a result, there is little question that a certain amount of recycling activity is not captured in the tonnages reported by SWMDs. For this reason, most SWMDs would like to see an expansion of, or in some cases, the creation of reporting requirements for these entities.

Another controversial aspect of Goal #2 concerns the types of materials that can be credited towards achieving the WRRR. Whenever questions arise regarding a material's eligibility for inclusion, Ohio EPA generally bases its position on the regulatory definition of solid waste, the disposal history for the material, and U.S. EPA's standardized recycling measurement methodology. There have been limited exceptions to these criteria, specifically related to the definition of solid waste. There have been several circumstances where a material does not fit Ohio's regulatory definition of solid waste yet tonnage associated with the material has been counted towards the WRRR. Examples include liquid household hazardous wastes and used oil. In addition, in most cases, if a material historically has never been disposed in landfill facilities, then Ohio EPA's position is that the material should not be credited. The WRRR is intended to measure diversion from landfill facilities. Thus, Ohio EPA has excluded materials such as municipal sewage sludge, manure, and scrap metals from auto salvage dealers from consideration as none of these materials historically have been disposed in landfill facilities.

Another facet related to Goal #2 that is problematic concerns crediting reductions in tonnage due to source reduction. In the past, Ohio EPA has allowed SWMDs to count tonnage reductions attributable to source reduction activities to the WRRR only for the year in which the reduction occurred and only if the SWMD can document the tonnages. Ohio EPA generally maintains that it is not appropriate for a SWMD to take specific credit for that reduction in subsequent years. If the programs that resulted in source reduction cause continued reductions, then SWMDs can take credit for those reductions, only in the year in which the reduction was achieved and only if the SWMD can document the reduction.

Even more problematic than determining how long to allow tonnage reductions attributable to source reduction programs is how to appropriately include those tonnages in the WRRR. Because source reduction results in a decrease in waste generation, and the WRRR measures

the percentage of waste generated that was diverted from landfills, tonnages attributable to source reduction technically should not be included in the calculation of the WRRR. SWMDs indirectly receive "credit" for source reduction activities in the form of reduced waste generation figures. Even without any changes in the other components of calculation, a reduction in waste generation will usually result in an increase in the WRRR. In an effort to reward SWMDs for successful waste reduction programs, Ohio EPA allows SWMDs to take credit for documented source reduction as a discrete amount, much like they would take credit for recycling only for the year that the reduction occurred. While this method does provide an incentive for SWMDs to document waste reduction activities, it also results in an inflated waste generation figure and is inconsistent with U.S. EPA's standard methodology. For these reasons, Ohio EPA may want to reevaluate this issue in the future.

As a third issue, Ohio EPA has received many inquiries concerning the relationship between the statewide goal and the two objectives for SWMDs. In particular, many have commented that it doesn't appear that the statewide goal would be met even if both objectives were reached at a statewide level.

When the statewide goal and SWMD objectives were originally developed, they were designed with somewhat different purposes in mind. The statewide goal was adopted to set an overall target for the State's progress towards increasing waste reduction and recycling and reducing the reliance on landfills for solid waste management. Most states report a statewide recycling rate, and the U.S. EPA has worked with various states to develop a uniform methodology for this purpose. Ohio's statewide numerical goal not only allows us to gauge the State's progress, but to some degree allows the State to benchmark our success against other states. The statewide goal established in the 1995 State Plan was an extension of the goal contained in the first State Plan, which was to reduce, reuse, and recycle 25% of the overall waste stream by 1994.

The two SWMD objectives, however, were designed recognizing that the industrial and residential/commercial waste streams have very different characteristics, both in terms of the composition of the waste stream and in terms of typical management practices. Since industrial generators frequently produce large amounts of homogeneous waste, the potential to reduce and/or recycle the industrial stream is frequently higher. Providing SWMDs with separate targets tailored towards the two separate waste streams was an effort to recognize the inherent differences in these waste streams while providing SWMDs with targets that are challenging but realistic. In addition, the SWMD objectives were designed knowing that they would become mandatory criteria for approval of SWMD solid waste management plans, while the statewide goal has no impact on plan approval.

While there are differences between the statewide goal and SWMD objectives, there is also a close relationship between the two. Although the numeric relationship is not exact, the objectives were designed to support the statewide goal. Since industrial waste comprises a larger percentage of the total solid waste stream and is generally recycled at higher rates than residential/commercial waste, and a large number of SWMDs achieve industrial sector WRRRs greater that 50 percent, it was thought that the industrial WRRR would pull the statewide WRRR upward towards the 50 percent goal.

Another factor that must be taken into account when evaluating the State's progress towards achieving Goal #2 is the production and disposal of FGD by Ohio's coal-burning power plants. As was discussed in Chapter I, the presence of a coal-burning power plant in a SWMD has a significant effect on the SWMD's ability to achieve the industrial sector component of Goal #2. Furthermore, the tonnage of FGD produced statewide has had a negative effect on Ohio's ability to meet the statewide recycling goal. [For a more in-depth discussion of the affect that FGD has had on both SWMDs' and Ohio's WRRRs, please see the narrative that begins on page 3 of Chapter I.] Unless the regulatory definition of solid waste is amended to exclude FGD, FGD will continue to be a portion of the industrial solid waste stream and, therefore, be included in calculations of SWMD and State WRRRs.

There have been some developments in the area of recycling FGD that may provide some relief to this situation. Ohio EPA is aware of at least one project to recycle FGD into gypsum wallboard that is being discussed in U.S. EPA's Region V. If this project does, in fact, come to fruition, there may be a market for FGD material that is generated in Ohio.

Progress Made Towards Achieving Goal #3 and Goal #4

SWMDs are required to incorporate strategies into their solid waste management plans to address the provision of information and technical assistance regarding source reduction. SWMDs are also required to provide information and technical assistance on recycling, reuse, and composting opportunities. Although these requirements are addressed in two separate goals, many of the programs initiated by SWMDs deal with both goals simultaneously. Therefore, the implementation of these goals are discussed together.

Because Goals 3 & 4 do not have numeric standards associated with them, evaluating Ohio's level of success in achieving those goals is difficult. Virtually every SWMD either funds or directly provides education, information, and technical assistance to its residents and businesses in one way or another. From that perspective, Ohio's SWMDs have been very successful in meeting these goals. However, because a wide variety of entities provide the

Educating Educators

Since its inception, the Hamilton County Solid Waste Management District has been providing educators with training and materials for incorporating solid waste management into school curricula. As a result, the District has a well-established program for educating educators. The District was able to increase the number of participants in workshops by offering a stipend to those educators that attended the sessions. The District began offering the stipend in the 1995-1996 school year. The District's educator workshop program from 1990 to 1998 is summarized below:

- From 1990 to 1993, the District utilized the Super Saver Investigators curriculum developed by ODNR and provided training to 60 educators through five workshops.
- In the 1994-1995 school year, the District offered two "All About Trash" workshops for educators in grades K-6. In total, 22 educators attended the sessions.
- In the 1995-1996 school year, the District developed the Explore the Environment curriculum for educators in grades six through eight. 114 educators were trained through a series of five workshops which were held in 1996, and the District offered a stipend to attendees.
- In the 1996-1997 school year, the District focused on educators in grades 3-5 by offering workshops for the "Everything You Wanted To Learn About Trash" curriculum. The District held two workshops which were attended by 53 educators who were again offered a stipend.
- In the 1996-1997 school year, the District also offered Workshops utilizing "Investigating Solid Waste Issues", a secondary, interdisciplinary curriculum developed by ODNR. Two workshops on the curriculum were attended by 30 high school teachers, and attendees were offered a stipend.
- In the 1997-1998 school year, the District presented the "Nature's For Me" curriculum developed by the Steel Recycling Institute to 40 pre-school educators and 34 K-2 educators in two workshops. Again, the stipend was offered as an incentive.

education services (such as SWMDs, county recycling and litter prevention offices, county extension offices, etc.) and most of these entities provide a variety of programs, it is difficult to quantify these education activities. For that reason, it is nearly impossible to present a truly comprehensive portrayal of the programs being implemented to meet Goals 3 & 4. However, it is clear that the types of programs and activities offered by the 52 SWMDs are quite varied. Some SWMDs place a great deal of emphasis on educating school-age children about the importance of reducing the amount of waste disposed in landfill facilities. To that end, they provide excellent materials for teachers to use in the classroom. Other SWMDs focus on providing information to homeowners to encourage them to use available recycling opportunities and to change their purchasing behaviors. Still others, due to the base of commercial and industrial establishments within their jurisdictions, have very strong programs geared towards those sectors.

Table II-2, which is located at the end of this Chapter, presents a breakdown of the strategies, programs, and activities SWMDs have implemented to achieve compliance with the seven goals of the *1995 State Plan*. Included in this table is a general breakdown of the types programs SWMDs have implemented for Goal #3 and Goal #4.

Progress Made Towards Achieving Goal #5

Household Hazardous Waste

Forty-five of Ohio's 52 SWMDs reported having conducted some type of program targeted to household hazardous waste management in 1999. In general, the programs that were offered consisted of telephone assistance, presentations, fact sheets and other printed educational materials, directories, HHW drop-off locations, and temporary and permanent HHW collection events. It is important to note that SWMDs are not required to provide their residents with alternatives to disposal for managing household hazardous waste. Even so, at least 29 SWMDs provided their residents with some type of household hazardous waste collection option. For a more detailed discussion of Ohio's household hazardous waste management programs, see Chapter VIII of this document.

Scrap Tires

As can be seen from Table II-2 which begins on page II-29 of this chapter, 17 SWMDs provided their residents with education regarding the proper management of scrap tires, 33 SWMDs provided their residents with collection opportunities for scrap tires and 6 SWMDs funded cleanups of scrap tire dumps. As with household hazardous waste, SWMDs are not required to provide residents with collection opportunities. However, all types of collection events are very popular with residents. As a result, many SWMDs offer these events on an annual basis. For more information regard-

ing Ohio's scrap tire program, see Chapter VII of this document.

Progress Towards Achieving Goal #6

Ohio EPA annually distributes to all SWMDs a form, called the Annual District Report (ADR) form, for SWMDs to report their activities related to implementing their approved solid waste management plans. The information submitted via the ADR form is used to measure not only each SWMD's progress towards meeting the goals established in the State Plan, but also Ohio's overall progress towards meeting those goals. The primary objectives of the ADR include to:

- provide the amount of solid waste reduced and recycled;
- list household hazardous waste management programs;
- estimate the amount of solid waste disposed in facilities located out-of-state; and
- provide an update on the SWMD's efforts to implement its approved solid waste management plan

SWMDs are required to complete the ADR form and submit the completed form to Ohio EPA by June 1st of each year. In 2000 (for information regarding calendar year 1999), Ohio EPA had received completed ADR forms from only 13 of Ohio's 52 SWMDs by June 1st. That equates to a compliance rate of 25 percent. To address noncompliance, Ohio EPA has begun issuing notice of violation letters (NOVs) to SWMDs whose completed ADR forms have not been received on time.

The Model Community Program

Model Community is a nationally recognized, not-for-profit program sponsored by Central States Education Center in Champaign, Illinois which promotes waste reduction through community involvement. Through Model Community, delegates from businesses and organizations representing all aspects of community operation are trained to reduce waste by 1) waste prevention, 2) eliminating toxins, 3) recycling, and 4) purchasing recycled products. Once trained, these representatives establish waste reduction programs at their respective organizations. After the waste reduction program is established, the organization can apply for a "Certificate of Merit" establishing the organization as a "Model of Waste Reduction". Once participants obtain certification, they are contacted annually to discuss continued progress and participation. The Model Community program stresses that waste reduction and pollution prevention are ongoing processes and that participants must continually make improvements to their waste reduction programs.

The Darke County SWMD obtained a grant from the Ohio Environmental Education Fund in July 1993 to implement the Model Community program for the county. In September of that same year, 32 Model Community Board Members were trained to promote the program and recruit additional participants. In 1994, 50 representatives from retail, wholesale, and service businesses, manufacturers, institutions, government agencies, and farms were trained in five sessions. In 1995, another 28 participants, representing primarily small businesses, were trained. These initial training sessions were conducted by the Central States Education Center at the Edison State Community College in Greenville, Ohio. While not all of the participants have obtained certification for their involvement, all have implemented some form of waste reduction program, and, the Darke County SWMD surveys all participants annually to remain current regarding each participants program. The Darke County SWMD continues to provide Model Community training to interested organizations on an as-requested basis. The Darke County SWMD is very pleased with the success of this program and praises the participants for the strides they have made towards waste reduction.

Progress Towards Achieving Goal #7

Unlike the other six goals of the *1995 State Plan*, Goal #7, the market development goal, was an optional goal. As such, SWMDs had the choice of whether or not to implement programs and activities to further the development of markets for recyclables in Ohio. Although the completed ADR forms for calendar year 1999 reflect that only a few (less than ten) SWMDs performed activities specifically related to Goal #7, Ohio EPA believes that more SWMDs are contributing to the development of markets for recyclable materials than are reporting those contributions. In general, many SWMDs compile and make available a list of vendors that offer products made with recycled materials. In addition, many SWMDs include the "Buy Recycled" message in their educational efforts. Many SWMDs also purchase products containing recycled material and assist local government purchasing agents with locating and purchasing recycled-content products. At least one SWMD awards grants to local entities for purchasing products made with recycled materials. [See Chapter IX for more details regarding the programs SWMDs have implemented for Goal #7.]

The Status of Recommended State Strategies in the *1995 State Plan*

The *1995 State Plan* established eight state-wide strategies for waste reduction and recycling and included

recommendations for state agencies designed to increase recycling and reduce reliance on landfilling. Some state strategies from the *1995 State Plan* have been fully implemented, while others are on-going or being considered for future implementation. Each strategy is discussed briefly below, including the status of efforts towards implementation. The recommended strategy from the *1995 State Plan* is underlined.

1995 State Plan Strategy #1

Ohio EPA will continue to develop a data and information base on the current levels of waste reduction and recycling to serve as a reference to future planning programs.

To address the strategy, Ohio EPA, in 1995, began compiling waste reduction and recycling data and publishing it annually in a report titled "Summary of Solid Waste Management in Ohio: Recycling Reduction, Incineration, and Disposal". This report was made available in calendar years 1995 (for 1990-1994 data), 1996 (for 1990-1995 data) and 1997 (for 1990-1996 data). Although Ohio EPA has not made revised versions of this report available in calendar years 1998 and 1999, the data presented in the report has been compiled and has been made available to interested parties.

1995 State Plan Strategy #2

ODNR and Ohio EPA will continue to provide technical assistance to SWMDs and local governments to plan and implement waste reduction and recycling programs and pollution prevention. Assistance may be given through trained technical staff, manuals and guidebooks, resource centers, workshops and seminars, bibliographies, and directories.

ODNR's DRLP has conducted 4 program assistance workshops, two in 1996 and two in 1997. The workshops were designed to help local program managers with everything from writing and designing promotional materials to implementing pay-as-you-throw programs.

The DRLP participated in two national "buy recycled" awareness campaigns. Television and radio spots as well as video and print materials were provided by the National Recycling Coalition and the Environmental Defense Fund and distributed through DRLP's program managers.

In State Fiscal Year (SFY) 1996, the DRLP coordinated the workshop, *Recycling in Local Communities: Current Options and Initiatives*, and held it at three Ohio locations. The workshop audience was comprised of local county commissioners, city council members, township trustees, service directors, SWMD coordinators and local program managers.

In SFY 1997, the DRLP, Ohio EPA and the Buckeye Chapter of the Solid Waste Association of North America (SWANA) planned and conducted three *Rural Community Solid Waste Management Workshops* to address issues of concern to SWMDs, legislators, county commissioners and township officials.

In SFY 1997, the DRLP partnered with Ohio EPA, SWANA, U.S. EPA and several Ohio SWMDs to conduct a workshop titled *Getting More for Less: Cost-Cutting Strategies for Collecting Solid Waste and Recyclables*. This workshop featured real-life experiences of solid waste and recycling managers who successfully changed their municipal solid waste management and recyclables collection systems, improved service, and cut costs.

In March 1998, the Ohio Buckeye Chapter of SWANA, ODNR, and Ohio EPA coordinated efforts once again to provide a series of seminars regarding variable rate garbage collection. The seminars were partially funded by a grant from U.S. EPA with the remaining funding coming from SWANA, ODNR, and Ohio EPA. The seminar series consisted of four workshops held in the spring of 1999 in different locations around Ohio. The Workshops featured Lisa Skumatz of Skumatz Economic Research Associates which is based in Seattle, Washington. Ms. Skumatz is considered to the be the leading authority on variable rate collection systems in the United States. The purpose of the seminars was to promote the implementation of pay-as-you-throw garbage collection systems in Ohio.

Until it was replaced with their web page on the Internet, the DRLP maintained an electronic bulletin board (ORICS) which provided a variety of recycling and market development information in full text search and downloading capabilities.

The DRLP established a website which provides recycling, waste reduction, recycling market development and litter prevention information. This information can be downloaded and includes fact sheets, recycling program lists and the latest in recycling and litter prevention news.

Ohio EPA established a website in 1995 to provide information on each program area at the Agency. The Division of Solid and Infectious Waste Management performed a major reorganization of its website in 2000. The website now has two webpages devoted to solid waste planning. Thus, the website has a page that is devoted to the State Plan. In addition, DSIWM's website has a webpage titled "Solid Waste Management District Clearinghouse" which is devoted to providing information to solid waste management district personnel. The Clearinghouse provides on-line versions of reports, fact sheets, guidance documents, report forms, meeting agendas and minutes, and other information commonly used in solid waste planning.

A buy-recycled campaign, *Get in the Loop*, was conducted as a pilot program with several of the local recycling programs. The campaign targeted shoppers at retail stores such as Krogers, Walmart and Heinens in an awareness campaign. Promotional materials were provided such as posters, and button badges. Many of the local programs enhanced the

campaign with local business contributions of door prizes and promotions.

A partnership between Ohio EPA, ODNR, the Department of Development, and the Association of Ohio Recyclers has resulted in the creation of the Ohio Materials Exchange (OMEx) which was implemented in early 1998. In 2000, the amount of waste which was exchanged through OMEx almost doubled over the 1999 figures, resulting in 80,546 tons of waste being exchanged. OMEx saved businesses approximately $3,221,840 in disposal costs. OMEx fielded 1,540 telephone calls. In terms of the composition of waste materials exchanged via OMEx, the following represent the most commonly exchanged materials:

Construction and Demolition Material	50,024,000 pounds
Alkalis	5,200,000 pounds
Rubber	3,748,870 pounds
Miscellaneous	3,655,682 pounds
Refractory Material	1,200,000 pounds

Ohio EPA's Office of Pollution Prevention (OPP) has also been involved in a number of technical assistance activities to assist local government and SWMDs complete waste reduction/recycling and pollution prevention activities. These activities include:

- *Southwest Ohio Local Government Pollution Prevention Collaborative*: This project helps local governments save money and improve the environment through pollution prevention. A series of meetings and training opportunities are being offered to representatives of local government in southwestern Ohio in areas such as purchasing, vehicle maintenance, utility engineering, air pollution inspection and community landscaping. Information sharing on initiatives and successes among local governments will also be a key component of the project. Ohio EPA hopes to make this project permanent in southwest Ohio and then expand to the rest of the State.
- *General Technical Assistance*: OPP is one of the leading technical assistance programs in the country for a state without mandatory pollution prevention legislation. OPP provided technical assistance to over 6,000 companies, organizations and/or individuals. This includes over 130 site visits to help Ohio companies implement pollution prevention programs and providing over 70,000 pollution prevention documents free-of-charge to help Ohio businesses help themselves to prevent waste. In addition, OPP completed 150 presentations and training events to educate Ohio businesses and organizations about pollution prevention. OPP's Internet site has also been acknowledged by U.S. EPA and others as one of the best sites in the nation to obtain practical pollution prevention information.

In January 1999, Ohio EPA and representatives from Ohio's SWMDs formed a workgroup to facilitate enhanced communication between DSIWM and SWMDs. This workgroup is intended to provide a forum for Ohio EPA and SWMDs to discuss issues of mutual interest. Ohio EPA hosts this workgroup about once every three months. All SWMDs are invited to and encouraged to attend these workgroup meetings. Notices and agendas for upcoming meetings are made available via DSIWM's web page.

1995 State Plan Strategy #3

Ohio EPA will finalize and adopt solid waste composting standards for metals, pH, and soluble salts.

Ohio EPA proposed revisions to the composting rules in December of 1998. These proposed revisions included certain composting standards. Due to numerous comments that Ohio EPA received, these rules were withdrawn for further consideration. Ohio EPA anticipates re-proposing these rules as an interested party draft in the fall of 2001. The composting rules will establish quality standards for compost with concentration limits for metals, organic constituents, foreign matter and pathogens. In addition, the rules will require that finished compost be tested for parameters that do not have concentration limits such as pH, salinity, maturity, nitrogen, carbon, phosphorus and potassium. The draft also includes the previously proposed position of expanding the number of feedstocks, bulking agents and additives that may be accepted at composting facilities without obtaining previous approval.

Standards for MSW compost will not be included in the proposed rules due to difficulties in identifying standards that would be adequately protective of human health and the environment.

1995 State Plan Strategy #4

Through the recycle Ohio Grant program, ODNR will continue to provide funds to assist municipalities and counties with implementation of a variety of recycling and litter prevention activities.

ODNR, through the DRLP, has provided the following grants to local governments for the implementation of recycling and litter prevention activities:

Grant Year	Number Awarded to Counties	Number Awarded to SWMDs	Number Awarded to Cities	Total Dollars Awarded
1996	54	21	12	$6,498,872
1997	54	26	16	$6,458,130
1998	54	27	16	$6,719,904
1999	55	28	16	$6,694,862
2000	55	27	16	$6,782,124
2001	55	28	16	$6,784,632

These grants are an important funding source for virtually all of Ohio's SWMDs.

1995 State Plan Strategy #5

Ohio EPA's Office of Pollution Prevention, through the Ohio Prevention First initiative, will provide technical assistance to industrial and commercial generators desiring to design and implement means of reducing their generation of wastes.

Ohio Prevention First began on September 1, 1993 when then-Governor George V. Voinovich challenged the "Top 100" companies on Ohio's Toxic Release Inventory (TRI) (i.e. the top 100 emitters) to commit to comprehensive pollution prevention planning. Eighty-six of those 100 companies agreed to participate. In 1998, there were 167 facilities participating in the program. As of 2001, there were 166 facilities participating in *Ohio Prevention First.* Participants work with Ohio EPA to develop a comprehensive pollution prevention plan.

Implementation of *Ohio Prevention First* was included as one of the 121 recommendations contained in the *State of Ohio Pollution Prevention Strategy* (*Strategy*). The *Strategy* provides specific recommendations for actions that consumers, state government, business, and industry can take to increase the amount of pollution prevented in Ohio. The goal of the *Ohio Prevention First* initiative is to reduce pollution in Ohio by 50 percent by the year 2000 based on 1988 pollution release data.

Ohio Prevention First is now the leading voluntary pollution prevention initiative in the U.S. As of 1998, participants had reduced hazardous waste production by 714,829 tons; solid waste generation by 5,980,271 tons; and materials reported for the Toxic Release Inventory by 372,743 tons. Participants estimate that, by 1998, they had saved $192,291,881 through pollution prevention programs.

The implementation phase of *Ohio Prevention First* was completed in the year 2000. Even so, it will take until 2003 for data from the participants to be analyzed and made available. Thus, even though implementation of the program is finished, OPP will continue to collect and evaluate data.

1995 State Plan Strategy #6

Ohio EPA will continue to investigate the methods of measuring and promoting source reduction of solid wastes.

Although documentation and publications addressing this issue continue to be gathered, Ohio EPA has made very limited progress towards implementing this strategy due to other higher priority work responsibilities.

1995 State Plan Strategy #7

Ohio EPA will explore alternatives for measuring waste reduction and recycling, and will investigate methods that will reduce the burden of reporting for industries, recyclers and haulers, and lower the costs of data collection for SWMDs. This strategy will include a re-examination of the information needed in order to monitor waste reduction and recycling rate progress in Ohio and investigating more consistent and accurate survey instruments.

The ADR is the vehicle by which Ohio EPA requires SWMDs to report recycling data that allows the Agency to monitor WRRRs. As a result of Ohio EPA's re-examination of the information needed to monitor WRRRs and in an attempt to reduce the burden of reporting recycling data, the ADR has been reduced in size. This has been accomplished by eliminating many questions and categories for reporting data. For each question and category of data Ohio EPA asked the following questions: Is this information required by regulation or statute? Does Ohio EPA need this information? Does Ohio EPA use this information or publish it, and if so, for what purpose? If the information was not required by regulation or statute or was not necessary to monitor WRRRs, then the question or category of data collection was eliminated. To further reduce SWMD's reporting burden, Ohio EPA and ODNR have consolidated much of their survey efforts to eliminate redundant reporting requirements.

Ohio EPA is currently in the process of implementing a new information management system. This system, called SIIMAN, will help reduce the SWMDs' burden of reporting to Ohio EPA by providing a system that will automatically retrieve data from one part of a report to use in another, make calculations, and allow for electronic submittal of annual reports.

During 1997, seven SWMDs assisted Ohio EPA in using and evaluating the U.S. EPA's standardized recycling measuring methodology to investigate more consistent and accurate survey instruments. This methodology does not appear to produce survey results that are more consistent or accurate than the method that is currently recommended in the *Format.* (See the discussion associated with the next strategy for further information regarding this project.)

1995 State Plan Strategy #8

Strategy #8: Ohio EPA will work with U.S. EPA and other states to promote greater standardization in the way that recycling and waste reduction efforts are measured and reported.

In 1997, Ohio, along with four other states, participated in a pilot project conducted by U. S. EPA. The purpose of this project was to test U. S. EPA's Recycling Measurement Model. U. S. EPA developed this model in an effort to create a systematic and standardized tool that could be used for measuring WRRRs. Provided that the pilot project proved the model to be effective, U.S. EPA ultimately would like to persuade all states to voluntarily adopt the methodology.

Participants in the pilot project were asked to use the model to collect recycling data and to provide input into the strengths and weaknesses of the model. States that had existing data collection systems were asked to compare the results obtained using the model with those obtained through other systems.

In Ohio, the pilot project was implemented as a joint effort among Ohio EPA, ODNR, and a limited number of SWMDs. Instead of implementing the model statewide, Ohio solicited eight SWMDs to participate in the project. Using a limited number of SWMDs allowed Ohio EPA and ODNR to oversee data collection efforts more effectively and provide more detailed assistance.

Each participant was required to submit quarterly progress reports as well as a final report detailing its experiences in testing the methodology. Ohio's final report was submitted to U. S. EPA in spring of 1998. Ultimately, Ohio EPA determined that U. S. EPA's methodology doesn't differ all that much from Ohio's existing data collection system. The major differences between the two centered on what materials and activities could and couldn't be counted as recycling. Generally, U. S. EPA's methodology is more restrictive. U. S. EPA has published the methodology for the model titled *Measuring Recycling—A Guide for State and Local Governments*. In June of 1998, U. S. EPA hosted a nationwide teleconference to promote the recycling measurement model. Ohio EPA participated in this teleconference.

Ohio EPA continues to be interested in moving towards a common system of calculating recycling rates among the states and will continue to evaluate U.S. EPA's methodology in the future.

Challenges Associated with Preparing Local Solid Waste Management Plans

As a part of demonstrating that it has met the goals and objectives of the State Plan, each SWMD must prepare a solid waste management plan covering a planning period of at least ten years. Much of the effort required for developing SWMD solid waste management plans is associated with obtaining data in order to complete the required inventory of facilities, estimate waste generation, document disposal, recycling, and waste reduction amounts, and estimate projections of waste generation, disposal, waste reduction, and recycling. A SWMD needs all of this information in order to determine appropriate strategies for meeting the State Plan objectives.

Several factors severely complicate the efforts of local SWMDs to make the necessary measurements for recycling and reduction levels, and to monitor progress toward the goals of the *1995 State Plan*. To begin with, the state of Ohio does not regulate recycling, and there are no reporting requirements for many private sector recycling entities. As a result, many recyclers and recycling brokers do not respond to attempts by SWMDs to obtain recycling information. Often this lack of response is attributable to concerns regarding confidentiality and a fear of compromising competitiveness in the market place.

SWMDs also frequently survey industrial generators of solid waste in preparing their solid waste management plans, in an effort to project the amounts of waste being generated, recycled or potentially able to be recycled. Unfortunately, the response by industrial generators to the voluntary surveys has been quite low in some SWMDs, with fewer than half of a SWMD's industries responding. This makes the task of projection difficult, particularly in some large SWMDs. SWMDs have been encouraged to base their projections on the number of employees in industries in different SIC (standard industrial classification) categories and on employment projections made by the Ohio Department of Development (ODOD). Because of these uncertainties, appropriate caution should be used in analyzing the amount of recycling projected in individual SWMDs and for the State as a whole.

Yet another source of error occurs with data obtained from scrap yards and processors. It is Ohio EPA's belief that owners and operators of some scrap and salvage yards, when surveyed by a SWMD, provide a total tonnage of material processed by the facility rather than the portion attributable to the surveying SWMD. The SWMD is left with the choice of either eliminating that tonnage from consideration or using the tonnage provided. It is also possible that owners and operators of scrap yards and salvage dealerships include the tonnage of train boxcars, automobile bodies, and/or scrap metal from construction/demolition operations in their totals. As was discussed earlier in this chapter, these were not considered when calculating the WRRR in accordance with the *1995 State Plan*.

Another common source of error originates with processors of recyclable materials. Some processors, when surveyed, provide the total tonnage of material processed by the facility as opposed to the portion that originated from the surveying entity. Others may incorrectly report material as originating from the residen-

tial/commercial sector when, in fact, it was generated by the industrial sector. Still other processors may report some materials as originating from both the residential/commercial and industrial sectors (i.e. double count material). Most SWMDs attempt to eliminate the double counting or miscounting of material before submitting the ADR form to Ohio EPA. In addition, Ohio EPA makes adjustments to the data that is submitted and then confirms those adjustments with the SWMDs.

Another measurement problem has involved the estimation of waste generation for the residential/commercial sector. Many SWMDs have found that the national averages for waste generation in the residential/commercial sector are not especially accurate. The averages are too high for rural areas and typically too low for dense urbanized areas such as Cuyahoga County.

Implementing Local Solid Waste Management Plans

SWMDs have used a variety of strategies in an attempt to meet the objectives in the *1995 State Plan*. Some have constructed facilities such as material recovery facilities (MRFs) while others have comprehensive systems of curbside recycling programs and drop-off services. Some SWMDs directly provide recycling opportunities and services to their residents while others rely entirely upon the private sector to provide the services needed. A limited number of SWMDs have used grant programs as incentives to promote greater participation in recycling and establish more infrastructure. Table II-2 presents a summary of the types of programs implemented by SWMDs to meet the waste reduction and recycling objectives of the *1995 State Plan.* [Although this table represents information reported to Ohio EPA by the SWMDs in ADRs and quarterly fee reports, it is likely that these figures understate the actual number of SWMD programs taking place in particular categories (such as education)].

Policy and Rule Development Efforts

The *1995 State Plan* required all SWMDs, in their solid waste management plans, to demonstrate compliance with either Goal #1 or Goal #2 by 2000. Failure to do so would result in disapproval of the SWMD's solid waste management plan by Ohio EPA. However, the *1995 State Plan* did envision a situation in which a SWMD could obtain an approved solid waste management plan that did not show compliance with either Goal #1 or Goal #2. Thus, the *1995 State Plan* stated that "In order to avoid solid waste management plan disapproval…the district's plan would need to demonstrate clearly the impediments to meeting Goals #1 and #2 and develop aggressive remedies within the plan to address the deficiencies." Due to an oversight, this language was not incorporated into the August 1, 1996 version of OAC Rule 3745-27-90 which defines the requirements SWMDs' solid waste management plans must meet in accordance with Ohio law.

Ohio EPA received requests from several SWMDs that were in the process of preparing solid waste management plan updates to extend the date for meeting Goal #1 or Goal #2 beyond the year 2000. Due to the staggered solid waste management plan submittal schedule, some SWMDs had a longer time frame within which to obtain an approved solid waste management plan and implement programs to meet the goals in the *1995 State Plan* than other SWMDs. The SWMDs that submitted solid waste management plan updates later in the cycle, in some cases, had insufficient time to implement the necessary programs. Additionally, some SWMDs were scheduled to receive approval of their solid waste management plan updates after 2000. In order to allow a SWMD that could not demonstrate compliance with Goals #1 and #2 to utilize the language in the *1995 State Plan*, Ohio EPA, on June 22, 1999, adopted a policy that defined the criteria and procedures to be used by those SWMDs for their solid waste management plan updates. This policy, DSIWM-27-90-0635, was intended to be an interim solution to the problem until formal language could be incorporated into OAC Rule 3745-27-90.

On December 1, 2000, Ohio EPA filed a draft version of OAC Rule 3745-27-90 with the Joint Agency Commission on Rule Review (JCARR) that contained language formally codifying policy DSIWM-27-90-0635. Normally, OAC Rule 3745-27-90 is not updated until a revised State Plan has been adopted. However, the five-year rule review requirements established by House Bill 473 in ORC Section 119.032 required that OAC Rule 3745-27-90 be reviewed prior to the adoption of the next State Plan. In the absence of a new State Plan, major revisions to OAC Rule 3745-27-90, beyond those required to incorporate Policy DSIWM-27-90-0635, were not necessary and a full-scale review of the rule was not conducted. Ohio EPA held a public hearing for the rule on January 8, 2001. No testimony was presented. Furthermore, no comments were offered at the hearing held by JCARR on March 5, 2001, and Ohio EPA filed a final version of OAC Rule 3745-27-90 with JCARR on April 19, 2001. The rule became effective on May 10, 2001. Following adoption of this State Plan, OAC Rule 3745-27-90 will once again be updated.

Table II-2: SWMD Strategies Used to Meet 1995 State Plan Goals [a]

Strategy/Program Residential Recycling Opportunities	# of Programs [b]	Strategy/Program Yard Waste Management	# of Programs [b]
Non-subscription curbside collection	233c	Education	31
Subscription curbside collection	99[d]	Collection (either curbside or drop-off)	13
Drop-off collection	639[e]	Facilities	7
Financial assistance/ grants	15		
Material Recovery Facility/ Recycling Center[f]	17	Scrap Tires	
Education		Education	17
general education	40	Collection	33
newsletter	19	Cleanups	6
oral presentations	23		
seminars/ workshops	17	Household Hazardous Waste	
model community [g]	2	Education	38
county fair displays	13	Collection	29
contests	9	Hotline	8
brochures/ pamphlets	24		
in-school programs	25	Lead-Acid Batteries	
advertising/ promotion	22	advertise available outlets	16
resource library	12	collection	16
Commercial/Industrial		Other Collections	
waste audits	17	phone books	10
awards	7	household batteries	8
commercial/ government office recycling programs	8	white goods	22
waste exchanges	10	used motor oil	8
		Christmas trees	7
Other programs		electronics	4
health department funding	40		
law enforcement funding	6	Market Development	
open dump cleanups	7	list of vendors	4
		purchase recycled content products	4
		education	5
		grants	1

[a] The primary objective of this table is to show the variety of strategies and programs used by SWMDs. The information has been taken directly from annual reports from SWMDs submitted for calendar year 1999.

[b] Except as indicated in footnotes c, d, and e below, the "number of programs" indicates the number of SWMDs using that type of strategy or program. In reality, the numbers shown are most certainly too low, however, they represent the information reported to Ohio EPA.

[c] The number of non-subscription curbside recycling programs reflects the number of communities, not SWMDs, that provide this service.

[d] The number of subscription curbside recycling programs reflects the number of communities, not SWMDs, that provide this service.

[e] The number of drop-off recycling programs reflects the number of locations, not SWMDs, where this service is provided.

[f] In this instance, "Material Recovery Facility" includes facilities that recover recyclables from mixed waste, facilities processing only recyclables, and drop-off sites which also process recyclables.

[g] "Model Community" is a program developed by a non-profit organization in Illinois, focusing on source reduction and recycling in businesses, offices, grocery stores, agriculture, etc.

GOALS FOR SOLID WASTE REDUCTION, RECYCLING, REUSE AND MINIMIZATION

CHAPTER 3

ORC Section 3734.50(A) requires the State Plan to "Reduce reliance on the use of landfills for management of solid waste."

ORC Section 3734.50(B) requires the State Plan to "Establish objectives for solid waste reduction, recycling, reuse, and minimization and a schedule for implementing those objectives."

ORC Section 3734.50 requires the Director of Ohio EPA to "...adopt rules...establishing the objectives and restrictions of the State Plan ...as mandatory elements of the solid waste management plans of county and joint solid waste management districts..."

In fulfillment of the directives above, this chapter establishes eight goals that SWMDs are required to achieve in their solid waste management plans. The goals are intended to provide direction to SWMDs for developing programs and activities to further recycling and waste minimization in the State. In addition, these goals provide minimum standards that SWMDs must meet for the provision of alternative waste management options to their residents and businesses. This chapter also outlines a statewide waste reduction and recycling goal as well as ten strategies to be implemented at the State level. These strategies are focused on ways that Ohio's various state agencies can promote recycling and waste minimization as well as ways they can assist Ohio's SWMDs in their efforts at the local level.

The goals established in this chapter are based on those established in the first revision to the State Plan that was adopted in 1995 (the *1995 State Plan*). After a great deal of discussion with officials from Ohio's SWMDs and other interested parties, Ohio EPA and SWAC have revised the goals from the *1995 State Plan* to address the problems that were identified in Chapter II and to ensure that Ohio continues making progress towards reducing the State's reliance on disposing of solid waste in landfill facilities. With a few exceptions, Ohio EPA and SWAC did not make major changes to the goals established by the *1995 State Plan*. This revision does contain a new goal to emphasize the importance of providing economic incentives to encourage greater participation in available recycling and reduction programs. In addition, this revision places greater emphasis on promoting participation in available recycling opportunities; increases the numerical goal associated with the industrial sector component of Goal #2; and emphasizes the need to provide education and information regarding recycling electronic equipment. For the most part, however, this revision refines the existing goals and provides some additional flexibility to SWMDs for demonstrating compliance with the goals in their solid waste management plans.

As was the case with the goals in the *1995 State Plan*, each of the eight goals discussed in this chapter are important to furthering recycling and waste minimization in Ohio. However, Ohio EPA considers Goals #1 and #2 to be the primary goals and, as a result, will place more importance on those goals when evaluating a SWMD's solid waste management plan for compliance with the State Plan. Ohio EPA fully expects that SWMDs will have to devote more effort and resources to meeting the requirements of Goal #1 or #2 than will be needed for the other goals. This focus does not diminish the importance of the remaining six goals, however.

A SWMD is required to demonstrate compliance with either Goal #1 or Goal #2 in order to obtain an approved solid waste management plan. The option of pursuing either Goal #1 or Goal #2 is provided in order to address several of the previously identified differences among SWMDs. This affords SWMDs with two methods of demonstrating compliance with the State's waste reduction and recycling goals. Ohio EPA and SWAC generally agree that the existing goals from the *1995 State Plan* are more or less appropriate and that Ohio should continue to provide SWMDs with the flexibility of meeting either a goal based on the provision of recycling opportunities (Goal #1) or a numerical goal (Goal #2). With the overall objective of reducing the State's reliance on landfill dispoal, SWMDs continue to have the option of demonstrating compliance with Goal #1 or Goal #2. Following the presentation of Goal #1 and Goal #2, the relationship between these goals is discussed in greater detail.

GOAL #1 : ACCESS TO ALTERNATIVE WASTE MANAGEMENT OPPORTUNITIES

The SWMD shall provide access to recycling and waste minimization opportunities for municipal solid waste to its residents and businesses

In order to achieve Goal #1, SWMDs must:

- Ensure that at least 90 percent of the residential sector population in each county of the SWMD has access to recycling or other alternative management opportunities for the management of solid wastes.

- Evaluate the WRRR for the residential/commercial sector. SWMDs that have a residential/commercial WRRR of less than 25 percent must establish a target WRRR for the residential/commercial sector to be achieved by the third year after approval of the SWMD's solid waste management plan. The target WRRR must be higher than the WRRR in the reference year.[1]

- Ensure that commercial and institutional solid waste generators have access to recycling or other alternative management opportunities for the management of solid waste.

- Evaluate the WRRR for the industrial sector. SWMDs that have an industrial WRRR of less than 66 percent must establish a target WRRR for the industrial sector to be achieved by the third year after plan approval. The target WRRR must be higher than the WRRR in the reference year.

To demonstrate compliance with Goal #1, the SWMD provides, in its solid waste management plan, a reduction/recycling needs assessment. Specifically, the needs assessment evaluates existing programs and activities to: (a) determine whether any sector of generators (residential, commercial/institutional, or industrial) does not have access to alternative management options; (b) identify any area or political jurisdiction within the SWMD where a sector of generators does not have access to alternative options; and (c) determine whether available alternative management options are being under-utilized.

To obtain an Ohio EPA approved plan, a SWMD must demonstrate that at least 90 percent of the residential population in each county comprising the SWMD will have access to waste reduction and recycling programs by the third year following approval of the SWMD's solid waste management plan.[2] These programs can be existing or new programs, but all programs being used to demonstrate 90 percent access must be in place within three years of obtaining an approved solid waste management plan. All programs and activities being used to demonstrate compliance with the residential sector component of Goal #1 must collect a minimum of five of the materials identified in Table III-1 as highly amenable to recovery from solid waste generated by the residential sector.

The SWMD must also demonstrate that generators in the commercial/institutional sector have access to recycling or other alternative management methods for at least five of the materials identified in Table III-2 as highly amendable to recovery from solid waste generated by the commercial/institutional sector.

In addition, the SWMD must encourage participation in the available recycling and waste minimization opportunities. This can be accomplished through education and aware-

Table III-1 List of Materials in the Municipal Solid Waste Stream Highly Amenable to Recovery from the Residential Sector[3]

Product, Packaging, or Material in MSW	Percent of Total MSW Generation	Product, Packaging, or Material in MSW	Percent of Total MSW Generation
Corrugated Cardboard	13.51	Lead-acid Batteries	0.88
Mixed Paper	12.23	Major Appliances	1.66
Newspaper	6.18	Yard Waste	12.59
Glass Containers	4.99	Steel Containers	1.22
Scrap Tires	2.05	Aluminum Containers	0.72
Used Motor Oil	Not Available	Plastic Containers	1.75
Textiles	3.90	Household Hazardous Waste	Not Available

[1]When a SWMD prepares its solid waste management plan, the SWMD selects a "reference year" which is the calendar year for all data collection needed for plan preparation. The data from the reference year serves as the baseline data upon which all subsequent projections are based.

[2]The methodology for demonstrating compliance with Goal #1 will be contained in OAC Rule 3745-2790 and the *Format*.

[3]Source: Municipal Solid Waste Generation, Recycling, and Disposal in the United States: Facts and Figures for 1998, Franklin Associates, for U.S. EPA, April 2000.

Table III-2 List of Materials in the Municipal Solid Waste Stream Highly Amenable to Recovery from the Commercial/Institutional Sector[4]

Product, Packaging, or Material in MSW	Percent of Total MSW Generation	Product, Packaging, or Material in MSW	Percent of Total MSW Generation
Corrugated Cardboard	13.51	Plastic Containers	1.75
Office Paper	3.20	Wood Pallets and Packaging	5.4
Newspaper	6.18	Food Waste	10.05
Glass Containers	4.99	Lead-acid Batteries	0.88
Steel Containers	1.22	Major Appliances	1.66
Aluminum Containers	0.72	Yard Waste	12.59

ness programs and by implementing incentive programs (see the discussion associated with Goal #6 for more detail regarding incentive programs).

It is expected that the programs and activities identified by a SWMD will consist of a combination of public sector and private sector efforts. SWMDs need not directly provide services in order to comply with this objective.

The Demonstration

In its solid waste management plan, a SWMD must analyze the recycling and waste minimization infrastructure that exists in its jurisdiction in the reference year. Using the results of this analysis and the methodology and standards provided in the *Format* and OAC Rule 3745-27-90, the SWMD then determines whether or not it needs to implement new programs and activities to demonstrate compliance with Goal #1. Much of the information needed to complete this demonstration is compiled as part of preparing the solid waste management plan. Thus, in the solid waste management plan, SWMDs are required to provide an inventory of the sources, composition, and quantities of solid wastes generated within the SWMD. This inventory is to include a list of all of the waste management and recycling facilities that provide service to the SWMD as well as all waste collection systems and entities collecting waste in the SWMD. The information gathered in compiling these inventories should enable a SWMD to show which materials are targeted for alternative management, the type of collection and management methods available, and the extent to which generators have access to alternative management opportunities.

This revision of the State Plan modifies the focus of Goal #1 to place a greater emphasis on participation in available recycling and minimization opportunities. As established in the Format which was revised following adoption of the *1995 State Plan*, SWMDs that are unable to demonstrate that at least 90 percent of the residential population has access to recycling opportunities in the reference year are directed to focus first on establishing the necessary infrastructure to achieve 90 percent access. Once that infrastructure is in place, SWMDs are then directed to focus on ensuring that residents participate in available recycling opportunities. With the adoption of this State Plan revision, SWMDs that are able to demonstrate that at least 90 percent of the residential population has access to recycling opportunities in the reference year will be required to perform an assessment of participation in those opportunities in their solid waste management plans. For opportunities that are being underutilized, the SWMD will then be required to develop strategies to increase participation. Such strategies could consist of increased educational efforts, provision of incentives, restructuring the location and array of available opportunities, etc.

In their solid waste management plans, SWMDs that opt to demonstrate compliance with Goal #1 calculate the percentage of the population that has access to recycling opportunities using default values that represent the number of people who can reasonably be expected to use a given opportunity. These default values are contained in OAC Rule 3745-27-90 and the *Format* and are provided for curbside recycling programs, drop-off recycling locations, and material recovery facilities. With the adoption of this State Plan, Ohio EPA will, through the revision of OAC Rule 3745-27-90 and the Format, develop additional methodologies that SWMDs can utilize to calculate the percentage of the residential population that has access to recycling opportunities. These additional methodologies will include:

- Visual tally/survey of users (must address multiple visits during survey period)
- Use of tonnages to gauge usage

[4]Source: Municipal Solid Waste Generation, Recycling, and Disposal in the United States: Facts and Figures for 1998, Franklin Associates, for U.S. EPA, April 2000.

- Explore the use of a radius around a drop-off whereby the population within the radius would be considered as having access to the drop-off
- Credit for a recycling opportunity located outside the SWMD or out of the defined service area
- Other possible methodologies acceptable to Ohio EPA (the determination of acceptability will be made on a case-by-case basis)

GOAL #2: WASTE REDUCTION AND RECYCLING RATES

The SWMD shall reduce and/or recycle at least 25 percent of the solid waste generated in the residential/commercial sector and at least 66 percent of the solid waste generated in the industrial sector.

SWAC recognizes that great variation exists among SWMDs in terms of ability to achieve the mandated WRRRs. Some SWMDs already exceed the 25 percent goal for the residential/commercial sector, while many others currently fall well below this level. Furthermore, it is more likely that SWMDs will reach the 66 percent goal for the industrial sector than they will the 25 percent goal for the residential/commercial sector. However, SWAC and Ohio EPA believe that each SWMD should make every effort to continue increasing the amounts of solid waste reduced and recycled and decreasing the amounts landfilled.

Residential/Commercial Sector Component

In order to comply with the residential/commercial component of Goal #2, a SWMD must demonstrate that, by relying on existing programs and activities and/or implementing new programs and activities, it will reduce and/or recycle at least 25 percent of the total amount of solid waste generated by the residential/commercial sector, including yard wastes, within three years of obtaining an approved solid waste management plan. Furthermore, the SWMD must demonstrate that it will maintain a WRRR of at least 25 percent for the residential/commercial sector for the remainder of the planning period. The materials that a SWMD can credit towards achieving the residential/commercial WRRR are the same as those allowed by the *1995 State Plan.*

Industrial Sector Component

To comply with the industrial sector component of Goal #2, SWMDs must demonstrate that existing and/or new programs will reduce and/or recycle at least 66 percent of the generation of industrial solid wastes within three years after obtaining an approved solid waste management plan. This State Plan revision increases the industrial sector percentage goal to 66 percent in order to 1)acknowledge that the previous target of 50 percent had been reached and that continued progress is appropriate, and 2) eliminate the uncertain relationship between the statewide goal and the two SWMD components. [As was discussed in Chapter 2, even if the two SWMD objectives established in the *1995 State Plan* were met, Ohio would not necessarily have achieved the statewide goal since 25 percent and 50 percent, when combined and averaged, do not result in 50 percent.] The methodology for calculating the WRRR for the industrial sector will be the same as in the *1995 State Plan*.

SWMDs will have the ability to demonstrate that the composition of the industrial waste stream will prevent the SWMD from being able to achieve a 66 percent waste reduction and recycling rate for that sector. Such a demonstration will have to prove that the waste material is inherently "unrecyclable" thereby making it impossible for the SWMD to demonstrate compliance with the industrial sector component of Goal #2. To do so, the SWMD will need to identify the industrial waste(s) that is problematic and explain why the waste isn't and/or cannot be recycled. As part of the demonstration, the SWMD will have to prove that at least 66 percent of the remaining industrial waste generated in the SWMD is being recycled.

Relationship between Goals #1 and #2

As was mentioned earlier, Ohio EPA and SWAC emphasize that SWMDs should strive to achieve both Goal #1 and Goal #2. Complying with the requirements of Goal #1 should help the SWMD achieve the residential/commercial and industrial components of Goal #2 which in turn will enable Ohio to achieve the state goal of reducing and recycling 50 percent of the solid waste generated by 2005 (see the discussion associated with the State's waste reduction and recycling goal which is presented later in this chapter). Table III-3 presents all of the possible scenarios of compliance with Goals #1 and #2 that a SWMD can demonstrate in its solid waste management plan. All but one scenario would result in the SWMD's solid waste management plan being approved for attributes related to Goals #1 and #2.

Some SWMDs will undoubtedly face a serious challenge in meeting the residential/commercial and/or industrial components of Goal #2. Conversely, some SWMDs may find it difficult to fulfill all the requirements associated with Goal #1. However, a SWMD must, in its solid waste management plan, demonstrate compliance with one goal or the other in order to obtain approval. If both Goals #1 and #2 are met (Scenarios 1 and 3), the SWMD will obviously receive an approved plan, providing all other aspects of the plan are acceptable.

Most districts will probably fall into Scenario 2, 4 or 5. Some SWMDs will experience difficulties demonstrating that they will achieve a 25 percent WRRR for the residential/commercial sector and, therefore, demonstrate compliance with Goal #1. If a SWMD determines that it will not be able to meet the 25 percent WRRR for the residential/commercial component of Goal #2, even

Table III-3: Relationship Between Goals #1 and #2 and Solid Waste Management Plan Approval

Scenario	Goal #1 met in reference year?	Goal #1 met within 3 years of plan approval?	Goal #2 met 3 years of plan approval	Solid Waste Management Plan approval?*
1	Yes; SWMD performs analysis of participation and provision of incentives	Yes; SWMD continues to meet	Yes; SWMD at or above both 25% for residential/ commercial sector and 66% for industrial sector	Yes
2	Yes; SWMD performs analysis of participation and provision of incentives	Yes; SWMD continues to meet	No; SWMD sets reasonable targets for both the residential/ commercial and industrial sectors.	Yes
3	No	Yes	Yes; SWMD at or above both 25% for residential/ commercial sector and 66% for industrial sector	Yes
4	No	Yes	No; SWMD sets reasonable targets for both the residential/ commercial and industrial sectors.	Yes
5	No	No	Yes; SWMD at or above both 25% for residential/ commercial sector and 66% for industrial sector	Yes
6	No	No	No; SWMD at or above 25% for residential/ commercial sector but below 66% for industrial sector	Yes, provided that the SWMD can prove the industrial waste is inherently industrial sector "unrecyclable" and demonstrate that 66 percent of all other industrial waste is being reduced/ recycled
7	No	No	No	No

* Discussion of plan approval in this column assumes that all other requirements for the plan have been satisfied.

after demonstrating compliance with Goal #1, the SWMD must set a "target" WRRR to be achieved within three years of obtaining approval of its solid waste management plan (Scenarios 2 and 4). The target established by the district must be greater than the WRRR in the reference year. The SWMD must also demonstrate that it will maintain the residential/commercial WRRR at or greater than the target WRRR for the remainder of the planning period.

Other SWMDs may have difficulty meeting a 66 percent WRRR for the industrial sector as mandated by Goal #2 due to the nature of their industrial sector, financial resources, or both and, therefore, demonstrate compliance with Goal #1 (Scenarios 2 and 4). There isn't a standard for the provision of recycling opportunities to the industrial sector. In order to receive approval of its solid waste management plan, the SWMD must demonstrate that it cannot meet the industrial objective and must set a "target" WRRR percentage for the industrial sector to be achieved within three years of obtaining solid waste management plan approval.

This is required even though the SWMD has successfully demonstrated compliance with Goal #1 for the residential and commercial sectors. The target must be greater than the current reported WRRR rate based upon the latest reference year. Furthermore, the SWMD must demonstrate that it will maintain the industrial sector WRRR at or greater than the target WRRR for the remainder of the planning period. The demonstration for the industrial sector WRRR should document the composition of the waste stream generated by industries and explain the difficulty in reducing and/or recycling these materials in greater quantity. SWMDs must also ensure that there will be programs and activities in place to meet the target. If such programs and activities do not exist or are not already planned, then the SWMD must include new strategies in the solid waste management plan.

Scenario 5 assumes that a SWMD determines it will not be able to meet Goal #1 (either in the reference year or within three years of obtaining solid waste management plan approval) even after exercising all reasonable efforts to do so, but the SWMD can meet both the 25 percent residential/commercial sector component and the 66 percent industrial sector component as stipulated by Goal #2. It is also possible that a SWMD will fall within this scenario by choice (i.e. the SWMD chooses not to demonstrate compliance with Goal #1).

Scenario 6 describes a SWMD which, in its solid waste management plan, is unable to demonstrate compliance with Goal #1 and is unable to demonstrate compliance with the industrial sector component of Goal #2, but is able to demonstrate compliance with the residential/commercial component of Goal #2. It is possible for a SWMD meeting these conditions to receive approval for its solid waste management plan, provided that the SWMD can provide the demonstration concerning inherently unrecyclable materials described on page 32 and demonstrate that at least 66 percent of the remaining industrial solid waste is being reduced/recycled. However, Ohio EPA expects that solid waste management plans that meet the conditions described by scenario 6 will be the exception and, therefore, expects to approve very few solid waste management plans that can't demonstrate strict compliance with either Goal #1 or Goal #2.

In the unlikely event that a SWMD can demonstrate being able to achieve an overall WRRR of 50 percent or greater and a WRRR for the residential/commercial sector of at least 25 percent but cannot demonstrate a WRRR of 66 percent for the industrial sector, Ohio EPA will consider approving the SWMD's solid waste management plan.

GOAL #3: SOURCE REDUCTION

Provide Informational and Technical Assistance on Source Reduction

SWMDs are required to have a program for providing informational and technical assistance regarding source reduction to solid waste generators, or particular categories of solid waste generators. SWMDs have the sole discretion to determine the types of assistance to be provided. However, information and technical assistance regarding source reduction must be provided to both the residential/commercial sector and the industrial sector.

Source reduction, which is the most preferred management method in the solid waste management hierarchy, can be an effective practice to reduce waste generation. Source reduction means less waste needs to be managed, lower costs for waste management, and decreased liability concerns for generators of waste.

Source reduction activities can be tailored for all sectors of generators. Examples of source reduction activities targeting the residential sector include providing local communities with assistance for implementing volume-based billing for waste collection and information regarding reducing the waste through purchasing practices. Commercial and industrial generators may greatly benefit from pollution prevention efforts, waste audits, or waste exchanges coordinated by a SWMD.

GOAL # 4: TECHNICAL AND INFORMATIONAL ASSISTANCE

Provide Informational and Technical Assistance on Recycling, Reuse, and Composting Opportunities

SWMDs must describe, in their solid waste management plans, the informational or technical assistance available to residential, commercial, and industrial generators within the SWMD regarding other alternative management options such as recycling or yard waste composting. This assistance can be provided by the SWMD or by other entities within the SWMD. Regardless of the provider, however, such efforts should be documented in the solid waste management plan. Informational assistance can include: public awareness efforts such as brochures or flyers concerning the types of recyclable materials accepted at and hours of operation for donation drop-off locations; newsletters distributed to the general public and business community; presentations to various community groups; seminars and workshops; displays at community functions, such as county fairs; advertising and public service announcements; promotion of backyard composting and "Don't Bag It" campaigns; compilation and distribution of lists of local businesses that accept recyclable materials; and development of school curricula programs. Technical assistance activities may include: waste audits for local businesses; assistance to local communities for establishing recycling or yard waste composting programs; waste exchanges; or marketing collected materials. The public awareness and technical assistance activities planned by the SWMD should be comprehensive with regard to the types of materials, management opportunities, and generators serviced by the available opportunities in the SWMD.

GOAL #5: RESTRICTED WASTES AND HOUSEHOLD HAZARDOUS WASTES

Strategies for Managing Scrap Tires, Yard Waste, Lead-acid Batteries, and Household Hazardous Wastes

SWMDs are required to provide strategies geared towards solid waste materials that are restricted from disposal in solid waste facilities. There are three materials for which restrictions exist. These materials are scrap tires, yard waste, and lead-acid batteries. In addition, SWMDs are required to provide residents with a strategy which addresses household hazardous waste. Although household hazardous waste is not a restricted waste stream, it has been included with the restricted wastes under Goal #5 for simplicity.

Scrap Tire Management Strategy

Local SWMDs are required to include a strategy to address scrap tires. The specific activities to be implemented are at the discretion of the local SWMDs. Programs implemented by SWMDs range from the provision of information regarding the proper disposal of scrap tires and available recycling and disposal outlets to sponsoring collection events or funding the abatement of abandoned scrap tire piles. [See Chapter VII for more detail regarding scrap tire management in Ohio and an account of the types of programs implemented by SWMDs to date.]

Yard Waste Management Strategy

Local SWMDs are required to include a strategy to address yard waste. The specific activities to be implemented are at the discretion of the local SWMD. Programs implemented by SWMDs range from providing information regarding backyard composting and "Don't Bag It" campaigns to contracting for curbside collection of yard waste and operating composting facilities. [See Chapter IV for more information regarding this requirement.]

Lead-acid Battery Strategy

Local SWMDs are required to include a strategy to address lead-acid batteries. The specific activities to be implemented are at the discretion of the local SWMD. SWMDs commonly provide residents with information regarding outlets for recycling lead-acid batteries. Several SWMDs also provide collection opportunities for lead-acid batteries. [See Chapter IV for more information regarding this requirement.]

Household Hazardous Waste (HHW) Program

Local SWMDs are required to include a strategy to address the proper separation and management of household hazardous wastes. The specific activities to be implemented are at the discretion of the local SWMD. Most SWMDs provide information to their residents concerning proper management of HHW as well as less-toxic/less hazardous materials that can be used. A large number of SWMDs host collection events for their residents. (See Chapter VIII for more information regarding household hazardous waste generation and management in Ohio as well as a discussion of the types of programs and activities implemented by SWMDs to meet this portion of Goal #5.)

In addition to providing a strategy for household hazardous waste in general, SWMDs will, with the adoption of this revision, be required to provide a strategy geared towards the management of electronic equipment. As is explained in Chapter VIII, the number of electronic components being disposed by the residential sector is rapidly growing. Many of these components have potentially harmful constituents. Furthermore, many electronic components are highly recyclable. Therefore, Ohio EPA and SWAC feel that it is important for SWMDs to at least acknowledge this issue in their solid waste management plans and to be prepared to provide information to their residents. As with the restricted waste streams and general household hazardous waste, the specific strategy selected by the SWMD is solely at the discretion of the SWMD.

GOAL #6: ECONOMIC INCENTIVE ANALYSIS

Evaluate the Feasibility of Incorporating Economic Incentives into Source Reduction and Recycling Programs

Despite the availability of opportunities to participate in recycling and reduction programs and education regarding those opportunities, recycling behavior is heavily influenced by economic incentives and disincentives. For this reason, Ohio EPA and SWAC believe that it is of utmost importance that SWMDs continue to explore methods of increasing participation through economic incentives or the removal of economic disincentives. Therefore, with the adoption of this revised State Plan, SWMDs will be required to perform, in their solid waste management plans, an evaluation of the feasibility of incorporating economic incentives into their programs and activities. While this evaluation will not obligate a SWMD to implement an incentive-based program, it is expected that the information garnered through the evaluation will be useful to the SWMD as it develops future programs.

The requirements imposed by Goal #6 are not new. In accordance with the *1995 State Plan*, SWMDs that choose to demonstrate compliance with Goal #1 in their solid waste management plan updates are already required to evaluate the feasibility of implementing financial incentives to promote greater participation in recycling programs. Potential financial incentives include volume-based collection rates (i.e. Pay-As-You-Throw (PAYT) programs), incentive-based grant programs, and reducing the costs for residents to recycle. As most SWMDs that have obtained approved

Providing Economic Incentives to Encourage Participation in Recycling Programs

Economic incentives are often one of the best methods for changing behavior. The behavior to change is the trend in the United States towards generating more waste each year and disposing of that waste in landfill facilities. U.S. EPA estimates in the Characterization of Municipal Solid Waste in the United States: 1998 Update indicate that the amount of MSW generated will continue to rise through the year 2005.

While there are numerous types of economic incentives that can be utilized, there are two basic types that will be discussed here: Volume-based rates (VBR) and Incentive-based grants. Several SWMDs and communities in Ohio have implemented effective financial incentive programs which have affected the WRRRs for those SWMDs.

Volume-based rates

Programs utilizing VBRs, also referred to as pay-as-you-throw (PAYT) programs, are widely acknowledged as a potential mechanism to reduce the amount of waste generated by charging generators on a per unit basis. A resident or business is charged a certain amount of money for **each** bag (or can) of waste set out for collection. Someone setting out six bags of waste will pay twice as much as his/her neighbor who puts only three bags at the curb.

Numerous variations of VBRs are in use in the United States. Some systems may charge the same rate for a maximum number of bags or cans. The resident would then be charged extra for any additional bags or cans set out. While most systems are based on volume, or the number of bags and cans, cities have also implemented weight-based rate structures in which the quantity of waste is weighed at the curb for each resident.

Although VBR programs have been used on a limited basis in Ohio, the number of communities implementing VBRs continues to grow, and several communities in Ohio have experienced great success through their VBR programs.

The Allen, Champaign, Hardin, Madison, Shelby, Union Joint County SWMD: The Village of Forrest in Hardin County, Ohio implemented a PAYT program in 1998. The program was implemented in an attempt to prevent an increase in the per-household rate for trash collection. Prior to implementation, the Village provided unlimited trash collection for each residence for a $10 charge per month which was assessed via the water bills. Services were provided to approximately 690 households and seven multi-family units that, in total, disposed of 700 tons of waste per year. Recycling was performed via a recycling center which was established in 1993. In total, 33 tons of recyclables were collected per year giving a recycling rate of five percent.

Following implementation, households are still assessed $10 through the water bills, but now are allowed to dispose of only two bags of garbage per week. Additional bags must be tagged with a $1 sticker. Recycling is still performed by residents transporting materials to the recycling center. However, the Village provided each household with two 18 gallon containers for collecting and transporting materials to the center. After the first year of implementation, the amount of waste disposed decreased by 45 percent and voluntary recycling increased by 350 percent or 115.5 tons. The Village has not experienced an increase in illegal dumping of waste. In fact, residents have actually picked up litter to full up their two-bag-a-week allotment.

Incentive-based Grants

Incentive-based grants are one form of economic incentive program utilized by SWMDs to encourage greater participation in available recycling programs. Many SWMDs award money to communities to support recycling programs. Under an incentive-based grant program, however, the amount of money awarded is based on the amount of recycling the community performs. The amount of money awarded can be based on whatever standard the SWMD deems appropriate (such as tonnage or percentage).

The Hamilton County SWMD: An example of an incentive-based grant program is the Residential Recycling Initiative Program that was implemented by the Hamilton County SWMD (District). This program is an incentive-based program that provides funding to municipalities and townships based on the weight of residential recyclable materials collected from the community and reported to the SWMD. Communities are eligible to participate if they operate, contract, or franchise a curbside, drop-off, or buyback recycling operation for their residents. Funds are distributed in three ways: rebates, community assistance funds, and residential reduction assistance grants.

(continued)

Rebates: Eligible communities receive a rebate in an amount equal to the number of tons of residential solid waste recycled multiplied by an incentive amount which is determined annually based on the District's available budget.

Community Assistance Funds: These funds are targeted to communities that have low recycling participation rates (10 percent recycling rate or lower). Communities that receive rebates are not eligible to receive community assistance funds in the same year and vice versa. Approved applicants receive approximately $5,000 per application, and a community can continue to apply for grants until the amount it receives is equal to the amount it would have received through a rebate.

Residential Reduction Assistance Grant: This program provides one-time funding for special recycling initiatives for communities and non-profit organizations. Eligible communities can receive residential reduction assistance grants even if they receive rebates or money through the community assistance fund.

solid waste management plans under the authority of the *1995 State Plan* have done so by demonstrating compliance with Goal #1, many SWMDs have already performed this evaluation. Inclusion of this requirement as a goal simply extends the obligation to perform the analysis to all SWMDs regardless of whether they demonstrate compliance with Goal #1 or Goal #2.

GOAL #7

Market Development Strategy (optional)

SWMDs are encouraged to conduct market development activities to promote the use of recycled products and to develop local markets for recovered materials. However, providing a market development strategy is not a mandatory element of a SWMD plan. Examples of strategies geared towards this goal include: compilation and distribution of lists of vendors that sell products made from recycled materials; development of policies that favor recycled-content products for government purchasing programs; grant programs for the purchase of recycled-content items; and funding research and development projects. For more discussion concerning potential market development activities conducted by the State and by SWMDs, please see Chapter IX.

GOAL #8: REPORTING

Annual Reporting of Plan Implementation

SWMDs are to annually evaluate the implementation of the programs and activities listed in the implementation schedule of the plan and the progress made toward the reduction objectives. SWMDs must submit to Ohio EPA a report based upon the previous calendar year that includes:

a. a detailed report on the status of the ongoing, new and proposed facilities, programs, and activities listed in the implementation schedule of the approved solid waste management plan;

b. an inventory of the alternative management methods available in the district and the types and quantities of municipal solid waste, yard waste, and industrial waste managed through alternate methods such as recycling, reuse, or minimization for the year;

c. an identification of source reduction activities that occurred during the year;

d. quantities of waste generated in the district that were disposed of at out-of-state landfills;

e. copies of revisions or additions to District Rules adopted under ORC 343.02;

f. an inventory of municipalities and townships that levy a host community fee under ORC 343.01 (G); and

g. an evaluation of the effectiveness of the HHW program and a report on the results of the district's program for household hazardous wastes, including the types and quantities of household hazardous wastes collected and recycled or disposed of at hazardous waste facilities.

State Recycling and Reduction Goal

The *1995 State Plan* established a statewide waste reduction and recycling goal of 50 percent by 2000. This revision to the State Plan retains that goal, but extends the time frame within which the goal will be met. Thus, this State Plan establishes the statewide goal as:

State Goal:

> Reduce and/or recycle at least 50 percent of the solid waste generated in Ohio by the year 2005.

The key components necessary to achieve this goal are the programs that SWMDs implement in order to meet Goal #1 and Goal #2. The State will contribute to achieving a 50 per-

cent WRRR by implementing the strategies described below.

State Strategies:

Strategy #1:
Continue to provide grants to local governments to help pay the start-up costs for recycling programs.

Through the Recycle Ohio! grant program, ODNR-DRLP will continue to provide funds to assist municipalities and counties with implementation of a variety of recycling and litter prevention activities. Ohio EPA and ODNR, DRLP will continue to explore closer links between ODNR grants and the SWMD planning process.

Strategy #2:
Explore an Ohio-specific waste characterization and generation study.

Several SWMDs have indicated that the national data generated by Franklin and Associates for U.S. EPA in the publication titled "Characterization of Municipal Solid Waste in the United States" is not appropriate given the demographics and composition of the population at the local level. Therefore, Ohio EPA, in conjunction with other appropriate parties, will pursue the development of waste characterization and generation data that is based upon Ohio data.

Strategy #3:
Explore means of obtaining improved reporting on the part of processors, haulers, and industrial generators.

Ohio's SWMDs are legally required to report to Ohio EPA annually on the progress they have made towards implementing their approved solid waste management plans. This requires that SWMDs survey those entities that actually generate, collect, process, and use recyclable materials. Such reporting on the part of those entities is purely voluntary and, as a result, can be difficult to obtain. Ohio EPA will explore ways of facilitating the collection of data to improve not only the quality of data that is received but also the ease of obtaining it. Completing this strategy will likely require that Ohio EPA explore establishing voluntary partnerships with various types of entities involved in recycling, explore simplified data collection processes, and explore developing mandatory reporting requirements.

Strategy #4:
Study existing recycling and disposal programs and the associated costs.

Implementing this strategy will be an attempt to document which options are the most cost-effective for communities and SWMDs as well as the relative economic burden such programs place on affected entities. Completion of the strategy may involve the development and employment of a full-cost accounting methodology.

Strategy #5:
Study alternative access credits for recycling opportunities and expected participation rates.

As was explained in Chapter II, SWMDs have requested that they be permitted to use methodologies other than those provided in the current version of the *Format*. Ohio EPA will research potential alternative methodologies and provide potential options in the *Format* when it is revised.

Strategy #6:
Publish the *Facility Data Report* and the *Planning Summary Report* every other year and make data available annually.

Ohio EPA recognizes that the information presented in these documents is helpful to SWMDs during preparation of solid waste management plan updates. Thus, Ohio EPA believes it is necessary to continue making the reports available. However, preparation of the full reports is extremely time consuming. Therefore, Ohio EPA will publish both reports every other year, but will make the data available annually via the Agency's web page.

Strategy #7:
Establish a WRRR goal for state agencies.

There currently isn't a specific target for state agency participation in recycling programs. Ohio EPA and ODNR will work together to establish a waste reduction and recycling goal for state agencies.

Strategy #8:
Develop and implement a plan to increase state agency procurement of recycled-content products.

There is currently some preference given to the purchase of products containing recycled-content materials at the State government level and, in SFY 2000, state of Ohio agencies purchased approximately $2.18 million worth of recycled-content products. However, Ohio EPA and ODNR believe that the overall quantity of products containing recycled-content constituents that are purchased by the state of Ohio remains far less than optimal. Ohio EPA and ODNR-DRLP, working with DAS, will develop a plan to improve this situation. SWAC strongly supports increased efforts on the part of the state of Ohio to purchased recycled-content products for use at State's agencies.

Strategy #9:
Establish a Procedure whereby Ohio EPA will notify ODNR when a SWMD is not in compliance with its solid waste management plan.

As part of this notification, Ohio EPA will recommend that ODNR direct the SWMD to use financial assistance provided by ODNR on implementing the recycling programs identified in that SWMD's solid waste management plan.

Strategy #10:
Study the potential impact of increased energy costs on waste, recycling, and reduction and evaluate new or emerging technologies for waste reduction and recycling with a focus on those that provide energy recovery.

RESTRICTIONS ON THE TYPES OF SOLID WASTE DISPOSED IN LANDFILLS AND BURNED IN INCINERATORS

4
CHAPTER

ORC Section 3734.50(C) requires the State Plan to "establish restrictions on the types of solid waste disposed of by landfilling for which alternative management methods are available, such as yard waste, and a schedule for implementing those restrictions..."

The statute goes on to specify that these restrictions "need not be of uniform application throughout the state or as to categories of solid waste generators. Rather, in establishing those...restrictions, the Director shall take into consideration the feasibility of waste reduction, recycling, reuse, and minimization measures and landfilling restrictions in urban, suburban, and rural areas and shall also take into consideration the extent to which those measures have been implemented by specific categories of solid waste generators and political subdivisions prior to the effective date of this section."

Introduction

When specific wastes are restricted from landfills, incinerators, and resource recovery (waste-to-energy) facilities, the results can include increased landfill life, reduced potential for surface and ground water contamination, decreased ash toxicity, improved air quality, and increased recycling. However, disposal restrictions implemented without careful examination of proper management can create added problems, such as illegal roadside dumping of materials banned from solid waste disposal facilities.

The *1989 State Plan* established strategies for restricting certain waste materials from being disposed at solid waste landfill and incinerator facilities. The types of restrictions (yard waste, tires, and lead-acid batteries) contained in the *1989 State Plan* were rather unique for Ohio EPA. Other Ohio EPA restrictions against the types of wastes (i.e. hazardous waste, PCBs, infectious waste, radioactive wastes, and friable asbestos) that can be accepted at a solid waste facility are based upon an increased threat to public health or safety or environmental impact. There is no increased threat created by disposing of yard wastes in today's highly regulated, highly monitored, engineered landfills. In contrast to the purpose of the lead-acid battery restriction, the primary purpose of the yard waste restriction was to save landfill volume by driving yard waste towards more environmentally sound management alternatives. Since this is a different type of objective (non-environmental based restriction), it requires an approach which considers the potential ramifications before creation of a rule.

The *1995 State Plan* continued the efforts to implement material restrictions that were championed by the *1989 State Plan*. However, rather than focusing on strict prohibitions on the acceptance of selected materials at solid waste facilities, the *1995 State Plan* focused on creating strategies to divert those materials to alternative management methods. The only exception to this was scrap tires. Thus, while the *1995 State Plan* continued to support a full-scale ban on the disposal of whole and shredded scrap tires, it fostered the creation of detection programs on the part of owners and operators of solid waste management facilities to prevent yard waste and lead acid batteries from being accepted at landfill and incinerator facilities. The *1995 State Plan* also promoted the need for education strategies on the part of solid waste management districts to inform residents of available management options for those wastes.

The remainder of this chapter discusses the history of and the current status of the restrictions on the disposal of yard waste, scrap tires, and lead-acid batteries including updates regarding recommendations from the *1995 State Plan*. This chapter also contains a discussion regarding Ohio's experiences related to implementing disposal restrictions as well as a description of Ohio's yard waste restriction. Finally, this chapter establishes guidelines for addressing potential waste restrictions in future State Plan revisions.

The *1989 State Plan* Recommendations

To achieve the goal of reduced reliance on landfills, the *1989 State Plan* recommended that certain wastes should be restricted from disposal in landfills and instead be managed by alternative methods. To assist in this effort, the *1989 State Plan* established the following criteria for consideration in developing disposal restrictions for Ohio:

- the volume of a specific waste versus the total volume of waste disposed at landfills;
- the toxicity of the waste and its potential to cause surface and ground water contamination and air pollution;
- costs and benefits of options;
- effect upon recycling activities; and
- alternative management options.

Because costly and highly complex alternatives to disposal and incineration can be difficult to implement, alternative management options were examined to determine their technical and economic feasibility. A specific waste exhibiting toxicity or the potential to cause contamination received careful consideration for restriction. If alternative management options existed, those wastes with a high potential for contamination were recommended for restriction.

After a preliminary assessment of the components in the overall waste stream, yard waste, used oil, waste tires, lead-acid batteries, household hazardous wastes, paper, and cardboard were evaluated as possible candidates for material restrictions in the *1989 State Plan*. Ultimately, the *1989 State Plan* recommended developing restrictions on landfill and incinerator disposal of yard wastes, whole and shredded tires, and lead-acid (automotive) batteries.

The *1989 State Plan* envisioned that the restrictions would be comprehensive and would take effect in accordance with the schedule established in the plan. However, these expectations were found to be impossible to fulfill as implementation proceeded. The chief obstacle to full-scale material restrictions is the focus of Ohio's solid waste regulations on owners and operators of landfill facilities as opposed to generators and haulers of solid wastes (see the discussion in the text box on page 42 of this chapter for a more in-depth explanation of this issue). As a result, at least with yard waste, Ohio EPA has the authority to regulate only owners and operators of disposal facilities. Owners and operators of landfill facilities have little control over whether or not a home owner places a restricted waste along with all other waste in the trash can or in a dedicated container for separate collection. Thus, prohibiting the disposal of restricted materials when it is the generator, not the owner or operator of the disposal facility, who decides how to manage the material is not effective.

The Yard Waste Restriction

The *1989 State Plan* concluded that yard waste should be restricted from landfill and incinerator disposal for the following reasons (Note that these reasons continue to be valid, so they are discussed in the present tense):

- To preserve landfill capacity in Ohio. Based upon nationwide averages, yard waste comprised approximately 16 percent of the total amount of solid waste generated in 1989 (13% in 1998).
- Alternative management options are available for yard waste. Composting, agricultural land application, and mulching are all preferential options compared to landfilling or combustion of yard waste;
- The cost of alternative management options are reasonable compared to landfilling; and
- The moisture content of solid waste is lower and more consistent when yard waste is omitted, resulting in greater combustion efficiency and greater control over temperatures for incinerators and resource recovery facilities. Consistent combustion temperatures improve the likelihood that toxic constituents are destroyed.

The *1989 State Plan* envisioned that Ohio EPA regulations would be in effect to implement the yard waste restriction by December 1, 1993. While the ban was in effect for incinerators by that date, regulations implementing the yard waste ban at landfills were not promulgated until September 13, 1994 and didn't become effective until February 1, 1995. The restriction that was implemented did not represent a comprehensive ban on the disposal and incineration of yard waste as originally intended by the *1989 State Plan*. The yard waste restriction under which Ohio currently operates bans only source-separated yard waste materials from being disposed in solid waste landfill facilities and burned in incinerator facilities. Owners and operators of landfill facilities and incinerators are allowed to accept for disposal yard waste that is mixed with municipal solid waste. (The issues constraining implementation of a full-scale ban are discussed in more detail in the text box on page 42 of this chapter. The specifics of the yard waste regulation and the restriction programs required of disposal facility owners and operators are discussed in a text box beginning on page 46 of this chapter.)

In order to encourage the separation of yard waste from the solid waste stream, the rules which became effective on February 1, 1995 mandated that disposal facility operators take actions to discourage the receipt of yard waste. To this end, owners and operators of landfills and incinerators are required to implement procedures to identify and refuse receipt of source-separated yard wastes in dedicated vehicles and to promote alternative management of restricted wastes through the distribution of educational information.

The Scrap Tire Restriction

The *1989 State Plan* envisioned that whole scrap tires would be banned from disposal in solid waste disposal facilities by January 1, 1993 and that shredded scrap tires would be banned by January 1, 1995. (This restriction was not intended to apply to shredded tires disposed at monofills or at monocells within sanitary landfills or utilized in beneficial uses approved in accordance with OAC Rule 3745-27-78.) Although these bans did not take effect until after adoption of the *1995 State Plan*, the Ohio General Assembly adopted Senate Bill 165 (S.B. 165), which became effective on October 29, 1993. The new law created by S.B. 165 gave Ohio EPA the authority necessary to

begin the process of implementing these bans. Unlike Ohio's yard waste restriction program, the scrap tire regulatory program affords Ohio EPA the authority to regulate all entities involved in the scrap tire waste stream. Thus, as is discussed later in this chapter, the ban on the disposal of scrap tires is comprehensive.

The Lead-acid Battery Restriction

The increased number of used lead-acid (automotive) batteries in the solid waste stream in the latter half of the 1980s was due to the low price of primary lead and the increased cost of environmental regulations for secondary lead smelters. These batteries can pose a threat to ground water when placed in improperly designed landfills. In addition, lead-acid batteries increase the lead content of municipal incinerator and resource recovery facility ash. (State policy for the disposal of ash from municipal solid waste incinerators and resource recovery facilities is described in Chapter VI.)

The *1989 State Plan* envisioned that lead-acid batteries would be banned from being disposed in solid waste landfill facilities and burned in solid waste incinerators by January 1, 1993. Rules banning lead-acid batteries from incinerators actually became effective on May 31, 1991. In anticipation of the pending restriction, owners and operators of several existing resource recovery facilities voluntarily initiated programs to divert lead-acid batteries from the waste stream prior to the actual effective date of the restriction. Although prohibiting owners and operators of transfer stations from accepting lead-acid batteries was not a focus of the *1989 State Plan*, rules banning lead-acid batteries from transfer stations became effective on October 31, 1993. For reasons that are discussed later in this chapter, a ban on the acceptance of lead-acid batteries at landfill facilities was never implemented.

One alternative to disposing batteries in the trash is returning them to retail businesses when purchasing a new battery. Many retail battery outlets accept spent batteries and some offer a discount on the purchase of a new battery. In addition, some recycling centers accept batteries. Local solid waste district plans are relying on education efforts and this existing infrastructure for management of this waste stream.

The Used Oil Restriction

The *1989 State Plan* contained a recommendation for a ban on the disposal and burning of used oil. The *1989 State Plan* anticipated that legislation would be adopted requiring all retail merchants selling motor oil to accept used oil from individuals who change oil in their own vehicles, and that the used oil ban would be imposed six months after the adoption of such legislation. Such legislation was never promulgated, and, hence, the used oil ban was never implemented.

The *1995 State Plan* Recommendations

Ohio's experience with implementing ORC Section 3734.50(C) illustrates that the enactment of comprehensive restrictions on the disposal of specific waste streams is an arduous task at best. As a result, rather than focus on developing restrictions for these waste streams, the *1995 State Plan* focused Ohio's attention on developing alternative management strategies for waste streams for which disposal is not the most logical management option. However, the *1995 State Plan* did obligate the state of Ohio to several commitments intended to further the implementation of the disposal restrictions established by the *1989 State Plan*, specifically the restriction on scrap tires. The narrative that follows provides updates regarding the status of these obligations.

The Yard Waste Restriction

At the time the *1995 State Plan* was written, requirements for landfill owners and operators to develop restriction programs for yard waste were already in place. The *1995 State Plan* did not contain any recommendations regarding the yard waste restriction.

In 1995, there were no composting facilities in Ohio which were approved to compost general trash (including trash **mixed** with yard waste). Therefore, Ohio EPA promulgated exemptions to the yard waste restriction to allow the landfill or other facilities to accept **mixed** yard waste if no composting facility capable of composting general trash is available in the same county as the landfill. On March 27, 1997, the Ohio EPA issued a permit-to-install to Medina County for the Medina Class I Compost Facility. This facility became the first, and only, composting facility with the legal authority to compost mixed municipal solid waste. However, the facility composts only trommel fines from a material recovery facility also operated by Medina County. Thus, even though there is a composting facility capable of composting general trash in Medina County, that facility does not represent a viable outlet for composting trash mixed with yard waste, due to the facility's operating practices.

The Scrap Tire Restriction

At the time the *1995 State Plan* was adopted, Ohio EPA was in the process of drafting new regulations to implement the scrap tire regulatory program created by S.B. 165. These new regulations, as stipulated in the law enacted with S.B. 165, were required to include restrictions on the disposal for whole scrap tires at municipal solid waste landfills. With the adoption of S.B. 165, Ohio law now required the registration of scrap tire transporters. This requirement gave

Ohio's Experiences Related to Implementing Material Restrictions

Implementation Issues

In order for bans to be enforceable, the restriction or prohibition must be contained in rules pertaining to each type of licensed solid waste facility (landfills, transfer stations, incinerators, and composting facilities). Disposal restrictions must appear in the rules governing operations of that type of facility. Where the regulations prohibit the receipt of a specific waste (whole or shredded tires, yard waste, lead-acid batteries), a violation of the applicable rule may be cited by Ohio EPA or health departments, and appropriate enforcement action taken against the facility operator according to Ohio Revised Code (ORC) Chapter 3734, and Ohio Administrative Code (OAC) Chapter 3745-27.

All of the disposal restrictions contained in the *1989 State Plan* have been incorporated into the Ohio's solid waste regulations governing incinerators (OAC 3745-27-52), transfer stations (OAC 3745-27-23), and composting facilities (OAC 3745-27-45). In addition, language implementing the yard waste ban has been incorporated into the landfill rules. There are no existing rules prohibiting receipt of lead-acid batteries by landfills.

As language was developed for implementing the restrictions, especially yard waste, Ohio's regulatory control of each component of the waste management process became an important issue. Ohio EPA has no authority under state law to regulate either the generators or the transporters of solid wastes, including yard wastes. In determining the appropriate regulatory structure for these restrictions, Ohio EPA also evaluated the potential environmental risk associated with landfill and/or incinerator disposal of each material. Both of these issues were primary considerations in developing the yard waste restrictions and were also considered when restrictions were established for scrap tires and lead-acid batteries. For these reasons, a number of delays were experienced in implementing the disposal restrictions according to the timelines outlined in the *1989 State Plan*.

No Regulatory Control of Generator or Transporter

Ohio EPA's statutory authority basically extends to regulation of solid waste facilities (composting facilities, landfills, transfer facilities, and incinerators) and enforcement against open dumping or open burning. This authority does not extend to haulers or solid waste generators. A significant difficulty in developing a compliance program for disposal of yard waste is that Ohio EPA cannot cite a violation and enforce against the generator for sending yard waste to the landfill, or the hauler for collecting and taking yard waste to the landfill. Actually, the solid waste law inherently places an obligation upon the generators and haulers to take solid wastes to a licensed solid waste disposal facility if they choose not to recycle or otherwise use alternative management.

Strictly prohibiting the landfill from accepting yard waste which generators and haulers can legally bring to the facility will be difficult since the landfill may not have effective management control over the hauler or the hauler's customers. Solid waste containing yard waste coming from states without yard waste restrictions further compounds the landfill owner's ability to control generators and haulers. Therefore, Ohio's only means to implement the yard waste restriction is to regulate the end of the process, the landfill owner/operators.

Since Ohio law does not provide the State with the authority to regulate generators or transporters, Ohio EPA cannot require source-separation of solid waste, including yard waste, for delivery to a particular type of solid waste facility or recycling facility. In fact, there is no explicit state law mandating source-separation. This is a critical issue since yard waste composting facilities may only accept source-separated yard wastes. Consequently, Ohio EPA's establishment of yard waste restrictions at the landfill, incinerator, or transfer facility cannot directly ensure or mandate that the generator or transporter will keep yard waste from becoming mixed with general trash before arriving at the landfill, incinerator, or transfer facility.

It is important to note that individual cities, villages, and political subdivisions, as well as local Districts, may have authority to require generators to source-separate yard waste or to regulate transporters. In keeping with the intent of the State Plan, many cities and villages do require generators to source-separate yard waste. They also require transporters/haulers to keep the **source-separated** yard waste out of the general trash. Ohio EPA's rules are intended to ensure that haulers of **source-separated** yard waste are *identified* by the operator at the landfill, incinerator, or transfer facility, are provided information regarding the location of nearby yard waste composting facilities and are not allowed to landfill, incinerate or transfer that **source-separated** yard waste. Effort must be made to coordinate implementation of disposal restrictions with local regulatory authorities, and to ensure that adequate alternative management capacity exists statewide to recycle or otherwise manage the restricted materials.

Ohio EPA the authority necessary to implement a full-scale ban on the disposal of scrap tires in solid waste landfills and incinerators. The scrap tire rules went into effect on March 1, 1996 thereby implementing the ban on the disposal of whole scrap tires. The ban on the disposal of shredded scrap tires at landfills and incinerators went into effect a year later, on March 1, 1997. (For more information regarding the scrap tire management program in Ohio, see Chapter VII of this document.)

The Lead-Acid Battery Restriction

The *1995 State Plan* anticipated that Ohio EPA would promulgate regulations in 1996 requiring lead-acid battery detection and education programs to be in place at all landfills. In 1995, when Ohio EPA and SWAC began addressing this obligation, studies indicated that the majority of used lead-acid batteries generated within the State were already being recycled through the existing retail infrastructure. As a result, SWAC advised Ohio EPA to delay the development of these regulations and to monitor the recycling and disposal markets for lead-acid batteries. SWAC further advised that if Ohio EPA observes a shift from recycling to disposal, then development of mandatory detection and education programs would be warranted at that time. Since no such shift has been observed to date, a regulatory program has not been implemented. Even without a mandate to do so, however, many owners and operators of landfill facilities in Ohio voluntarily initiated separation programs to remove lead-acid batteries from incoming wastes.

Although Ohio does not have a ban on the disposal of lead-acid batteries in solid waste landfill facilities, 42 states do have bans on the disposal and incineration of lead-acid batteries (Whitford, 2001). If circumstances change in the future and a shift from recycling of lead-acid batteries to disposal occurs, then SWAC and Ohio EPA will need to revisit the issue of banning lead-acid batteries. It is unlikely that such a shift will occur, however, in the near future as mined lead costs more than recycled lead. In fact, recent data suggests that 96.5% of discarded lead acid batteries are recycled nationwide and that manufacturers of lead-acid batteries are pushing for even higher recovery rates (Whitford, 2001).

Management Capacity for Restricted Waste Streams

The *1995 State Plan* mentioned that "effort must be made to coordinate implementation of disposal restrictions with local regulatory authorities, and to ensure that adequate alternative management capacity exists statewide to recycle or otherwise manage the restricted materials".

Available Capacity for Managing Yard Waste

On January 1, 1995 there were 180 Class IV composting facilities and 53 Class III composting facilities registered with Ohio EPA. As of February 21, 2001, there were 521 Class IV and 50 Class III composting facilities registered with Ohio EPA. This amounts to a net increase of approximately 341 Class IV and a net decrease of three (3) Class III composting facilities registered since 1995. (It is difficult to determine a definite number of new facilities as some facilities closed during this three year period and some re-registered for a different class [mostly from Class III to Class IV]. Overall, however, there was a substantial net increase in the number of composting facilities registered with Ohio EPA since the implementation of the *1995 State Plan*). While there appears to be a substantial increase in the level of interest regarding composting, annual reporting is not required for all classes of compost facilities. Therefore, it is difficult to determine how many compost facilities are actually in operation.

In addition to the available compost facilities mentioned above, there are many programs geared towards providing alternative options for managing yard waste and educating residents regarding those options. More than half of Ohio counties, and nearly all SWMDs, have initiated educational campaigns to teach residents to leave grass clippings on the lawn when they mow. Many of these educational campaigns use the slogan "Don't Bag It." Many communities already provided opportunities for residents to turn in Christmas trees for mulching. In addition, several solid waste management districts sponsor annual collection events to collect Christmas trees from their residents. Many communities in Ohio apply yard waste directly to the land. Generally, land application is more common in rural areas with close access to agricultural property.

Other management alternatives for yard wastes include neighborhood and backyard composting. Small scale composting in back yards is generally more feasible in suburban areas than inner cities due to land availability.

To further encourage the development of yard waste management programs, solid waste management districts that can document the amounts of yard waste that are diverted from landfills may credit those amounts to the SWMD's WRRR. Prior to adoption of the *1995 State Plan*, yard waste which has been diverted from disposal facilities was not included in calculations of Ohio's waste reduction and recycling rate.

Available Capacity for Managing Scrap Tires

The text below describes the available facilities for managing scrap tires. Although it is not possible to determine the total capacity available for managing scrap tires, the number of facilities available in Ohio is significant. For a more in-depth discussion regarding each type of scrap tire facility, please see Chapter VII.

Scrap Tire Monofill and Monocell Facilities

There are two scrap tire monofill facilities and one scrap tire monocell facility currently operating in Ohio. The monofill facilities are both located in Stark County. These facilities are the American Tire Monofill and the C & E Coal Monofill. The scrap tire monocell is located at the Pike Sanitation Landfill in Pike County. In total, these three facilities provide 2,655,371 cubic yards of permitted airspace for the disposal of scrap tires. In terms of remaining available capacity for disposal of scrap tires, Ohio EPA estimated that there were 377,644 cubic yards of airspace remaining at the two monofills as of January 1, 2000. Ohio EPA was unable to calculate remaining airspace at the monocell.

Scrap Tire Collection, Storage, and Recovery Facilities

As of March 8, 2001, there were 16 scrap tire collection facilities, nine mobile scrap tire recovery facilities, 16 Class 2 recovery facilities, two Class 1 storage facilities, and two Class 2 storage facilities in Ohio.

Available Capacity for Managing Lead-Acid Batteries

As was mentioned earlier in this chapter, data regarding management of lead-acid batteries indicates that the majority of used lead-acid batteries generated within the State are recycled through the existing infrastructure (i.e. automotive repair and maintenance operations, automotive supply retail establishments, scrap yards, etc.). In addition, several solid waste management districts conduct collection events to which residents can take used lead-acid batteries.

Other Restrictions

Material Restrictions in U. S. EPA's Region V

A number of states have imposed restrictions on the types of materials that can be disposed in solid waste landfill facilities and incinerators. As was mentioned earlier, the primary purpose behind these restrictions is to force the materials to be managed through alternative means and create incentives to recycle the materials. The most frequently restricted materials are lead-acid batteries, tires, and yard wastes. Several other states have bans on the disposal or incineration of major appliances and used oil. Table IV-1 presents the most common material restrictions and indicates which states within U. S. EPA's Region V have implemented those restrictions.

Unlike the other Region V states, Wisconsin has a comprehensive ban on a wide variety of recyclable materials. This ban extends to both solid waste landfill and incineration facilities. The list of banned materials is as follows:

- Lead-acid batteries
- Major appliances (except for microwaves if the capacitor has been removed)
- Waste oil (except can burn waste oil for energy recovery)
- Yard waste
- Aluminum containers

Table IV-1: Waste Disposal Restrictions in U.S. EPA's Region V

State	Yard Waste	Whole Scrap Tires	Scrap Tire Shreds	Lead-Acid batteries	Major Appliances/ White Goods	Used Oil	Other
Illinois	Yes	Yes	Yes	Yes	Yes	Yes	No
Indiana	Yes	Yes	Not specified	Yes	No	No	No
Kentucky	No	Yes	No	No	No	No	No
Michigan	Source-Separated only	No	No	Yes	No	No	No
Minnesota	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ohio	Source-Separated only	Yes	Yes	Incinerators only	No	No	No
Wisconsin	Yes	Yes	Not Specified	Yes	Yes	Yes	Yes

- Corrugated paper or other container board
- Foam polystyrene packaging
- Glass containers
- Magazine or other material printed on similar paper
- Newspaper or other material printed on newsprint
- Office paper
- Plastic containers
- Steel containers
- Waste tires (ban is on landfilling only)
- Containers for carbonated or malt beverages that are primarily made of a combination of steel and aluminum

The bans on the materials listed above only apply to material from a community that does not have an effective recycling program in place. The qualifications for an effective recycling program are contained in Section 287.11 of the Wisconsin Administrative Code.

In addition to the restrictions presented in Table IV-1, Minnesota has restrictions on how telephone directories can be managed. Thus, no one is allowed to place a telephone directory in a solid waste disposal facility, or in a resource recovery facility (compost facility, incinerator, or waste-to-energy facility). Furthermore, publishers and distributors of telephone directories are required to provide for the collection and delivery to an available recycler.

Minnesota also restricts source separated recyclable materials from disposal facilities and from management in a resource recovery facility. Minnesota's statute further prohibits solid waste collectors and transporters from delivering source-separated recyclable materials to a disposal or resource recovery facility, unless the director determines that no other person is willing to accept the recyclable materials.

Although not a state in U.S. EPA's Region V, Massachusetts, like Wisconsin, has implemented bans on the disposal and incineration of a wide variety of recyclable materials. Massachusetts' ban also extends to the transfer of these materials. The list of banned materials is as follows:

- Lead-acid batteries
- Leaves
- Whole tires (may be burned in incinerators and shreds may be landfilled)
- White goods
- Other yard waste
- Aluminum containers
- Metal containers
- Glass containers
- Single polymer plastics
- Recyclable paper
- Cathode Ray Tubes

Massachusetts' ban is carried out through detection and monitoring programs implemented by the owners and operators of disposal, incineration, and transfer facilities combined with an inspection and enforce-

The Massachusetts Waste Disposal Restriction Program

In Massachusetts, solid waste handling and disposal facilities are required to obtain an approved waste ban compliance plan and implement that plan. The approved waste ban compliance plan for a facility is then used by the Massachusetts Department of Environmental Protection (DEP) to evaluate compliance and conduct needed enforcement. The waste ban compliance plan is to describe the procedures to be used at the facility to ensure that restricted materials are not disposed at the facility. At a minimum, the plans are required to provide for the following:

- On-going waste stream monitoring of all loads to monitor the presence of restricted materials; and
- Comprehensive waste load inspections of certain loads; and
- Written communication that will be sent to responsible parties when they deliver unacceptable amounts of restricted materials (as defined by the Massachusetts Department of Environmental Protection).

The operators of the facilities are required to keep records of all loads containing unacceptable quantities of restricted materials. Inspectors from the DEP review the records periodically. If the inspectors determine that the facility is receiving large numbers of unacceptable loads, then the DEP may require the owner or operator of the facility to take some action (such as amend the waste ban compliance plan) or even pursue enforcement of the material restrictions.

The DEP attributes the significant increases in the recycling rate Massachusetts experienced in the early 1990s largely to the implementation of the material restrictions.

Major Components of the Yard Waste Restriction - the Regulation

In accordance with Rule 3745-27-01 of the Ohio Administrative Code (OAC), yard waste is defined as leaves, grass clippings, tree trimmings, garden wastes, brush, tree trunks, holiday trees, and/or prunings. The greatest quantity of leaves is collected in the fall, with smaller collections occurring in the spring. Grass clippings and garden wastes are generated in the summer. Tree trimmings are most prevalent in the waste stream during the spring.

Ohio EPA promulgated rules governing yard waste, animal waste, and mixed municipal solid waste composting facilities June 1, 1992. In response to complaints from local officials that the new regulations for leaf and grass composting were unnecessary and burdensome, on November 9, 1992, Ohio EPA Director Donald Schregardus announced a moratorium on the enforcement of rules at composting facilities that exclusively compost yard waste. He noted that the rules were not intended to discourage composting or to close down existing yard waste composting operations.

On October 31, 1993, in response to comments from local officials, revisions to the composting rules became effective. These revisions required owners and operators of facilities composting exclusively yard waste to register with Ohio EPA and notify Ohio EPA if the facility ownership is transferred or the facility is closed. Yard waste composting facilities are not required to employ certified operators or meet the siting criteria required for facilities that compost other types of waste, such as animal waste.

Except for tree trunks and stumps, the regulations now prohibit landfills, incinerators and transfer facilities from accepting source-separated yard waste. Landfills, transfer facilities, and incinerators are allowed to accept and dispose of source-separated yard waste under the following circumstances:

- For a six month period following the effective date of the yard waste restriction rules, owners and operators of landfills, incinerators, and transfer facilities were allowed to accept source-separated yard waste if their facility was located in a county where no operating or publicly available yard waste composting facility existed. Once a composting facility became available in the county, the owner or operator of the landfill, incinerator, or transfer facility was prohibited from accepting source-separated yard waste. After August 1, 1995, the owner or operator of a landfill, incinerator, or transfer facility was prohibited from accepting source-separated yard waste regardless of whether an operating or publicly available composting facility existed in the county.
- Upon obtaining the written acknowledgement of the solid waste management district of the need for the temporary disposal of yard waste, the owner or operator of a landfill, incinerator, or transfer facility may temporarily accept source-separated yard waste resulting from storm damage or some other natural catastrophe. The solid waste management district is the appropriate entity to make the determination that locally available yard waste management capacity is not sufficient to handle yard waste resulting from storm damage or some other natural catastrophe.

(continued)

ment program implemented by the Massachusetts Department of Environmental Protection (see the text box on this page for a more in-depth discussion of Massachusetts' program).

Massachusetts' Ban on Cathode Ray Tubes

In that past couple of years, the disposal of electronic and computer equipment has begun to receive a great deal of attention. (See Chapter VIII for a more in-depth discussion of this issue.) The Commonwealth of Massachusetts was the first, and to date the only, state to enact a restriction on the disposal of any type of electronic equipment. On April 1, 2000, a ban on the disposal, incineration, or transfer for disposal of cathode ray tubes (CRTs) became effective in Massachusetts. The Commonwealth has developed a multi-step plan to provide residents and businesses with access to alternative management options for CRTs. The steps in this plan are:

- Upon obtaining the appropriate document, owners and operators of landfills, incinerators, or transfer facilities may accept a vehicle load of source-separated yard waste if that vehicle load has been refused by a yard waste composting facility.

Also, once yard waste is mixed with general trash, it becomes impractical and costly to sort through trash to remove bags or individual pieces of grass or leaves. At the time the yard waste restriction was being developed, there weren't any composting facilities in Ohio that composted general trash (including trash **mixed** with yard waste). Therefore, Ohio EPA promulgated exemptions to the yard waste restriction to allow the landfill or other facility to accept **mixed** yard waste if no composting facility capable of composting general trash was available in the same county as the landfill.

Judging whether a landfill, incinerator, or transfer facility is complying with the restriction also presents problems. Once waste is placed in the landfill, or on the floor of an incineration or transfer facility, it is difficult to determine whether a particular bag of yard waste originally had been **source-separated** and transported in a vehicle dedicated to transporting yard waste (the situation which the proposed rules seek to restrict) or whether that bag came to the facility **mixed** with general trash in a garbage truck (the **mixed** yard waste situation). Since it may not be practical to have facility operators inspect each garbage truck for yard waste (or have Ohio EPA or health department staff spend a great deal of time trying to decide whether grass or leaves in the landfill or tipping floor is or is not a violation), Ohio EPA addressed this situation by allowing landfills the option of establishing a Yard Waste Restriction Program.

In establishing the Yard Waste Restriction Program option, Ohio EPA sought to place an emphasis on encouraging alternative yard waste management options and deterring landfilling or incineration of **source-separated** yard waste. Ohio EPA believes this approach is appropriate given that the design, operation, and environmental monitoring provides more than adequate environmental protection should incidental loads of yard waste be landfilled. The Yard Waste Restriction Program requires the operator to implement procedures to identify and refuse receipt of **source-separated** yard waste in dedicated vehicles and to promote alternative management of yard waste through distribution of information. By having a Yard Waste Restriction Program, the landfill, incinerator, or transfer facility is not violating the yard waste restriction for **mixed** yard waste or the incidental disposal of **source-separated** yard waste. However, the operator is required to review the program and implement improvements. Failure by the operator to implement the program, review the program, and incorporate any program improvements determined by the owner to be needed, would all be violations.

Another implementation issue pertains to the applicability of the bans to resource recovery facilities (RRFs), which burn mixed municipal solid waste for energy recovery. These facilities are currently exempted from Ohio solid waste regulations, and are subject only to air and water pollution regulations. These facilities cannot be cited for a violation of solid waste rules by Ohio EPA or local health departments. However, SWAC affirmed, on October 29, 1992, that the disposal restrictions in the State Plan are intended to apply at these facilities.

- Promote market research and development grants
- Establish a statewide contract for electronics recycling
- Provide a municipal grant program, including seven permanent regional facilities receiving used electronics from municipalities or residents
- Add CRTs to the list of appliances banned from disposal

The Future of Material Restrictions in Ohio

Ohio will continue to monitor other states' policies and local recycling markets in order to consider whether additional disposal restrictions should be considered in Ohio. Given the focus of current solid waste regulations on landfill facilities as opposed to generators and transporters of solid waste, Ohio EPA does not anticipate implementing any new disposal restrictions. In the future, if Ohio EPA's regulatory jurisdiction is expanded to encompass generators

and transporters of restricted wastes or greater enforcement capability is afforded to Ohio EPA for pursuing violations of the yard waste ban, then new disposal restrictions could be developed. Any additional restrictions would be evaluated in terms of the criteria outlined at the beginning of this chapter: the volume and toxicity of the specific waste material, the costs and benefits of options, the effect of a disposal restriction upon recycling activities, and the availability of alternative management infrastructure, including mechanisms for cost-effective collection of the material where necessary.

Due to the implementation problems associated with disposal restrictions, this revision of the State Plan (and possibly future revisions) will focus more on alternative strategies for waste streams which may be managed more properly by some method other than disposal. Chapter III discusses management strategies for waste streams such as used oil, white goods, and household batteries which are recommended for implementation by SWMDs. While this approach does not create a regulatory prohibition for disposal of certain wastes, it is more workable in the short run, and requires a strong emphasis on education of residents for long term changes in managing our wastes.

References:

Whitford, Marty (March 5, 2001), *Battery Makers Look to Get the Lead Out*, Waste News.

REVISED GENERAL CRITERIA FOR THE LOCATION OF SOLID WASTE FACILITIES

CHAPTER 5

ORC Section 3734.50(D) requires that the State Plan "establish revised general criteria for the location of solid waste facilities...."

Background Information

To determine the best possible location for a solid waste facility, a potential site must be evaluated for hydrogeologic conditions, technical and engineering features, and site-specific characteristics. During the review of a PTI application for a solid waste facility, siting criteria are carefully evaluated to protect the environment, public health and safety. This evaluation includes the protection of surface water, ground water, and drinking water supplies. Landfills sited in improper locations and lacking current technology have, in some cases, caused environmental harm to ground and surface waters. The cleanup of these sites is costly; some have cost millions of dollars.

Ground Water Protection

Ground water fills the spaces between particles of soil and rock underground. Most is found in aquifers - layers of porous rock that may be located near the surface or hundreds of feet underground. Aquifer water resources are tapped by wells drilled into the aquifer.

Today, nearly half of the nation's drinking water comes from ground water. Ohio is blessed with an abundance of groundwater. Ground water supplies almost 40 percent of the State's population with water for drinking and other household uses. Approximately one billion gallons of ground water are required every day in Ohio for industrial, agricultural, and residential uses. Three major cities - Canton, Dayton, and Springfield - depend almost exclusively on ground water for public water supplies. Other major cities such as Cincinnati and Columbus also draw extensively on ground water. Because of these critical uses of ground water, all siting decisions should assure that it is protected from contamination and depletion.

Surface Water Protection

In addition to tremendous ground water reserves, Ohio has 61,500 miles of streams and rivers, a 451-mile border on the Ohio River, 5,130 lakes and reservoirs, and more than 230 miles of Lake Erie shoreline. Most Ohioans depend on surface water for drinking, industrial, commercial, agricultural, and household uses. Improper siting and operation of solid waste facilities may result in impacts on surface waters.

The *1989 State Plan*

At the time H.B. 592 was adopted, the existing solid waste regulations, adopted in 1976, contained only basic criteria governing the siting of solid waste facilities. Because these criteria were not extensive, solid waste disposal facilities were being operated in areas with less than ideal conditions. The consequences of operating solid waste facilities in improper locations can include environmental harm to surface and ground waters as well as to drinking water supplies. In an effort to address the need for more comprehensive siting criteria, H.B. 592 not only required the State Plan to include more stringent siting criteria but it also required the Director of Ohio EPA to adopt rules containing the revised general location criteria for solid waste facilities.

Siting Criteria for Solid Waste Landfill Facilities

On March 1, 1990, Ohio EPA's revised regulations for solid waste landfills became effective. These regulations, known as the "Best Available Technology" (BAT) regulations, included new siting criteria specifying acceptable and unacceptable locations for landfills. Ohio's siting criteria incorporated not only recommendations from the *1989 State Plan* but also provisions from proposed federal regulations for municipal solid waste landfills that were, at the time, in draft form. Ohio's BAT regulations required that any new landfill permitted after March 1, 1990 meet all the siting criteria.

Under state law, owners and operators of older landfills were also required to upgrade those facilities to meet the new BAT standards, including the siting criteria, or close the facilities in an environmentally sound manner. These owners and operators were required to obtain what are referred to as "call-in" permits based on a schedule established in both state law and the regulations. ORC Section 3734.05 requires owners and operators of facilities sited or permitted before 1968 to submit applications for permits first. These facilities are often referred to as "pre-1968" facilities. Ohio EPA has completed action on these facilities. Thus, even though the requirement still exists, permits for all of the "pre-1968" facilities have been reviewed

pursuant to the BAT rules, including the siting critiera. OAC Rule 3745-27-97 requires owners and operators of facilities permitted between 1968 and 1980 to submit "call-in"permit applications for review by Ohio EPA between April 1992 and March 1996 based on a schedule established in the rule. With a couple of exceptions, permits for these facilities have been reviewed by Ohio EPA as well. Facilities that were permitted after 1980 but prior to 1990 are not required to submit "call-in" permits. However, owners and operators of all permitted facilities are required to submit permits on the tenth anniversary of the date the permit for the facility was issued. As a result, facilities permitted between 1980 and 1990 are effectively "called-in" for review on a case-by-case basis. For all reviews, including call-in permit applications, permit applications for new facilities, and permit applications for ten year anniversary updates, Ohio EPA applies the siting criteria. Owners and operators of older facilities that cannot meet the standards are required to close those facilities within one year of Ohio EPA's final denial of the permit application.

U.S. EPA's regulations for sanitary landfills became effective October 9, 1991. These regulations were promulgated in accordance with Subtitle D of RCRA and established, among other requirements, minimum siting and operational standards for all landfills receiving municipal solid waste. The federal regulations, in turn, required states to develop and implement permit programs to ensure that municipal solid waste landfills will comply with the new federal requirements. Once a state's program was approved by U.S. EPA, then the state received primacy for the municipal solid waste landfill program. In the interim, however, municipal solid waste landfill facilities in states, like Ohio, that already had regulations in place were required to comply with both the federal and the state regulations. As was mentioned, the federal regulations established minimal criteria to address the siting of landfills. Ohio's 1990 BAT regulations contained extensive siting criteria that were not only more comprehensive than those in the federal rules but also were applied to new and existing municipal solid waste landfills in Ohio well before the federal regulations applied to Ohio facilities. Therefore, the siting criteria in the federal regulations were nothing new to owners and operators of municipal solid waste landfill facilities in Ohio.

The federal rules provided deadlines by which municipal solid waste landfills were required to comply with the requirements. These deadlines were based on the tonnage of waste accepted by the landfill facility. Owners and operators of the largest facilities, those that accepted greater than 100 tons per day of waste, were required to comply by October, 1993. Owners and operators of the remaining facilities were required to comply by either April 9, 1994 or October 9, 1995, depending on the size of the facility.

On June 1, 1994, Ohio adopted regulations that comply with the federal Subtitle D regulations for municipal solid waste landfill facilities. Ohio received a final determination of adequacy for its municipal solid waste permit program on June 13, 1994 from U.S. EPA.

Siting Criteria for Other Solid Waste Facilities

In addition to siting criteria for landfill facilities, Ohio also promulgated siting criteria for transfer stations, incinerators, and composting facilities, none of which are addressed by the federal rules. The siting criteria for transfer stations and incinerators went into effect with the adoption of state regulations on May 31, 1991. State siting criteria for composting facilities became effective June 1, 1992.

Tables V-1 through V- 4, located at the end of this chapter, show, for each of four types of facilities - landfills, transfer stations, incinerators, and composting facilities - side-by-side comparisons of the following: siting criteria recommended for Ohio in the *1989 State Plan*; siting criteria contained in the existing state regulations; and siting criteria mandated by the 1991 federal requirements. The citation numbers given for Ohio rules in these tables were updated to reflect the currently effective rules, which took effect in 1994 and have been updated in accordance with the five year review schedule established in Section 119.032 of the Ohio Revised Code (formerly House Bill 473).

Since the *1995 State Plan* was adopted

The *1995 State Plan* indicated that siting criteria for scrap tire facilities would be developed and incorporated into new rules during 1995 to implement recent legislation. Regulations governing scrap tire facilities became effective on March 1, 1996. Contained in the rules are siting restrictions for scrap tire monofill facilities, Class I and Class II scrap tire storage or recovery facilities, and scrap tire collection facilities. Table IV-5 displays how the siting criteria from the scrap tire regulations apply to each of the different types of scrap tire facilities. Because the Federal RCRA Subtitle D Regulations did not mandate and the *1989 State Plan* did not contain recommendations for siting criteria for scrap tire facilities, the format of this table is different than that for Tables IV-1 through IV-4.

At the time the *1995 State Plan* was adopted, Ohio EPA's Division of Surface Water (DSW) was in the process of developing rules to redefine some terms such as 'state resource waters'. The intent behind this effort was to strengthen Ohio EPA's ability to protect Ohio's water resources from degradation. The rules referenced by the *1995 State Plan* are the antidegradation provisions contained in OAC Rule 3745-1-05 (the

"Antidegradation Rule") which became effective in 1996. It was anticipated that these new rules and definitions had the potential to affect the siting criteria for solid waste landfill facilities. Although the Antidegradation Rule redefined "state resource waters," the change in the definition has not had an impact on the siting criteria for solid waste landfill facilities.

Proposed Changes to the Existing Siting Criteria Rules

Because Ohio's siting criteria are already fairly comprehensive and, therefore, protective of human health and the environment, no changes to the current siting criteria have been made since the publication of the *1995 State Plan*. However, in order to comply with the requirements of ORC Section 119.032, which requires all state agencies to review all of their rules every five years, DSIWM appointed a team of interagency personnel to review the siting criteria for municipal, industrial, and residual solid waste landfill facilities and for scrap tire monofills. A function of this team is to evaluate the current siting criteria to determine whether changes (either deletions or additions) need to be made. The siting criteria for other types of solid waste facilities (composting facilities, transfer stations, and incinerators) will be reviewed along with the other rules governing those types of facilities. Thus, the composition of Ohio's siting criteria could change in the next couple of years depending upon the outcome of these review processes.

The Workgroup assigned to review the siting criteria for solid waste landfill facilities and scrap tire monofills is proposing the following changes to the existing criteria:

- **1,000 foot set back from National Parks, Recreation Areas, and State Parks** - OAC Rule 3745-27-07(H)(1) currently prohibits solid waste landfill facilities from being located **in** a national park or recreation area, a candidate area for potential inclusion in the national park system, a state park or established state park purchase area, or any property that lies within the boundaries of a national park or recreation area but that has not been acquired or is not administered by the Secretary of the United States Department of the Interior. In contrast, OAC Rule 3745-27-07(H)(4)(a) prohibits solid waste landfill facilities from being located **within one thousand feet** of natural areas which are designated by the Ohio Department of Natural Resources. The Workgroup recommends that the 1000 foot setback be included in both rules to make them consistent with one another. Thus, the Workgroup has recommended adding the 1000 foot setback to OAC Rule 3745-27-07(H)(1) with the stipulation that an owner or operator could locate a landfill within the setback if they reach an agreement to that effect with the owner or authorized representative of the area. SWAC supports the addition of the 1000 foot setback to OAC Rule 3745-27-07(H)(1) to make it consistent with OAC Rule 3745-27-07(H)(4)(a).

- **Removing "unless deemed acceptable by the director" language from the siting criteria** - Currently, several of the siting criteria contain the phrase "unless deemed acceptable by the director." This phrase essentially allows an owner or operator to locate a solid waste landfill facility in an area that deviates from those criteria as long as the director has deemed the deviation to be acceptable. Ohio EPA is in the process of developing a variance rule - similar to the existing variance rule (OAC Rule 3745-30-15) in the residual waste regulations - for the municipal solid waste landfill, industrial solid waste landfill, and scrap tire programs. Such a variance rule would authorize the director to issue variances to rule requirements and would serve the same purpose as the current "unless deemed acceptable" language. Adoption of this variance rule is specified and authorized by ORC 3734.092(A). Thus, for purposes of the review of the siting criteria rules, the workgroup has recommended removing the "unless deemed acceptable to the director" language. SWAC supports the removal of this language and the creation of the variance rule to provide Ohio EPA with a consistent mechanism for granting deviations from the siting criteria.

- **Vertical expansion over unlined areas** - the current rules allow owners and operators of solid waste landfill facilities to apply for and receive permits to install to expand existing facilities vertically over unlined areas of landfill facilities provided the expansion areas meet all of the siting criteria. The existing rules do not provide any direct consideration to the potential impact the unlined landfill may have on ground water quality, a potential that may be compounded when additional waste is placed above the unlined area. The workgroup has recommended that owners and operators be required to design and construct a separatory liner over emplaced waste before placing additional waste over unlined areas of the landfill facility. Proposed language will qualify that the incorporation of the separatory liner is required only for permit-to install (PTI) applications that are submitted to Ohio EPA after the effective date of the rule.

- **Other Miscellaneous Amendments** - Other recommendations that the workgroup has made include:
  - Adding definitions for "well head protection areas" and "ground water source water protection areas" to the five year time of travel criterion in OAC Rule 3745-27-07(H)(3)(a);
  - Extending the set back from an up-gradient water supply well from 500 feet to 1,000 feet if gas migration is a concern;
  - Clarifying Ohio EPA's interpretation of state nature preserves and surface waters;
  - Clarifying Ohio EPA's application of the "five year time of travel" criterion to only underground pathways.

Ohio EPA filed proposed rules containing the changes described above with JCARR on August 31, 2000. A public hearing regarding the proposed rules was held on September 6, 2000. At that hearing, interested parties expressed their desire to review the siting criteria rules in conjunction with the solid waste landfill facility and scrap tire monofill design and construction, ground water monitoring, closure/post-closure, operations, PTI, and variance rules all of which are in the process of being reviewed in accordance with ORC Section 119.032. These interested parties indicated that they could not realistically evaluate the impact of the proposed siting rules without knowing the proposed changes to the other rule packages. Ohio EPA, via written correspondence dated September 14, 2000, conveyed the Agency's intent to refile the siting criteria rules in mid to late June, 2001.

Public Involvement in the Siting of Solid Waste Facilities

Siting decisions affect citizens, communities, local business and industry. Ohio EPA provides two kinds of public forums when a PTI application is received for a proposed solid waste facility. These forums provide opportunities for residents to become involved in the siting of solid waste facilities. The first opportunity is an informational meeting, which is held soon after the Agency receives a permit application for a solid waste facility. The second, a formal public meeting, is held after the PTI has been reviewed by the Agency. Members of the general public and other interested parties are encouraged to attend these meetings and provide input into the siting of solid waste facilities.

Siting Solid Waste Facilities by Solid Waste Management Districts

Each SWMD's solid waste management plan is required to include a siting strategy for new solid waste management facilities identified in the plan as needed to provide solid waste management capacity. Although some SWMDs include a siting strategy that is intended to apply to all facilities being proposed within their boundaries, the siting strategy required to be included in the SWMD's plan is intended to assist the SWMD in siting facilities necessary to provide needed capacity. Most SWMDs have developed a weighting system to rank different alternatives and have either a technical advisory council or a special siting committee evaluate potential sites and make recommendations to the SWMD's Board of Directors. Virtually all SWMD siting strategies begin with Ohio's required siting criteria and add additional concerns such as the type of access road, the availability of public utilities, and so on. A good SWMD siting strategy will also outline each step of the decision making process and specify how much time is required or allowed for each stage.

To encourage citizen involvement early in the siting process, Ohio EPA recommends that the local SWMD policy committee establish viable public input through a technical advisory council. H.B. 592 specified that a technical advisory council must include a representative from the solid waste hauling or disposal industry and may include at least one person representing each of the following:

- health commissioners having jurisdiction within the SWMD
- political subdivisions within the SWMD
- environmental advocacy organizations
- industrial generators of solid waste
- other constituencies deemed appropriate by the SWMD's policy committee

SWAC strongly encourages SWMDs to appoint technical advisory councils and strongly encourages that the technical advisory councils have broadly-based and diverse representation. Many SWMDs have established technical advisory councils to help them prepare a 10-year or 15-year solid waste management plan.

The SWMD should provide a detailed explanation of the strategy for siting new and expanded facilities in its solid waste management plan. For facilities to be sited by the SWMD, Ohio EPA recommends establish-

ment of a siting committee to conduct at least portions of the siting study. The siting strategy should:

- identify individuals or groups responsible for each step of the process;
- provide the estimated time required for each step; and
- be well-defined so the process can be easily followed.

SWMDs should regard the siting strategy as an environmental assessment of potential facility sites with the objective of minimizing negative impacts. Ohio EPA recommends that local SWMDs incorporate the following elements into their siting strategies.

Preliminary Site Survey

1. Obtain a current copy of Ohio's solid waste regulations (OAC Rules 3745-27, 3745-29, and 3745-37) and other available guidance on siting criteria from the appropriate Ohio EPA District Office. SWMDs should be aware that the Ohio EPA Director can exempt proposed facilities from selected Ohio solid waste siting criteria if he determines that granting the exemption will not result in negative environmental and/or public health impacts.
2. Obtain county or regional information for the general location where the facility is to be located. Information regarding political jurisdictions, rivers and streams, possible location of wetlands, soil associations, drainage patterns (watershed boundaries), floodplains, public water systems, endangered and threatened species, active and abandoned mines, aquifer boundaries, seismic impact zones, airport locations, glacial drift thickness, and other land use data may be obtained from the Geographic Information System (GIS) coordinator for Ohio EPA, the Ohio Department of Natural Resources, Local Planning Commissions, the U.S. Geological Survey, and Local Soil and Water Conservation Districts.
3. Other considerations in the search for potential sites should include:
   - visual inspection of the designated area
   - zoning restrictions
   - location of population centers
   - hauling distances and economics
   - transportation routes and emergency services
   - local land acquisition
   - location of historical or archaeological sites
   - conservancy districts
   - parks, state and national forests, nature preserves, wildlife areas, scenic rivers
4. Compile data obtained in items two and three for the general site location. The easiest way to visualize the information is to record it on a general map of the area being studied. Specific sections of the map that will not meet Ohio's siting criteria should be eliminated during initial examination.
5. Once potential sites have been located, the SWMD may contact the appropriate Ohio EPA District Office. Ohio EPA will conduct a preliminary site investigation, if time permits. The preliminary site investigation focuses on superficial features of the site and regional geology. Site specific geologic considerations cannot be addressed until a hydrogeologic site investigation is performed and the results evaluated.
6. If the SWMD intends to construct a facility, the policy committee should schedule a pre-application meeting with the appropriate Ohio EPA district office geologist and solid waste engineer to discuss best available technology requirements and specific PTI application requirements. The SWMD should decide whether to proceed with engineering detail plans and specifications based upon meetings and discussions with Ohio EPA technical staff.

Ranking Scheme

In order to facilitate evaluation and selection of a facility site, the SWMD should consider developing a ranking scheme. The ranking scheme should allow SWMDs to compare potential sites quickly and as objectively as possible.

Resolving Site Impasses Through Mediation

Siting a solid waste facility usually involves controversy. Increased public involvement and technical advisory council recommendations early in the siting process help to identify potential sites and reduce controversy. Nevertheless, siting conflicts are still likely to occur. The district siting strategy should include a method to deal with impasses associated with facility siting.

Mediation is a technique widely used by government, industry, labor, and management to resolve impasses. This approach is generally formal and brings together a limited number of representatives of opposing positions to work with a mediator (or a team of mediators) toward resolution of conflicts. The mediator is neutral and serves to:

- act as a "go-between" for the opposing parties, fostering communication and cooperation;

- clarify issues and promote better understanding of opposing positions; and
- offer constructive suggestions and possible solutions.

The Ohio Commission on Dispute Resolution and Conflict Management (Commission) can provide assistance in locating trained mediators and developing mediation strategies. The Commission is located at 77 South High Street, Columbus, Ohio 43266-0214, and may be reached by phone at (614) 752-9595.

Local and Regional Affects of Solid Waste Landfill Facilities

SWAC has long recognized that communities that host solid waste landfill facilities incur impacts that are associated with those facilities. Infrastructure needs such as road maintenance, adding adequate emergency personnel and equipment, erecting noise barriers, etc. may require the host community to expend resources. Currently, Ohio's solid waste law and regulations do not afford Ohio EPA with specific authority to consider these types of local impacts during the review and consideration of applications for permits to install for solid waste landfill facilities. However, there are several tools available to county, city, and municipal governments and SWMDs that allow those entities to address these local impacts. These tools are discussed below.

Zoning

Zoning is a means that local governments can use to control how land within a specified area is developed and the ways that each property within that area may be used. Zoning is a legal limitation on how properties can and can't be used and is created by a legislature, a municipal authority, or a township through laws, regulations, and ordinances. As such, zoning is an authority used strictly by county, city, municipal, or township governments. Zoning provisions typically specify the areas in which residential, industrial, recreational or commercial activities may take place. The four most commonly used categories for zoning ordinances are commercial, residential, industrial, and agricultural. Each of these broad categories typically contains sub-categories that further define how a particular zoned area can be used or what amenities can be added to properties within that zone. Thus, an area zoned as residential may be further divided into areas that are zoned for single-family housing and those that are zoned for multiple-family housing. Areas zoned for industrial activity may be further divided into areas zoned for "light" and "heavy" industry. Zoning is intended to be a tool for land-use planning purposes and is intended to organize similarly used properties in proximity with one another.

Zoning classifications are not permanent nor are they necessarily uniform from one community to the next, or even within one community. Furthermore, changes in zoning, or rezoning, can affect the overall land-use plan over time. Additionally, most local governments have rules that allow for variance requests for deviations from established zoning restrictions to be considered and acted upon.

Host Community Fees

ORC Section 3734.57(C) authorizes municipal corporations (municipalities) and townships that have a solid waste disposal facility located within their boundaries to levy a fee of up to 25 cents per ton on the disposal of solid waste at the solid waste disposal facility. Although not legally named as such, this fee is commonly referred to as a host community fee. The host community fee can be collected on all solid waste disposed at the facility, regardless of where the waste was generated. Revenues from the host community fee are intended to be used to offset the costs incurred by the municipal corporation or township due to the presence of the disposal facility. Such costs can include those associated with repairing or maintaining roads and other public facilities, providing emergency and other public services, and compensation for reductions in real property values due to the location and operation of the disposal facility.

The host community fee is levied by a municipal corporation or township by enacting an ordinance or adopting a resolution establishing the amount of the fee. Once levied in accordance with the requirements of the statute, the owners or operators of all solid waste disposal facilities located within the jurisdiction of the municipal corporation or township are required to collect the fee and remit all revenues to the entity levying the fee.

In 1999, there were at least 41 communities in Ohio that collected host community fees. In that year, these fees resulted in approximately $3,200,000 of revenue to the affected communities. In addition, several communities collected revenue via contractual agreements with the owners/operators of the landfill facilities in those communities. In total, communities collected at least $1,500,000 in contractual fees in 1999.

SWMD Rule Promulgation Authority

ORC Section 343.01(G) authorizes the board of county commissioners of a county SWMD or board of directors of a joint county SWMD to adopt, publish, and enforce rules concerning several aspects of solid waste management. However, in order to adopt rules, the SWMD's solid waste management plan must authorize the adoption of rules. The *Format* directs SWMDs to list, in their solid waste management plans, all of the areas in ORC Section 3734.53(C) for which the SWMD wants to retain the authority to adopt rules. [The same authorization is contained in ORC Section 343.01(G).] ORC Sections 343.01(G) and 3734.53(C) give SWMDs the ability to adopt rules that:

1. Prohibit or limit the receipt of solid waste generated outside the SWMD;
2. Govern the maintenance, protection, and use of solid waste collection, transfer, disposal, recycling, or resource recovery facilities;
3. Govern a program to inspect out-of-state waste; and
4. Exempt an owner or operator of a solid waste facility from compliance with an amendment to local zoning requirements that became effective within two years prior to the filing of permit application by the facility.

Regarding the SWMD's ability to adopt rules "govern[ing] the maintenance, protection, and use of solid waste collection, transfer, disposal, recycling, or resource recovery facilities," the SWMD is precluded from establishing design standards for solid waste facilities. Furthermore, any rules adopted concerning solid waste facilities must be consistent with the solid waste provisions of ORC Chapter 3734 and the rules adopted under that chapter. SWMDs are authorized to adopt rules prohibiting "any person, municipal corporation, township, or other political subdivision from constructing, enlarging, or modifying a solid waste facility until general plans and specifications for the proposed improvement have been submitted to and approved by the board of county commissioners or board of directors as complying with the solid waste management plan for the SWMD."

It should be noted that, while SWMDs' authority to adopt rules is provided for in statute, the exercise of this authority has been challenged in court. As a result, some SWMDs are hesitant to pursue local rules.

Negotiated Agreements

During the process of siting a solid waste facility, the facility owner or operator and the host community may enter into an agreement to address the concerns of residents of the community thereby facilitating the siting of the facility. These agreements typically involve the provision of concessions on the part of the facility owner or operator in exchange for the host community's cooperation in siting the facility. These concessions can involve the owner or operator providing monetary compensation or indirect compensation, such as infrastructure improvements, to the community. In the past, concessions have included the provision of services, such as curbside recycling services, at no cost to the community, or access to disposal capacity at reduced cost. Another form of agreement involves service restrictions. In this scenario, the owner or operator of the facility limits its customer base to those located within a certain distance of the facility.

Table V-1: Landfill Siting Criteria Recommendations

Recommendation from the *1989 State Plan*	***Ohio Administrative Code*[1]**	***Federal RCRA Subtitle D Regulations***
Not located in the regulatory floodplain	3745-27-07(A)(3) - facility not located in floodway, and 3745-27-20(C)(2) - limits of solid waste placement not located in 100 year floodplain	Not in 100 year floodplain unless demonstration made 40 CFR 258.11
Not located within existing/proposed state or national park or recreational area	3745-27-07(H)(1)(a) to (d) - Limits of solid waste placement not located within: a. national park or recreation area, b. candidate area for potential inclusion in the National Park System, c. state park or state park purchase area, or d. any property within boundaries of national park or recreation area not acquired by U.S. Department of Interior	Do not address
Not located in a geologically unstable area	3745-27-20(C)(5) - PTI requires identification of unstable areas and demonstration that design will resist earth movement	Not in unstable area unless demonstration is made 40 CFR 285.15
Not located in areas surrounding wellhead of public supply well if contamination may reach wellhead within 5 years	3745-27-07(H)(3)(a) - Same as Solid Waste Management Plan recommendation	Do not address
Not located above federally declared sole source aquifer	3745-27-07(H)(2)(c) - Same as Solid Waste Management Plan recommendation	Do not address
Not located over unconsolidated aquifer yielding 100 gal/min to well within 1000' of limits of solid waste placement	3745-27-07(H)(2)(d) - Same as Solid Waste Management Plan recommendation	Do not address
Not located within 200' of fault	3745-27-20(C)(3) - Same as Solid Waste Management Plan recommendation	Same as Ohio EPA unless demonstration made for alternative setback
Not located in area of potential subsidence due to underground mine	3745-27-07(H)(3)(b) - Same as Solid Waste Management Plan recommendation	Mines not specifically addressed, but considered under unstable area
Not located within 1000' of ODNR preserves, wildlife areas, or scenic rivers, Ohio Historical Society nature preserves, USDOI national wildlife refuges or scenic rivers, US Forest Service special interest areas or research natural areas, and Ohio EPA designated resource waters	3745-27-07(H)(4)(a)(i) to (v) - Same as Solid Waste Management Plan recommendation	Do not address
Not located within 1000' of water well or developed spring unless under specified circumstances	3745-27-07(H)(3)(c) - Same as Solid Waste Management Plan recommendation	Do not address
Not located within 300' of property line	3745-27-07(H)(4)(b) - Same as Solid Waste Management Plan recommendation	Do not address

[1]*For ease in reading this table, all rule references are based on the municipal solid waste landfill rules (OAC Rule 3745-27-07). Many of these same criteria can be found in the industrial solid waste landfill facility rules (OAC Rule 3745-29-07) and the residual solid waste landfill facility rules (OAC Rule 3745-30-06).*

Table V-1: Landfill Siting Criteria Recommendations

Recommendation from the *1989 State Plan*	***Ohio Administrative Code***	***Federal RCRA Subtitle D Regulations***
Not located within 1000' of residence	3745-27-07(H)(4)(c) - Same as Solid Waste Management Plan recommendation	Do not address
Not located within 200' of stream, lake, or natural wetland	3745-27-07(H)(4)(d) - Same as Solid Waste Management Plan recommendation	Do not address
PTI application must demonstrate that the municipal solid waste landfill will not pose a bird hazard to aircraft (municipal solid waste landfill within 10,000'/5,000') of airports	3745-27-20(C)(1) - PTI's identify airports within 10,000'/5,000' then notification letter to airport	Notification of airport and Federal Aviation Administration of municipal solid waste landfill within 5 miles Bird hazard demonstration if within 10,000' or 5,000'
Required 15' isolation distance from uppermost aquifer for municipal solid waste landfills	3745-27-07(H)(2)(e) - Same as Solid Waste Management Plan recommendation	Do not address
Required 5' isolation distance from uppermost aquifer for some classes of coal combustion solid waste landfills	3745-30-06(B)(15)(a) to (c) - Same as Solid Waste Management Plan recommendation in the residual waste rules	Do not address
Was existing rule	3745-27-07(H)(2)(a) - Not in sand or gravel pit	Do not address
Was existing rule	3745-27-07(H)(2)(b) - Not in limestone/sandstone quarry	Do not address

Table V-2: Transfer Station Siting Criteria Recommendations

Recommendation from the 1989 State Plan	***Ohio Administrative Code***	***Federal RCRA Subtitle D Regulations***
Not located in regulatory floodplain	3745-27-22 (C) - Facility not located in a floodway and identify floodplain boundary 3745-27-21(B)(2)(d)	Do not address
	3745-27-22(D) - Not located within 200' of surface waters of the State	Do not address
	3745-27-22(I)(1) to (4) - Not located within park/candidate area, purchase area, etc.	Do not address
	3745-27-22(J)(1) to (5) - Not located within 500' of nature preserves, wildlife area, scenic river, etc.	Do not address
	3745-27-22(K) - Not located within 250' of domicile	Do not address

Table V-3: Incinerator Siting Criteria Recommendations

Recommendation from the 1989 State Plan	***Ohio Administrative Code***	***Federal RCRA Subtitle D Regulations***
Not located in a regulatory floodplain	3745-27-51(C) - Facility not located in floodway and 3745-27-50(B)(2)(d) - identify floodplain boundary	Do not address
	3745-27-51(D) - Not located within 200' of waters of the State	Do not address
	3745-27-51(I) - Not located within park/candidate area, purchase area, etc.	Do not address
	3745-27-51(J) - Not located within 250' of nature preserves, wildlife, refuge, scenic river, etc.	Do not address
	3745-27-51(K) - Not located within 250' of domicile	Do not address

Table V-4: Composting Facility Siting Criteria Recommendations

Recommendation from the 1989 State Plan	***Ohio Administrative Code***	***Federal RCRA Subtitle D Regulations***
Not located in a regulatory floodplain	Solid waste placement areas not located in floodway 3745-27-41(B)(2)(a)(i)and 3745-27-43(C)(1)(a); and identify the limits of the regulatory floodway 3745-27-41(B)(1)(g) and 3745-27-42(A)(2)(c)(iii)	Do not address
	Not located within 100 feet of surface waters of the State 3745-27-41(B)(2)(b) and 3745-27-43(C)(1)(b) and identify streams, wetlands, lakes, springs, and other surface waters 3745-27-41(B)(1)(c) and 3745-27-42(A)(2)(b)(iv)	
	Except for facilities which compost only wastes generated within state or national parks, not located within a park or candidate area, purchase area, etc. 3745-27-41(B)(2)(ii), 3745-27-41 (C)(3) and 3745-27-43 (C)(2)	
	Not located within 200 feet of a water supply well, or developed spring 3745-27-41(B)(2)(c) and 3745-27-43 (C)(1)(c)	
	For a Class I composting facility, must be located at least 500 feet from a domicile 3745-27-43(C)(1)(d) 3745-27-41(B)(2)(d) - For Class II composting facilities, must be located at least 250 feet from a domicile	
	3745-27-41(B)(2)(d) - For a Class III composting facility, must be located at least 250 feet from a domicile, unless the domicile is controlled by the facility registrant, or the facility was in operation on July 1, 1991	

Table V-4: Composting Facility Siting Criteria Recommendations

Recommendation from the 1989 State Plan	*Ohio Administrative Code*	*Federal RCRA Subtitle D Regulations*
	3745-27-41(B)(2)(e)(i) to (v) - For a Class II and Class III composting facility, waste placement areas must be at least 500 feet from nature preserves, wildlife refuges, scenic rivers, special interest areas, research areas within the Wayne National Forest, State resource waters, coldwater habitats, or warmwater habitats.	
	3745-27-43(C)(1)(e) - For a Class I composting facility, waste placement areas must be at least 1,000 feet from nature preserves, wildlife refuges, scenic rivers, special interest areas, research areas within the Wayne National Forest, State resource waters, coldwater habitats, or warmwater habitats.	

Table V-5: Scrap Tire Siting Criteria

Criteria	*Scrap Tire Monofill Facility*	*Class I Scrap Tire Storage Facility or Class I Recovery Facility*	*Scrap Tire Collection, Class II Storage, or Class II Recovery Facility*
At least 100' from any buildings or structures not owned or leased by the owner or operator of the facility. This includes all portable containers in which tires are stored, at a collection facility	Not Applicable[2]	3745-27-64(A)(9)(a)	3745-27-62(A)(8)(a)
Not located within areas specified below, unless facility exclusively stores scrap tires generated within the areas specified below:	3745-27-71(H)(1)	3745-27-64(A)(9)(c)	3745-27-62(A)(8)(a)
a national park or national recreation area	3745-27-71(H)(1)(a)	3745-27-64(A)(9)(c)(i)	3745-27-62(A)(8)(b)(i)
b state park or established state park purchase area	3745-27-71(H)(1)(c)	3745-27-64(A)(9)(c)(ii)	3745-27-62(A)(8)(b)(ii)
c candidate for potential inclusion in the national park system	3745-27-71(H)(1)(b)	3745-27-64(A)(9)(c)(iii)	3745-27-62(A)(8)(b)(iii)
d any property within boundaries of national park or national recreation area not acquired by the U. S. Department of Interior	3745-27-71(H)(1)(d)	3745-27-64(A)(9)(c)(iv)	3745-27-62(A)(8)(b)(iv)
Not located in a regulatory floodplain	Not Applicable	3745-27-64(A)(9)(b)	3745-27-62(A)(9)(a)

[2]*The two hundred feet property line setback and five hundred feet domicile setback make this unnecessary.*

Table V-5: Scrap Tire Siting Criteria

Criteria	***Scrap Tire Monofill Facility***	***Class I Scrap Tire Storage Facility or Class I Recovery Facility***	***Scrap Tire Collection, Class II Storage, or Class II Recovery Facility***
At least 1000' from the boundaries of the following natural areas:	3745-27-71(H)(2)(a)	3745-27-64(A)(9)(d)	*3745-27-62(A)(9)(b)*
a areas designated by ODNR as state nature preserve, state wildlife area, or state scenic river.	3745-27-71(H)(2)(a)(i)	3745-27-64(A)(9)(d)(i)	3745-27-62(A)(9)(b)(i)
b areas designated, owned, and managed by the Ohio Historical Society as a nature preserve	3745-27-71(H)(2)(a)(ii)	3745-27-64(A)(9)(d)(ii)	3745-27-62(A)(9)(b)(ii)
c areas designated by the United States Department of the Interior as either a national wildlife refuge or a national scenic river	3745-27-71(H)(2)(a)(iii)	3745-27-64(A)(9)(d)(iii)	3745-27-62(A)(9)(b)(iii)
d areas designated by the United States Forest Service as either a special interest areas or a research natural area in the Wayne National Forest	3745-27-71(H)(2)(a)(iv)	3745-27-64(A)(9)(d)(iv)	3745-27-62(A)(9)(b)(iv)
e stream segments designated by Ohio EPA as either a state resource water, a coldwater habitat, or an exceptional warmwater habitat	3745-27-71(H)(2)(a)(v)	3745-27-64(A)(9)(d)(v)	3745-27-62(A)(9)(b)(v)
Two hundred feet from the property line	3745-27-71(H)(2)(b)	Not applicable	Not Applicable
One hundred feet from the property line	Not Applicable	3745-27-64(A)(9)(g)	3745-27-62(A)(9)(e)
Two hundred feet from domicile owner or leased by the owner or operator	Not Applicable	3745-27-64(A)(9)(e)(i)	3745-27-62(A)(9)(d)
Five hundred feet from domicile	3745-27-71(H)(2)(c)	3745-27-64(A)(9)(e)(ii)	3745-27-62(A)(9)(d)
Two hundred feet from surface waters	3745-27-71(H)(2)(d)	3745-27-64(A)(9)(f)	3745-27-62(A)(9)(c)

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MANAGEMENT OF ASH RESULTING FROM THE BURNING OF MIXED MUNICIPAL SOLID WASTE

6
CHAPTER

ORC Section 3734.50 (E) requires that the State Plan "examine alternative methods of disposal for fly ash and bottom ash resulting from the burning of mixed municipal solid wastes..."

ORC Section 3734.50(E) further requires that "Within one year after adoption of the plan, the Director shall adopt rules...establishing standards for the disposal of fly ash and bottom ash resulting from the burning of mixed municipal solid waste."

Introduction

As solid waste management options, incineration and waste-to-energy have historically never been major components of Ohio's overall disposal program. To illustrate, the management of solid waste via incineration and waste-to-energy ranged from seven percent of Ohio's total waste stream in 1990 to 0.2 percent in 1997. Although incineration and waste-to-energy have never been major methods of waste management on a statewide basis, they were integral components of waste disposal in the cities of Columbus and Akron as well as in Montgomery County in years past. However, in 1994, with the closure of the waste-to-energy facility in Columbus, Ohio's publicly available solid waste incinerators and waste-to-energy facilities began closing, one-by-one, until the last operating facility ceased operations in 1997. The result is that, as of the date this State Plan was adopted, there are no operating incinerators or waste-to-energy facilities accepting mixed municipal waste for combustion.

At the time H.B. 592 was passed, the combustion of solid waste was not only viable as a waste management alternative but was also expected to provide a means of reducing the volume of solid waste disposed in Ohio's then rapidly diminishing landfill airspace. To reduce the burden on Ohio's landfill facilities even further, the statute, as can be seen from the reference to the left, requires the State Plan to consider alternatives to disposal as methods for managing ash produced from the incineration of mixed municipal solid waste. In 1997, Ohio EPA initiated a program, known as the Integrated Alternative Waste Management Program (IAWMP), for the review and consideration of requests to manage waste materials outside of traditional disposal facilities. Although IAWMP is not specific to the alternative management of incineration ash, it is possible that alternative uses of ash could be approved through the program, if the management of incinerator ash becomes an issue in the future.

Because the incineration of mixed municipal solid waste is not a viable option at this time nor is it expected to become a viable option in the foreseeable future, the SWAC and Ohio EPA, do not believe that expending resources on the development of an alternative management program specific to solid waste incineration ash is warranted at this time. If incineration is utilized at some point in the future for the management of solid waste, then SWAC and Ohio EPA recommend that an alternative management program be developed.

Mixed Municipal Combustion Ash Overview

Whenever solid waste material is burned, part of the original material is noncombustible and the result is ash. Under ideal operating conditions, approximately 10 percent of the volume and 32 percent of the weight of municipal waste is left after it is burned. The ash residue from solid waste contains glass, cans, clays that are used in paper, stabilizers from plastics, pigments in inks, and minerals in organic wastes. The exact composition of the ash varies widely depending on what is burned, the type of combustion process involved, and other factors.

Municipal waste incinerators produce two types of ash residue:

- Bottom ash is the residue that collects beneath the combustion chamber. It constitutes approximately 90 percent by weight of all ash.
- Fly ash is the powdery residue that is trapped in the plant's emission control devices. It represents about 10 percent by weight of the total amount of ash that is generated.

The physical appearance of ash ranges from fine-grained to very coarse particles. Although the chemical content of ash varies according to the waste sources, the composition of the ash residue contains many of the same constituents present in the original waste. For example, ash residue typically contains relatively harmless materials, such as iron and silicon, as well as potentially toxic materials, such as lead and cadmium.

The following information is generally accepted about ash:

- Levels of dioxin in ash are linked to combustion practices.
- Fly ash typically contains heavy metals, predominantly lead and cadmium.

- Bottom ash is alkaline, while fly ash is acidic.

Typically, fly ash contains higher concentrations of toxic metals and may produce toxic leachate when disposed in landfills. The bottom ash contains lower concentrations of heavy metal constituents. When fly ash and bottom ash are mixed into what is called "combined ash," the metal concentrations in the mixture are usually diluted when compared to the levels in the segregated fly ash.

History of the Mixed Municipal Solid Waste Incinerator Ash Regulatory Program

At the time the *1989 State Plan* was being developed, there wasn't a federal law that delineated whether ash from mixed-MSW combustion facilities (incinerators and waste-to-energy/resource recovery facilities) was subject to regulation as a solid waste or subject to regulation as a hazardous waste. In 1988, shortly after the adoption of H.B. 592, Ohio EPA strengthened its control over the disposal of this ash in Ohio by developing a policy that required toxicity testing prior to disposal and placed several restrictions on facilities that accepted ash for disposal. This policy, titled *"Interim Policy on the Disposal of Municipal Incinerator Ash"* (Interim Policy), went into effect on October 8, 1988 and was incorporated into the *1989 State Plan.*

In accordance with Ohio EPA's Interim Policy, before accepting municipal incinerator ash, owners and operators of disposal facilities were required to verify that the ash did not qualify as a hazardous waste when analyzed for the Toxicity Characteristic (TC). The ash was to be periodically sampled and the sample results statistically analyzed. If the results of the statistical analyses of the ash samples exceeded the limits for TC, the material could be rendered nonhazardous on-site where it was generated, as necessary to meet the TC limits or taken to a hazardous waste treatment or disposal facility. Under the Interim Policy, if the ash safely met the testing criteria as nonhazardous, it could be disposed at a solid waste disposal facility that has a ground water monitoring system in place, but the ash was required to be kept physically isolated from other solid wastes.

Ohio's Interim Policy applied only to ash generated from municipal incinerator facilities where the incoming waste stream consisted solely of household waste and nonhazardous commercial and industrial waste. Following the development of Ohio's Interim Policy in 1988, additional guidance regarding the testing and disposal of ash from the incineration of solid waste came from U.S. EPA and the Courts. This guidance is discussed below. While much of Ohio's Interim Policy remained unaffected by that guidance, some changes and clarifications were needed in order to maintain consistency with federal policy. These changes and clarifications were primarily related to the sampling and analysis procedures that were prescribed by Ohio's Interim Policy.

In 1991, Ohio EPA promulgated new rules governing the permitting, operation, closure, and financial assurance of solid waste incinerator facilities (OAC Rules 3745-27-50 through -53). These rules became effective on May 31, 1991 and exist relatively unchanged today. The incinerator rules, as they are usually referred to, require applicants for a permit to install for a solid waste incinerator to prepare and submit ash management plans that, at a minimum, address the ash disposal requirements established in the Interim Policy and contained in the *1989 State Plan*. Additional provisions of OAC Section 3745-27-50(C) require discussion of ash removal, handling and storage practices at solid waste incineration facilities.

Since the adoption of Ohio's first solid waste regulations in1976, resource recovery facilities (including waste-to-energy facilities) had been exempted in OAC Rule 3745-27-03(N) from Ohio's solid waste regulations. This exemption status did not change with the adoption of the regulations governing solid waste incinerators. Thus, facilities such as those that were operated by the cities of Akron and Columbus were exempted from the solid waste incinerator regulations. Because resource recovery facilities were not regulated as solid waste facilities, there were no requirements for operators of resource recovery facilities to have approved ash management plans. The result was that it was not clear, in Ohio, whether or not ash from resource recovery facilities that burned solid waste was subject to the requirements in Ohio's Interim Policy.

On September 18, 1992, U.S. EPA Administrator William K. Reilly announced that municipal waste combustion ash would be exempted from regulation at the federal level under Section 3001 (i) of RCRA. This decision was effectively overturned on May 2, 1994, when the U.S. Supreme Court issued an opinion interpreting Section 3001(i). (*City of Chicago v. EDF*, No. 92-1639) The Court held that Section 3001(i) does not exempt ash generated at resource recovery facilities (i.e., waste-to-energy facilities) burning household wastes and nonhazardous commercial wastes from the hazardous waste requirements of RCRA Subtitle C. As of the effective date of the Court's decision (June 1, 1994), operators of such facilities must determine through sampling whether the ash generated is characterized as a hazardous waste. Ash that is determined, through sampling, to be characteristically hazardous must be managed in compliance with all applicable hazardous waste regulations. The decision further clarified that if the ash is not a hazardous waste according to the test results, it may continue to be disposed at a licensed solid waste landfill that meets U.S. EPA standards under Subtitle D of RCRA.

On May 20, 1994, U.S. EPA issued a draft guidance document titled *Sampling and Analysis of Municipal Refuse Incinerator Ash*. Through written correspondence dated May 27, 1994, Ohio EPA notified operators of Ohio's four municipal waste combustors that, because of the U.S.

Supreme Court's ruling, Ohio's Interim Policy had been replaced by U.S. EPA's *Draft Sampling and Analysis of Municipal Refuse Incineration Ash.* That correspondence conveyed the need to follow the sampling and analysis procedures in the federal draft guidance rather than in Ohio's Interim Policy and that Ohio's Interim Policy would be revised as part of the first revision to the State Plan. The ultimate effect of these actions was to eliminate the previous uncertainty over the regulatory status of ash from solid waste resource recovery facilities and to make ash from solid waste resource recovery facilities subject to the same testing requirements as ash from municipal incinerators.

This draft sampling protocol prescribed by U.S. EPA's sampling and analysis document is quite similar in principle to the requirements of Ohio's Interim Policy, with slightly different sampling frequencies. For the initial waste characterization, the combustion facility operator must take two eight-hour composite samples each day for one week's operation, for a total of fourteen 1000-gram samples. (An eight-hour composite sample means to take one grab sample from the designated sampling area each hour for eight hours, and combine them; Another eight-hour composite sample must be taken during another shift.) The sample analysis method to be used is U.S. EPA SW-846 TCLP (toxicity characteristic leaching procedure) method 1311, applying the Student's t-test from U.S. EPA SW-846 for statistical data evaluation. The TCLP test covers 40 different species of organics and metals. It is recommended that subsequent testing be conducted at least quarterly to determine the ash variability over time. Using the sample data from each sampling period, the operator must determine if the ash exhibits toxic characteristics. If the statistical analysis fails the limits for TC the ash is to be disposed as hazardous waste, unless rendered nonhazardous prior to the point of disposal.

Because of questions about whether fly ash and bottom ash from these facilities could be combined prior to sampling, U.S. EPA published in the Federal Register effective February 3, 1995, a *Determination of Point at which RCRA Subtitle C Jurisdiction begins for Municipal Waste Combustion Ash at Waste-to-Energy Facilities*. This point was determined to be the point at which the ash exits the combustion building following the combustion and air pollution control processes. While within the combustion building, ash handling is exempt from regulation under Subtitle C. Fly and bottom ash may be combined prior to sampling for hazardous waste characteristics, as long as the combining of the ash types takes place within the combustion building prior to either ash having been collected or deposited outside the building.

All four solid waste incinerator and resource recovery facilities operating in Ohio utilized U.S. EPA's sampling protocol from May, 1994, until operations ceased. During this time, no exceedences of the TCLP limits were reported for any of the facilities following U.S. EPA's sampling protocol.

The *1995 State Plan* mentioned that Ohio's Interim Policy would be revised to remove the inconsistencies between the Interim Policy and U.S. EPA's policy and that these revisions would be incorporated into rule during the 1995-96 time frame. While the Interim Policy itself has not been revised, Ohio EPA, in 1996, in conjunction with the promulgation of new rules governing scrap tire facilities, removed the exemption for resource recovery facilities from OAC Rule 3745-27-03(N). This change brought oversight of resource recovery facilities that burn mixed municipal solid waste under the rules governing the permitting, operation, financial assurance, and closure of solid waste incinerators and made Ohio's program consistent with federal policy.

In 1997, DSIWM conducted a review of the rules governing the permitting, operation, and closure of MSW incineration facilities in accordance with H.B. 473, and, in1998, the rules were readopted without any changes.

Background Information

At the time the *1995 State Plan* was adopted, Ohio had two operating, publically-available incinerators that were accepting mixed municipal solid waste. These facilities were the Montgomery County North Incinerator (600 tons per day) and the Montgomery County South Incinerator (800 tons per day). The Montgomery County South Incinerator closed in December of 1996, and the Montgomery County North Incinerator closed in May of 1997. Thus, by May of 1997, all of the previously operating, large, publicly-owned municipal solid waste incinerator and waste-to-energy facilities in Ohio had ceased operations. While there is currently one active incinerator, BFI Warren Medical Waste located in Trumbull County, that is licensed to accept mixed municipal solid waste, that facility primary burns infectious waste. The small amounts of solid waste burned at the facility generally consist of hospital records and other office waste.

In 1995, approximately 2% (369,479 tons) of the 18,805,828 tons of solid waste disposed in solid waste disposal facilities in Ohio were delivered to solid waste incinerators. From the 369,479 tons of solid waste delivered to incinerators, approximately, 192,744 tons of ash were delivered to solid waste disposal facilities. In 1996, the number of tons of solid waste delivered to solid waste incinerators decreased to 1.1% (238,897 tons) of all waste disposed in solid waste disposal facilities. In 1997, these figure decreased further to 0.2% (42,937 tons) of all solid waste disposed in solid waste disposal facilities. In 1996 and 1997, 134,793 tons of ash and 28,082 tons of ash, respectively, were disposed in solid waste disposal facilities.

While there aren't any operating solid waste incinerators or waste-to-energy facilities that burn mixed municipal solid waste, there are a number of small incinerators operated by schools and similar institutions that burn solid waste generated on the premises. Because the tonnage of ash produced by these individual incinerators is not monitored, it is not known how much ash is being disposed in Ohio's landfills. However, it is safe to assume that the overall tonnage is relatively insignificant. It is also possible that Ohio imports municipal solid waste incinerator ash from other states that still utilize incineration as a waste management alternative. As with ash produced by institutionally-operated incinerators, there aren't any available estimates regarding how much, if any, out-of-state ash is being disposed in Ohio's solid waste landfill facilities.

Closure of Ohio's Solid Waste Incinerators and Waste-to-energy Facilities

As was mentioned above, by May of 1997 all of the existing, large, publicly-owned municipal solid waste incinerators in Ohio had ceased operations. There are many factors that caused these closures to occur. Two of these factors are the inability of local communities to utilize flow control due to its unconstitutionality and the new air standards. While both of these factors are discussed individually in the text that follows, the closure of Ohio's solid waste incinerators was the result of these factors combined.

Flow Control

At the time H.B. 592 was adopted into law in 1988, the legislation intended that all SWMDs would have the ability to designate which disposal facilities were to receive solid waste generated within that SWMD. In this manner, not only would the SWMD be able to easily trace the flow of its solid waste, but the SWMD would also be able to ensure that a sufficient quantity of solid waste was delivered to publicly financed disposal facilities to keep those facilities financially solvent. These practices, coined "flow control" were subsequently deemed unconstitutional by a U.S. Supreme Court decision which overturned a local flow control ordinance in New York (*C & A Carbone, Inc. v. Town of Clarkstown, New York*, No. 92-1402, May 16, 1994.). It is highly likely that this decision adversely affected the ability of owners and operators of MSW incineration and resource recovery facilities to compete economically with owners and operators of landfills and other solid waste management alternatives. The decision may also have affected the ability of owners and operators of these facilities to attract sufficient volumes of waste to ensure repayment of facility financing.

New Air Standards

There are both state and federal regulations that apply to municipal waste combustion. U.S. EPA regulates air emissions from combustion facilities through its "New Source Performance Standards" (NSPS) and "Prevention of Significant Deterioration" (PSD) permit process. Whenever a new facility is proposed, plant operators must prepare a detailed calculation of air emissions to determine whether compliance will be achieved with federal and state rules. U.S. EPA also requires such facilities to install best available control technology (BACT) on large facilities.

Ohio regulates particulate incinerator stack emissions through the Particulate Matter Standards that are contained in OAC Chapter 3745-17. These regulations address all new and existing facilities by: setting standards that regulate particulate emissions for stationary sources; controlling fugitive dust emissions from various sources; and setting specific restrictions on particulate emissions and odors from incinerators. In addition, all new facilities must install Best Available Technology to reduce all pollutants in accordance with Ohio EPA Permit-to-Install rules.

When materials are burned, gases and other by-products are formed and must be controlled to mitigate air pollution. Modern resource recovery plants are designed to solve this problem by achieving extremely high temperatures (1800 to 2200 degrees Fahrenheit) to minimize the formation of complex chemical compounds such as dioxin, and by using pollution control devices. BACT requirements, such as scrubbers, electrostatic precipitators, and fabric filters, can reduce emissions by up to 99 percent.

An efficient pollution control system generally transfers metal oxides from the flue gas to the fly ash or scrubber sludge. This is why fly ash tends to contain metals.

The Clean Air Act Amendments of 1990 require U.S. EPA to promulgate additional requirements for the control of emissions from existing and new municipal waste combustors. The standards for units of greater than 35 metric tons per day capacity were promulgated in final form on December 19, 1995, but were the subject of series of challenges and court-ordered amendments that resulted in a redefinition of size categories and separate standards for "small" units of 35 to 250 tons per day capacity and "large" units above 250 tons per day capacity. Standards for large units became effective in 1997 and standards for small units were proposed in 1999. The state of Ohio has the option of writing their own rules for existing units, which may equal or exceed the stringency of the federal guidelines, but has chosen not to do so, because of the closure of all potentially affected units. These closures appear to result from poor economics of operation in the absence of flow control, and the necessity of upgrading control equipment to meet new emission limits. The U.S. EPA also intends to issue standards for municipal waste combustors smaller than 35 metric tons per day. This category falls under the "Other Small Waste Incinerator" or

"OSWI" classification and is not scheduled for issuance of final rules before November 15, 2005.

Implementation of the 1990 federal Clean Air Act Amendments has resulted in tighter controls over mercury and dioxin emissions from MSW incinerators and resource recovery facilities, requiring extensive upgrades at many facilities. U.S. EPA has also conducted a multi-year Dioxin Reassessment to evaluate dioxin tolerance levels. Based on the results of this report and in response to citizen concerns, U.S. EPA may place additional requirements on these facilities in an effort to reduce dioxin emissions.

Uses for Mixed Municipal Solid Waste Combustion Ash

SWAC encourages methods to reuse nonhazardous ash that are demonstrated by scientifically valid research to be beneficial and environmentally sound. If the incinerator ash is not hazardous based on the TCLP test, it can be disposed in a solid waste facility meeting RCRA Subtitle D standards, or possibly reused. Many reuse technologies remain experimental and will require additional testing to determine their environmental suitability.

Ash usually must undergo some form of treatment before it can be reused. Solidification and chemical stabilization are the most widely used forms of treatment. The processes include mixing ash with lime or portland cement to form less soluble metals. A number of companies currently offer stabilization technologies for municipal combustion ash. Once stabilized, the ash can be used for construction materials or road foundation, provided it meets construction specifications.

Interim Alternative Waste Management Program

IAWMP was issued as a management directive on July 1, 1997 from the chiefs of DSIWM and DSW to all staff in those divisions. The ultimate purpose of IAWMP is to expedite the approval of alternate uses of waste materials. The purpose of the directive was to clarify which division, DSIWM or DSW, is to review a particular type of alternative waste management proposal, under what authority to review that proposal, and what type of response/approval/authorization is appropriate for the proposal under consideration. Through IAWMP, Ohio EPA utilizes current statutory and regulatory authorities and, as result, the directive was not intended to alter, in any significant way, past practices of DSW and the policies it utilizes under its existing "beneficial use" program. Ohio EPA does, however, employ existing regulatory authorities in OAC Chapter 3734-27 which, prior to IAWMP, had never before been utilized. Requests to manage solid waste incinerator ash in ways other than disposal in landfill facilities could be considered and, if acceptable, approved using IAWMP. Should MSW ash management become an important issue in the future, then, it is possible that alternative uses of ash could be approved through this program.

Controlling the Content of the Ash Residue from Mixed Municipal Solid Waste Combustion Facilities

The content of the ash residue from mixed municipal solid waste combustion depends on a number of factors, including the types of materials burned, the air emissions requirements, the efficiency of the combustion process, and the competency of the operator. Eliminating certain materials from the combustion process is one means of affecting the quality of the resulting ash. This is most easily accomplished through source separation and waste diversion programs. Ensuring that solid waste incinerators are operated by competent and knowledgeable staff can be accomplished through an operator training and certification program.

Role of Source Separation

Many materials destined for combustion at resource recovery facilities or for incineration can be separated from other wastes at the point of generation. Materials containing heavy metals and other potentially harmful components should not be burned. Eliminating such materials from the combustion process can have a positive effect on the quality of the resulting ash requiring disposal. To accomplish this, SWAC recommends that state and local solid waste management programs encourage citizens and businesses to adopt aggressive pollution prevention programs to reduce the generation of not only wastes containing potentially harmful substances, but also all wastes. SWAC further recommends that wastes that cannot be eliminated through pollution prevention strategies be recycled whenever possible and wherever recycling programs are feasible.

Role of Diverting Wastes from Mixed Municipal Combustion Facilities

Certain wastes, such as lead-acid batteries, contribute hazardous constituents (especially toxic organics and heavy metals) to emissions and ash. Chapters IV and VIII provide strategies for handling these materials. Owners and operators of solid waste incinerators must implement measures to divert wastes with hazardous constituents from the waste stream. SWAC recommends diverting these materials and recycling them whenever feasible.

OAC Section 3745-27-52(T) specifies that solid waste incinerator facilities shall not accept the following:

1. Hazardous wastes;
2. Asbestos or asbestos-containing waste material that is subject to the provisions of NESHAP, 40 CFR Part 61, Subpart M;
3. Infectious wastes...that have not been treated to render them non-infectious, unless the facility is an infectious waste treatment fa-

cility operated in accordance with state infectious waste rules, or unless the facility holds a solid waste disposal license with a notation that the facility treats infectious wastes;

4. Explosive materials;
5. Lead-Acid (automotive) batteries;
6. Yard waste after December 1, 1993, except logs and brush;
7. Whole waste tires after January 1, 1993, unless the facility is otherwise authorized to incinerate whole waste tires; and
8. Shredded waste tires after January 1, 1995, unless the facility is otherwise authorized to incinerate shredded waste tires.

In addition, SWAC recommends that all SWMDs that utilize or will utilize incineration or waste-to-energy facilities in the future, to the greatest extent practical, recycle certain materials. These materials include glass and other materials not usable as fuels, materials which may have greater value if recycled, or materials which may interfere with efficient incinerator operation if not removed.

Separation and recycling may be met through community-based programs such as curbside, drop-off or other programs, or by a program initiated at a transfer station, or at the incinerator or waste-to-energy facility itself.

Because Ohio EPA does not have authority to regulate generators or transporters of solid waste, some of these materials such as yard waste and lead acid batteries cannot be effectively banned if mixed with other solid wastes. The *1995 State Plan* indicated that in SFY 1996, the incinerator rules would be revised and that the language banning solid waste incinerator facilities from accepting yard waste and lead-acid batteries would be clarified to apply to source-separated materials. Modifications were made to the yard-waste portion of these restrictions, clarifying that the restriction applies only to source-separated yard waste. These modifications became effective January 1, 1995. The lead-acid battery restriction remains in place, unmodified from its original version. Thus, the lead-acid battery restriction is not limited to source-separated batteries, but applies to mixed loads as well.

The reason the lead-acid battery restriction was not altered is that studies indicated that the majority of used lead-acid batteries in the State were already being recycled and few were being delivered to disposal facilities. In the event that Ohio EPA observes a shift from recycling to disposal, then development of a clarified restriction may be warranted at that time.

Role of Operator Certification

Operator training and certification programs can assist in ensuring safe and effective operation of incinerators and pollution control equipment, as well as help operators determine which wastes should be burned. Ohio EPA is required by law to develop an operator certification and training program that addresses all operators of solid waste facilities, all infectious waste treatment facilities, and all health department personnel who are responsible for enforcing the solid and infectious waste laws and rules (see ORC Section 3734.02(L) for details.). In 1992, Ohio EPA proposed rules necessary to create this program. Opposition to these rules was significant, primarily from health departments who lacked adequate funding to complete the proposed training and certification requirements. To date, these rules have not been finalized.

The *1995 State Plan* projected that the operator certification and training program would be implemented during the 1996-97 biennium, which began July 1, 1995. This did not happen. A report published in 1998 which documents a review that was conducted of the *1995 State Plan* indicated that an Ohio EPA/Ohio Environmental Health Association Workgroup was working on developing a recommendation for this issue. In addition, the report indicated that legislation to address health department funding had been introduced into the Ohio General Assembly. The report further stated that pending the outcome of this issue, work on the certification program was scheduled to continue during the 1998-99 biennium. Since publication of the 1998 report, the legislation regarding health department funding was tabled and meetings of the Ohio EPA/Environmental Health Association Workgroup have ended. At this point in time, Ohio EPA believes it is unlikely that the rules necessary to create the training and certification program can be promulgated until the health department funding issue is resolved.

The Future of Ash Management in Ohio

Given the absence of large, publicly-owned municipal solid waste incinerators in Ohio, the management of municipal solid waste combustion ash is not a pressing issue for Ohio at this point in time. Furthermore, Ohio EPA does not anticipate that incineration will become a significant solid waste management option in Ohio in the foreseeable future due to the issues surrounding flow control and the expense of upgrading existing incineration facilities to meet current emission standards. Consequently, an updated analysis of alternative methods of disposal of MSW incineration ash is not warranted at this time.

A STATEWIDE STRATEGY FOR MANAGING SCRAP TIRES

7
CHAPTER

Section 3734.50(F) of the Ohio Revised Code requires the State Plan to "establish a statewide strategy for managing scrap tires, which shall include identification of locations within the state that qualify as scrap tire facilities and accumulations. In developing the strategy, the director [of Ohio EPA] shall examine the feasibility of recycling or recovering materials or energy from scrap tires and landfilling scrap tires in abandoned coal strip mines as well as other methods for managing scrap tires."

Why are Scrap Tires a Special Problem?

Scrap tires pose a substantial management challenge due both to the large number of tires taken off the road annually and to the properties built into a tire to ensure its safety and durability in use. Each year approximately 12 million passenger tire equivalents (PTEs[1]) enter the waste stream in Ohio. The same design factors that make tires today wear longer than tires a generation ago also make the tires more difficult to retread or recycle. Until 1996, the vast majority of scrap tires were landfilled (using up valuable MSW landfill space), stockpiled, or illegally dumped, thereby creating potentially serious health and environmental threats. The overall objective in the management strategy for scrap tires is to reduce the number of tires in uncontrolled stockpiles or illegal dumps. These sites are often infested with mosquitoes, with the potential for spreading dangerous mosquito-borne diseases. Large tire dumps can also lead to fires with major releases of air pollution and hazardous organic chemicals into surface and ground water.

Public Health Threats and Environmental Hazards of Tire Dumps and Stockpiles

Mosquitoes

Mosquitoes, as well as other vectors, find scrap tires an ideal breeding habitat as the stagnant water in scrap tires provides an ideal breeding habitat. Biting mosquitoes near tire piles can become a serious nuisance. According to the Vector-Borne Disease Unit of the Ohio Department of Health, abandoned or improperly stored tires constitute optimal habitat for a least four types of disease carrying mosquitoes in Ohio: Aedes triseratus (La Crosse encephalitis, dog heartworm); Culex pipens (St. Louis encephalitis); Aedes albopictus (Dengue, La Crosse encephalitis); and Aedes aegypti (Dengue, Yellow Fever). Between 1960 and 1991, there were 744 incidences of La Crosse encephalitis and 445 incidences of St. Louis encephalitis reported in Ohio.

A new disease spread by mosquitoes may become a threat in Ohio. This disease, the West Nile Virus, is expected to reach Ohio in 2001. An interagency task force has been convened to develop a statewide response to the West Nile Virus. Representatives from the Ohio Department of Agriculture (ODA), Ohio EPA, Ohio Department of Health (ODH), ODNR, Ohio State University, the United States Department of Agriculture (USDA), and local health departments serve on this task force. The task force is further broken down into subcommittees that are focused on developing recommendations for specific facets of the overall issue.

Commerce in scrap tires as used tires and retreadable casings is believed to be a vehicle for the intra-state, inter-state and even international spread of mosquito eggs and larvae and may result in the further spread of disease unless environmental controls for vectors are implemented.

Fire

Stockpiled tires represent vast collections of highly combustible materials. Once ignited, tire fires can be extremely hard to extinguish. This is due in large part to the geometric design of a tire which encapsulates a rich oxygen supply, thus prolonging the fire.

As the tires burn, large quantities of oil are released, and the heavy smoke and noxious emissions pose a serious hazard to humans and the environment. Once extinguished, unburned oil that is not recovered threatens ground water, surface water, and soil.

Tire fires require a tremendous amount of water to limit the spread of the fire and eventually bring the fire under control. Often fire equip-

[1]A PTE is an average passenger car tire which weighs 20 pounds. Rather than using the number of actual tires as the measure, Ohio EPA uses PTE as the measurement standard. The reason is that tires from different types of vehicles vary widely in size and weight. A tire from a tractor or semi-trailer weighs significantly more than a tire from an automobile and costs far more to process or dispose. Thus, the number of tires in an open dump is not as informative as the weight of tires for purposes of estimating abatement costs.

ment has to be used continuously for such a long period of time at a single tire fire that years of life expectancy for the equipment is consumed in a single day. As a result, a fire department may have to replace a pumper truck years before it was planned in the budget. These unexpected costs can be crippling to a local fire department. Also, a tire fire can rapidly exceed the capabilities of a single fire department. In Ohio's case, one tire fire required the assistance from 21 additional fire departments. In the two largest scrap tire fires in Ohio, U.S. EPA was called in with their emergency response contractors to bury tire fires that were too large to be controlled with water or foam.

The runoff from a tire fire can destroy aquatic life in streams near the site. Pyrolotic oil is highly oxygen deficient and can strip all of the oxygen from any water it comes into contact with. The pyrolytic oil and other chemicals in the fire fighting runoff need to be contained as quickly as possible to limit impacts to surface and ground water.

There have been several significant tire pile fires in Ohio in the past several years. The largest tire fire in the state occurred at a site in Wyandot County and involved five to seven million tires. This fire cost over two million dollars in immediate fire response costs during the first few weeks and over $3.5 million in water treatment costs during the following two years. Expenses of over $0.5 million per year for water treatment will continue until the fire residuals can be removed to a proper disposal site. Removal of the fire residuals is estimated to cost $2.5 million to $7.5 million, depending on the amount of contaminated soil that must be removed.

Operational Problems Caused by Scrap Tires in Municipal Solid Waste Landfills

Besides taking up valuable airspace, scrap tires pose an operational problem for sanitary landfills due to their design. The donut shape of the tire enables methane gas to collect inside. This may cause the tire to migrate to the surface and disturb the cap system of the sanitary landfill facility, allowing more precipitation and surface water runoff to penetrate into the landfill and contribute to the generation of leachate. Whole scrap tires also do not compact well because of their shape.

Estimate of Number of Scrap Tires Dumped in Ohio

From 1987 to the early 1990s, Ohio EPA used 100 million scrap tires as the estimate of the number of tires that had been dumped or were stockpiled in Ohio. In the mid 1990s, using new guidelines to estimate the number of scrap tires in open dumps and other stockpiles, Ohio EPA and the local health departments produced estimates that are believed to be accurate to within plus or minus 25 percent. Thus, the revised estimate of the number of scrap tires dumped and stockpiled in Ohio is 31 million PTEs. With an accuracy of plus or minus 25 percent, this number could be as low as 23 million PTEs or as high as 38 million PTEs. Several adjustments to this number may be necessary. As previously unidentified scrap tire piles are located, the number will need to be adjusted upwards. Over 95 percent of the owners of existing stockpiles failed to obtain a license to operate the facility during the first 5 years of the scrap tire regulatory program and will be the subject of enforcement cases as resources become available. Some voluntary, private cleanup of smaller sites continue as do cleanups funded by local governments. The most likely scenario, however, is that the State of Ohio will have to cleanup approximately 30 to 40 million scrap tires with one-half of this total at a single site in Wyandot County.

Scrap Tire Management and the *1989 State Plan*

At the time the *1989 State Plan* was adopted, Ohio's solid waste law did not contain specific provisions to address the management of scrap tires. While illegal dumping of scrap tires could be addressed through the general prohibition on the open dumping of solid waste, controlling the illegal management of scrap tires was a daunting task. This shortcoming in Ohio's law combined with the general belief that there were better management options for scrap tires than landfilling prompted Ohio's legislature to include the proper management of scrap tires as a goal of H.B. 592. As a result, H.B. 592 required the State Plan to establish a statewide strategy for the management of scrap tires.

The *1989 State Plan* contained six primary strategies for managing scrap tires in Ohio. These strategies were as follows:

- Require disposal of waste tires in monocell/monofill facilities
- Regulate waste tire storage sites
- Investigate disposal of waste tires in abandoned coal strip mines
- Develop waste tire markets
- Abate and cleanup waste tire stockpiles and open dumps
- Investigate energy recovery from waste tires

Furthermore, the *1989 State Plan* recommended that whole waste tires be banned from disposal in solid waste landfill facilities beginning on January 1, 1993 and that shredded waste tires be banned from co-disposal with municipal solid waste in landfill facilities beginning on January 1, 1995. The bans on whole and shredded scrap tires were not implemented in accordance with this schedule because, at the time, Ohio's existing regulatory authority did not extend to transporters of scrap tires, and limited alternative capacity existed for managing scrap tires.

S.B. 165, which became effective October 29, 1993, gave Ohio EPA the authority necessary to implement the strategies contained in the *1989 State Plan* and to create the comprehensive scrap tire regulatory program

under which the State currently operates. This regulatory program, as directed by law, contains provisions governing scrap tire collection, storage, transportation, recovery, beneficial use, and disposal facilities, which include monofills and monocells. This new regulatory program was the first step in ensuring that scrap tire management facilities are located, maintained, operated, and closed in a manner that does not create a nuisance, a threat to public health and safety, or a fire hazard. The law also established a fifty-cent per tire fee on the wholesale sale of new tires. Revenues from this fee are used to enforce the scrap tire laws and regulations, to fund research into alternative uses for scrap tires, to fund market development projects, and to provide financial resources to remediate abandoned tire dump sites. (For a more in-depth explanation of the provisions of S.B. 165, see Appendix B.)

S.B. 165 required the Director of Ohio EPA to adopt rules governing the management of scrap tires pursuant to the new law. At the time, it was forecasted that these rules would take effect in 1995. As is discussed in the next section of this chapter, the rules didn't actually take effect until March, 1996.

Scrap Tire Management and the *1995 State Plan*

At the time the *1995 State Plan* was adopted, the scrap tire rules had not yet been promulgated. However, in anticipation of the adoption of the scrap tire rules, the *1995 State Plan* contained a detailed discussion of the requirements being developed through on-going rulemaking efforts and projected that the final rules would be adopted sometime in 1995. While the rules were not actually adopted until March, 1996, the *1995 State Plan* contained, with a few exceptions, a fairly accurate discussion of the requirements that are contained in the final rule.

Ohio's scrap tire rules, primarily encompassed by OAC Rules 3745-27-54 through 79, became effective on March 1, 1996. With the implementation of these regulations, Ohio was enabled to meet many of the objectives for scrap tire management that were originally established in the *1989 State Plan*.

Ohio's scrap tire regulatory program applies to the transportation, collection, storage, processing, beneficial use, and disposal of scrap tires. The regulations, with a few limited exemptions, mandate that only registered scrap tire transporters can deliver scrap tires to specific types of destinations. A shipping paper system was established, and everyone involved in the shipment of scrap tires is required to retain copies of the shipping papers for three years. Each transporter and licensed facility is required to submit annual reports to Ohio EPA. These reports are intended to provide a comprehensive picture of scrap tire movement within Ohio. The system is designed to reduce illegal dumping by allowing for the identification of those responsible for scrap tires that never reach a proper recycling or disposal destination.

The scrap tire rules apply to anyone involved in managing scrap tires including generators, transporters, owners and operators of scrap tire collection, storage, recovery, and disposal (monofills and monocells) facilities, and individuals performing projects to beneficially use scrap tires. Each of these different "classes" of regulated entities is discussed in more detail in Appendix C.

One of the provisions of the new law allows owners and operators of existing stockpiles of scrap tires to remove ("draw-down") those stockpiles over a period of time not to exceed five years, until the scrap tire storage or recovery facility is fully in compliance with the new rules. For each year of the draw-down period, 20 percent of the stockpile must be removed or restacked in compliance with the new rules, and restacked areas may not exceed the maximum size allowed for new facilities. Failure of a facility owner or operator to remove the tires according to the terms of an approved draw-down plan for the facility will result in the loss of the annual operating license and the ability to do business receiving scrap tires. However, only a handfull of owners of small stockpiles took advantage of this provision. Rarely do the owners of the property where tires are stockpiled have the resources to remove the tires to a recycling or disposal facility either immediately or over a five-year period.

Recycling, Reuse, and Energy Recovery of Scrap Tires

Bans on the disposal of waste materials cannot be expected to be effective without available alternative management options. As was mentioned earlier, S.B. 165 provided a number of incentives to encourage not only the recycling of scrap tires but also the development of the infrastructure needed to provide recycling options. State agencies, such as the Ohio Department of Transportation (ODOT) and ODNR have begun using scrap tires in state-funded projects. ODOT has begun using crumb rubber in road construction and maintenance projects. ODNR endorsed a project using shredded scrap tires to reclaim abandoned mine lands. Manufacturers are incorporating crumb rubber from scrap tires into a wide variety of products such as sealants for roads and roofs, anti-fatigue matting, truck bed liners, and pour-in-place playground mats. In addition, several of Ohio's SWMDs have implemented programs and funded projects to further the development of markets for scrap tires.

Scrap Tires in Transportation Applications

ODOT makes direct purchases of ground rubber for use as a crack seal enhancer. In 1999, 27.3 tons of ground rubber were purchased for ODOT use, significantly more than was used on construction contracts. ODOT continues its study of rubberized asphalt roads constructed in

Ohio during the late 1980s. Recycled rubber is also currently used as the ballast or collar for a multitude of construction barrels and cones.

Scrap Tire Reuse/Beneficial Use

As defined in S.B. 165, the "beneficial use" of a scrap tire results in a commodity for sale or exchange, or use in any other manner authorized by the Director of Ohio EPA. The substitution of scrap tires for another material must have a comparable engineering value at least equal to the material the scrap tires are replacing and must not be solely for purposes of disposal. Anyone wanting to beneficially use scrap tires must comply with certain statutory and regulatory requirements. However, using pieces of scrap tires or crumb rubber to manufacture or assemble commercial products is not regulated under Ohio's scrap tire program.

Listed below are the types of beneficial uses involving scrap tires that have been approved by Ohio EPA:

- Use of tire chips in leachate collection systems and as construction material in landfill facilities
- Use of tire chips in the protective layers over liner systems in landfill facilities
- Use of modified whole tires as weights to hold down tarps used as alternative daily cover at landfill facilities
- Use of tire chips as backfill around buildings
- Use in misc. construction projects
  - whole tires used as crash barriers at racetracks
  - whole tires used as rifle range backstop
  - earth moving tires filled with dirt used as a fence
  - whole tires used for house construction
- Use of tire shreds as a based un der public roads, roads within solid waste landfill facilities, and under parking lots
- Use of whole tires with one sidewall removed as a zero earth pressure wall

Scrap Tire Energy Recovery

The *1995 State Plan* sought to encourage the use of scrap tires for energy recovery. Therefore, certain types of facilities were proposed to be excluded from being defined as "scrap tire recovery facilities." Solid waste incinerators and energy recovery facilities that accept primarily mixed municipal solid waste were already proposed to be excluded from the definition of "scrap tire recovery facility" and, therefore, would not be subject to the registration or permit requirements. The *1995 State Plan* recommended expanding the exclusions in the definition of "solid waste recovery facility" thereby increasing the potential for energy recovery by allowing cement kilns, coal-fired electric utility boilers, and coal-fired industrial boilers to use scrap tires as a fuel supplement (i.e. tire-derived fuel (TDF)). This exclusion was added for the final rule. Although excluded facilities are not required to register as recovery facilities, the rules covering the general storage of scrap tires still apply. Currently, only one industrial boiler occasionally uses tire-derived fuel to supplement its fuel mix. No electric utilities or cement kilns in Ohio are currently using or have used scrap tires as a fuel supplement. Most facilities would incur considerable cost to retrofit and upgrade equipment in order to burn tire-derived fuel. This is a disincentive to the use of scrap tires as a fuel supplement.

Even though using scrap tires as fuel is not widespread in Ohio, other states are seeing an increased interest for using scrap tires for energy recovery. Currently, at least one scrap tire processor in Ohio is processing scrap tires to be used as TDF for energy production in West Virginia and Kentucky. According to a representative from one of Ohio's largest scrap tire processors, there are three main factors that affect an energy providers ability to utilize scrap tires as a fuel source. These factors are as follows:

1. The state's regulatory structure (i.e. emission control requirements)
2. The type of furnace and feed system that the energy provider utilizes
3. The proximity of the energy provider to the scrap tire processor. The cost to transport the TDF from the processor to the user can be the determining factor in the economic viability of using scrap tires for energy recovery.

Of the scrap tires accepted by one processor in Ohio as a result of current generation, approximately 85 percent are being processed for use as TDF and 15 percent are processed for use in civil engineering applications (such as backfill around buildings and drainage material in landfill facilities). If scrap tires from abatement projects are included in the mix, approximately 70 percent of the tires processed are used in civil engineering applications and 30 percent are processed for use as TDF.

As a result of the increasing costs associated with energy usage, interest in using scrap tires as an energy source may continue to grow.

Disposal Within Abandoned Coal Strip Mines

The *1989 State Plan* called for an evaluation of the feasibility of landfilling scrap tires in abandoned coal strip mines. Ohio's coal resources are located in 34 counties and extend over nearly 12,000 square miles. Prior to 1948, when the Strip Coal Mining Act became effective, large land areas were stripped of coal and then abandoned. Some of the most serious consequences posed by abandoned coal strip mines include acid mine drainage, landslides, floods, and contamination from sediment which can have severe effects on rivers, drainage pathways, and bottomlands.

Utilizing abandoned strip mine areas for scrap tire monofills may prove beneficial in two ways. First, previously abandoned coal strip mines would be reclaimed. Second, vast stockpiles of discarded tires would be "stored" and possibly mined later if the demand for tire material ever exceeds the current generation rate of scrap tires. Scrap tire disposal sites in former strip mine areas would be subject to Ohio EPA permit requirements and regulations for scrap tire monofills, in addition to regular inspections by the local health department and an annual operating license.

The *1995 State Plan* indicated that a pilot project was being developed to demonstrate the feasibility of monofilling scrap tires in a former coal strip mine in Stark County. This project, known as the Pilot Waste Tire Project, occurred as a cooperative effort between Ohio EPA and ODNR, Division of Mines and Reclamation (now known as the Division of Mineral Resource Management). On March 20, 1995, Ohio EPA issued Director's Final Findings and Orders approving this project to C & E Coal, Inc. (C & E) as the lessee of the property and operator of the monofill facility. The project was originally approved for a three year period to begin on the first day tires were accepted at the site and to expire on the third anniversary of that date. C & E began accepting tires at the project site on March 19, 1997 and by September, 1999 had disposed of or beneficially used 8,650,000 PTEs. As of September, 1999, C & E had used 113,224 cubic yards of approved air space for the disposal of scrap tires, leaving approximately 172,408 cubic yards of air space available for scrap tire placement.

The original approval for the project was to expire on March 19, 2000 at which time C & E was expected to have reclaimed the project site. However, because C & E beneficially used more scrap tires than originally anticipated and, therefore, did not fill the available air space as quickly as anticipated, the site was not completely reclaimed. As a result, C & E applied for an extension to the project deadline, and Ohio EPA approved the extension request on January 11, 2000. This extension gives C & E an additional three years, to expire on January 11, 2003, within which to complete the project.

On February 2, 2001, C & E Coal, Inc. received a permit to install a scrap tire monofill on the same property as the previously approved Pilot Waste Tire Project. This facility, called the C & E Scrap Tire Monofill, consists of 15.7 acres of scrap tire placement with a total capacity of 992,785 cubic yards. The permit authorizes C & E to accept up to 425 tons of processed scrap tires per day. The anticipated life of the facility at the maximum acceptance rate is 3.9 years.

Research and Development

S.B. 165 earmarked $150,000 per year of the money collected through the scrap tire fee to be used for research and development into reusing crumb rubber from scrap tires in a wider variety of products. This research and development was conducted by the Institute of Polymer Science at the University of Akron (Institute). During the period of 1994 to 1999, the Institute conducted two multi-year research projects regarding the reuse of rubber from scrap tires. Through one project, the "Ultrasonic Devulcanization Technology for Scrap Tire Recycling" the Institute researched the use of ultrasonic vibrations in the presence of pressure and heat to cause devulcanization to produce crumb rubber. The other study, "Ground Scrap Tire Rubber as a Compounding Additive," was an attempt to promote the bonding of vulcanized crumb rubber to other vulcanized crumb rubber or virgin rubber.

The Institute prepared annual progress reports describing the research that was carried out during the year and submitted those progress reports to Ohio EPA. The Institute also disseminated findings to the rubber recycling industry. Ultimately, the Institute published a series of papers summarizing the research and detailing their findings. In 1999, as was originally intended by S.B. 165, the funding previously earmarked for the Institute ended.

Financial Assistance For Scrap Tire Recycling

S.B. 165 stipulated that $1.0 million per year of the revenues raised by the scrap tire fee was to be used to fund scrap tire market development projects. Under the terms of H.B. 165, this financial assistance was administered via the Ohio Department of Development (ODOD).

During state fiscal years 1994 through March 2000, ODOD received approximately $8.7 million from the scrap tire fee. ODOD's dispensation of loans and grants began in late 1995. By March 2000, ODOD had dispensed approximately $7.0 million in loans and grants and encumbered another $1.3 million in soon-to-be awarded grants and loans. These grants and loans went to projects that ranged from running tracks at high schools, civil engineering projects, new business development, and basic research into devulcanization or tire rubber. A listing of all of the grants and loans that have been awarded to date is available in Appendix D.

Changes to the Scrap Tire Program Since 1996

The Scrap Tire Fee

The fifty-cents-per-tire fee on the wholesale sale of tires was originally scheduled to sunset in 2001. However, the General Assembly extended the effective life of the fee through June 2006 via the budget bill passed in 1999 for fiscal years 2000 and 2001. With the passage of H.B. 95 (the budget bill for state fiscal years 2002 and 2003) which became effective on July 1, 2001, Ohio's General Assembly approved an increase in the amount of the per-tire fee from $0.50 per tire to $1.00 per tire. This increase is intended to expedite state funded tire abatement and cleanup

projects and was primarily focused on scrap tire removal activities at the Kirby Tire Recycling, Inc. dump site (See the text box on page VII-18 of this chapter for a discussion of abatement activities at the Kirby Tire Recycling, Inc. dump).

Transfer of Authority for Administering Grants and Loans from ODOD to ODNR, DRLP

Ohio's General Assembly, through H.B. 95 (the budget bill for state fiscal years 2002 and 2003) shifted the responsibility for administering the portion of the scrap tire management fund allocated to grants and loans from ODOD to the ODNR, Division of Recycling and Litter Prevention. This shift became effective on July 1, 2001. Neither the transfer of authority nor H.B. 95 affected the amount of money available for grants and loans on a yearly basis.

Publication of Standard Practice for Use of Scrap Tires in Civil Engineering Applications, American Society for Testing and Materials (ASTM) D 6270-98

The publication of this ASTM standard established some of the first industry wide definitions of tire chips for civil engineering applications. The standard also establishes guidelines for the civil engineering uses of tire shreds which allow for an expansion in Ohio's approved-by-rule beneficial uses of tire derived chip. The design guidelines to minimize internal heating of tire shred fills first recommended by an Ad Hoc Civil Engineering Committee of the Scrap Tire Management Council in 1997 are now published as design standards in ASTM D 6270-98. The internal heating of tire shred fills remains a concern for Ohio's scrap tire monofill and monocell operators. This concern is being addressed by voluntary daily visual monitoring of fills for evidence of heating, by insuring that weekly cover is properly applied to the entire working face including the sides of the current lift of tire shreds, and by restricting the height of the lift to less than one meter. Revisions to the scrap tire monofill and monocell operating rules are being proposed to incorporate information from this ASTM Standard.

Lessons Learned from the Kirby Scrap Tire Fire

Enforcement of the scrap tire storage standards is vital to prevent future environmental disasters such as occurred at the Kirby site in Wyandot County in August 1999. Piles of whole tires with a basal area larger than 2,500 square feet and taller than 14 feet exceed the ability of normal fire fighting techniques to bring the fire under control and eventually extinguish the fire. The piles involved in the Kirby fire ranged in size from 36,000 square feet to 135,000 square feet with heights over 40 feet. The combined efforts of 22 fire departments aided by favorable weather conditions were able to contain the fire until USEPA's emergency response contractors could smother the fire with layers of sand, soil, and clay. Runoff from the initial fire fighting effort and the pyrolytic oil generated by the tire fire caused a fish kill along several miles of Sycamore Creek before effective containment measures could be implemented. The unknown existence of field drainage tiles under the fire site contributed to the fish kill by providing hidden pathways to Sycamore Creek.

Revised National Fire Protection Association (NFPA) 231D, Standard for Storage of Rubber Tires, 1998 Edition

This revision of the 1989 Edition of NFPA 231D provided additional information of tire storage based on an additional ten years of experience fighting scrap tire fires. This additional information was used to improve the scrap tire rules in a draft rule package that was filed with JCARR in 2001. New standards for the storage of tire derived fuel and tire derived chips (tire shreds with all dimensions less than four inches) were developed based on the revised NFPA 231D and will enable scrap tire recovery facilities to create stockpiles of tire derived fuel and tire derived chips to meet future market demands with reasonable protection of the public health and safety and the environment. Storage piles of small shreds (under four inches in all dimensions) burn very differently from piles of whole tires or larger shreds due to the lack of large air spaces within the pile. Fires in these shred piles can be controlled with conventional fire fighting equipment and fire fighting techniques. Using windrows to store these small shreds is viewed as an acceptable risk by Ohio EPA as long as the height is restricted to 14 feet, the width to 50 feet, and the length to a maximum of 250 feet. At these maximum dimensions a fire lane width of 137 feet is recommended by NFPA 231D. For whole tires and shreds larger than four inches in any dimension, the storage limits remain at 2,500 square feet of basal area and 14 feet in height.

Regulatory Barriers to Scrap Tire Market Development

The regulatory barriers to scrap tire market development must be continually reviewed with an eye to removing any barriers where the removal of the barrier does not unreasonably increase the risk to the environment or risk to public health and safety. Proposed revisions to the current scrap tire rules were formally filed in February 2001 and contained provisions that were designed to remove some market development barriers. Objections to the proposed rules are currently being resolved with the goal to refile the rules with the Joint Committee on Agency Rule Review before March 2002.

For example, storage restriction on scrap tire products in the current scrap tire rules may restrict a scrap tire recovery facility's ability to meet market demands. Processing scrap tires into a final product such as tire derived fuel, tire derived chips, and crumb rubber is a very expensive and time consuming process. Other industries have the ability to stockpile products in order to meet market de-

mands, but the scrap tire rules, as adopted in 1996, failed to provide for this type of storage for the scrap tire industry. The emphasis that the 1996 scrap tires rules place on limited storage of whole tires needs to continue due to the significant problems associated with fires in whole tire storage piles and the mosquito breeding problems with whole tires. The failure to allow adequate, limited stockpiling of tire chips, however, has been identified by some as a barrier to market development. Revisions to the scrap tire rules that were proposed in February 2001 contained an increase in the storage of tire chips at recovery facilities. Work is still being done on these rules, and the exact storage requirements are being resolved through discussions with interested parties.

Some have also suggested that restricted disposal options in Ohio may aggravate the problems for scrap tire recovery facilities trying to establish a demonstrated processing capacity to potential customers. Currently, many scrap tire recovery facilities operate in an inefficient start-stop mode of business. They process at maximum capacity when they have orders and then have to shut down between orders when they reach their storage limits. The option of disposing of their excess capacity is expensive because of the limited disposal options in Ohio. With the current ban on the disposal of tire shreds in landfills there are only only three disposal sites in the state of Ohio. Two of those disposal sites are in Northeast Ohio, Stark County, and the other is in Southeast Ohio, Pike County. Scrap tire recovery facilities are faced with the expense of hauling tire shreds to these three facilities and then have to pay disposal costs that are much higher than the normal cost for solid waste disposal.

When the creation of monofills and monocells for the disposal of scrap tires was proposed in the *1989 State Plan*, the creation of only three scrap tire monofills or monocells in the State was not envisioned. It is interesting to note that none of Ohio's neighboring states have imposed a ban of tire shreds from their landfills. These states ban whole tire disposal but allow quartered tires to be disposed of in municipal solid waste landfills.

Ohio EPA, with the advice of SWAC, will continue to explore the various issues associated with the current scrap tire rules and will work to identify the barriers that are created by the regulations. Where appropriate, revisions to these rules will be proposed to minimize or eliminate these regulatory barriers. Some of these revisions may be included in the rules that Ohio EPA plans to refile by March, 2002. Other revisions may have to be pursued after that date or in conjunction with future State Plan updates.

Current Review of the Scrap Tire Rules

In order to comply with the requirements of ORC Section 119.032 (formerly H.B. 473), which requires all state agencies to review all of their rules every five years, DSIWM appointed a team of interagency personnel to review the scrap tire rules. A function of this team is to evaluate the current rules to determine whether changes (either deletions or additions) need to be made. Thus, the requirements contained in Ohio's existing scrap tire rules could change depending upon the outcome of this review process. Because the timeframe for this review process extends beyond the expected adoption date for this State Plan, the proposed changes that are discussed in the proceeding narrative may or may not appear in the final rule once that rule is adopted.

The Workgroup assigned to review the scrap tire rules is proposing a substantial number of changes to the existing rules. The following is a list of the "major" changes being proposed by the Workgroup:

1. A new definition of tire derived chip (TDC) was adopted constistent with ASTM standards for civil engineering uses of scrap tire shreds.
2. Approved beneficial uses for the TDC were added to the scrap tire rules.
3. The cost of maintaining financial assurance for scrap tire transporters was reduced by deleting the requirement to make annual inflation adjustments to the transporter's $20,000.00 financial assurance instrument.
4. The annual inflation adjustment for financial assurance for scrap tire facilities was deleted since inflation is not a noticeable factor in scrap tire markets. However, if the state-funded scrap tire cleanup costs increase significantly, a rule change will be initiated to adjust the financial assurance formulas for scrap tire facilities to an appropriate level.
5. Rules on the operation of portable equipment for load consolidating were added to the scrap tire transporter operation rule.
6. Rules on the operation of portable equipment for production of useable materials were added to the scrap tire recovery facility operation rule.
7. The scrap tire shipping paper system was simplified by deleting the transporter's log and allowing for the use of forms created by the businesses as long as those forms include all information required by rule 3745-27-57 of the Administrative Code.
8. Mosquito control procedures were revised and clarified.
9. "Modification" was defined as it applies to scrap tire facilities.
10. Criteria for review and approval of scrap tire facility registration and permit applications were reformatted and consolidated into more easily understood categories. This resulted in the rescission of an existing rule.
11. Scrap tire storage guidelines were updated to reflect the 1998 edition of the National Fire Pro-

tection Association (NFPA) 231D, Storage of Rubber Tires.

12. Rules were revised to reflect experience gained in dealing with the pollution resulting from scrap tire fires and to tailor the requirements concerning ground water monitoring to deal with a scrap tire fire site.

These rule revisions were formally proposed on February 7, 2001. Due to numerous comments that were received during the public comment period, an "intent to refile letter" was issued on March 16, 2001, which signifies the Agency's intent to make further revisions to the proposed rules prior to formally filing them in the future. At this point, Ohio EPA is working to resolve the issues identified in the comments, and intends to refile the rules by March, 2002.

Compliance Monitoring and Enforcement

Ohio EPA responsibilities

Through the portion of the scrap tire fee that is designated for compliance, monitoring, and enforcement activities, Ohio EPA currently supports eight and one-half (8-1/2) full-time-equivalent staff positions located throughout Ohio. The responsibilities of these staff positions include administering the scrap tire program, including monitoring regulated entities' compliance with the applicable scrap tire laws and rules. When violations of the scrap tire law are identified, formal enforcement actions may be pursued. Since 1995, numerous formal enforcement actions have been initiated by Ohio EPA for violations of scrap tire management requirements, resulting in a significant number of fines for these violations.

Local Health Department Responsibilities

Local health departments are also responsible for enforcing provisions of the scrap tire rules. In addition, health departments can also pursue enforcement actions for local nuisance violations. Furthermore, the local health departments assist Ohio EPA in the enforcement and identification and prioritization of scrap tire dumpsites for locally and state-funded abatement actions.

S.B. 165 provided a funding mechanism to approved local health departments for compliance monitoring and enforcement activities related to the scrap tire management regulatory program. The annual license fee for all scrap tire facilities is paid to the local approved health department and the health department retains the fees in a special fund. The Board of Health is allowed to retain the entire amount of any fee that is less than $15,000 and the first $15,000 of any fee over $15,000. The remainder, if any, of each license fee collected by the board is transmitted to Ohio EPA for deposit in the State Scrap Tire Management Fund, to be reallocated for regulatory, research, recycling, or abatement activities. Local health departments and SWMDs are encouraged to work together in the oversight of scrap tire facilities and dumpsites.

Scrap Tire Open Dump Abatement and Removal Actions

As stipulated in S.B. 165 and discussed in the *1995 State Plan*, Ohio EPA is now using funds from the scrap tire fund to pay qualifying contractors to abate the biggest scrap tire dumps in the state. The contractors are removing and either processing and beneficially (re)using the scrap tires or properly disposing of the tires. Based on the priorities set by law, Ohio EPA must first remediate sites that pose the most significant risks to human health and the environment. There are many other scrap tire dumps where there are significant risks to human health and the environment, but the total amount of state funding available is not expected to be adequate to abate all of these sites in a timely manner. In some cases, local SWMDs and Health Departments have been able to provide funding for abatement projects. Ohio EPA, SWMDs, and Health Departments continue to perform abatement of Ohio's scrap tire dumps.

The law requires Ohio EPA to make diligent efforts to have the responsible party clean up the scrap tire dump before spending money from the scrap tire fund on abatement activities. Under the procedure established in the law, Ohio EPA must first identify the responsible party and issue orders for that party to remove the tires. The party responsible for the tire accumulation has 120 days to undertake cleanup efforts. If no action is taken, Ohio EPA may use state funding to remove the tires. Ohio EPA then must pursue legal action to recover the cost of the cleanup. If the responsible party fails to pay the full cost of the cleanup, then a lien may be placed against the property.

As of June 1, 2000, the state of Ohio had provided funding to abate six tire dumps. Of those, five of the abatement projects were completed and one is ongoing. The status of these projects as well as the cost and number of tires removed are summarized in Table VII-1.

In the fall of 2000, one additional abatement project was initiated. The Phoenix Recycling Industry site in Fairfield County was cleaned-up through a joint effort among Ohio EPA, the Coshocton, Fairfield, Licking, Perry multi-county SWMD, and the Fairfield County Health Department. The majority of the funding was provided by the Coshocton, Fairfield, Licking, Perry multi-county SWMD. The site became an emergency situation in 2000 following a death attributable to encephalitis transmitted by a mosquito. Proper mosquito control was not being maintained by the owner of the nearby Phoenix Recycling Industry scrap tire site, and mosquito trapping by the ODH and the Fairfield Health Department confirmed an increasing population of the type of mosquitoes known to carry encephalitis. Funding from Ohio EPA to aid in the removal of whole tires from the Phoenix site was provided from money

normally used to administer the solid waste program.

By far, the Kirby Tire site, upon completion, will consume more resources than any other abatement project in the State of Ohio. This site originally contained an estimated 20 million scrap tires, making it, by far, the largest scrap tire accumulation in Ohio and one of the largest in the nation. The expense of the Kirby Tire abatement has been compounded by the fire that occurred in August, 1999. The result is that the existing funds that have been earmarked for tire abatement projects are no longer adequate to pay for the Kirby Tire site and allow Ohio EPA to remediate other sites around the state simultaneously. If approved, the increase in the scrap tire fee will allow Ohio EPA to expedite the Kirby abatement project and to address additional sites in Ohio at the same time. For a more in-depth discussion of remediation efforts at the Kirby Tire site, please see the text box on page 79.

Table VII-1: Summary of State-funded Scrap Tire Abatement Projects in Ohio

County	Tire Site	Number of Tires Removed (In PTEs)*	Cost	Status
Summit	Regenesis	4,031,106 PTEs of which 50% were whole scrap tires and 50% were shreds	$3,231,582	Completed
Clark	Seelig	860,000 PTEs, 100% of which were whole scrap tires	$1,008,251	Completed
Coshocton	Warsing	2,173,200 PTEs, of which 33% were whole scrap tires and 67% were baled tires	$2,421,022	Completed
Mahoning	COGCO	530,476 PTEs of which 90% were whole scrap tires and 10% were shreds	$657,540	Completed
Lawrence	Willis	125,591 PTEs, 100% of which were whole scrap tires	$321,500	Completed
Wyandot	Kirby Tire Recycling, Inc.	To date, 2,804,362 PTEs have been removed, of which 93 percent were whole scrap tires. Another 5 to 7 million burned in a fire on August 21, 1999 leaving residuals which will need to be removed. As of May 2001, it is estimated that 15,000,000 tires remain at the site.	$2,435,845**	Ongoing
Totals	6 sites	10,525,085 PTEs	$10,075,741	5 completed

* PTE stands for passenger tire equivalent and is an average passenger car tire which weighs twenty pounds.

**This amount was spent on removal of tires during the abatement process. This amount does not include expenses incurred as a result of the fire on August 21, 1999, which exceeded $3,500,000 as of May 2001.

Ohio EPA maintains a list of all of the known scrap tire accumulations around the state. This list is continuously updated as new accumulations are discovered and as existing accumulations are abated. Table VII-2 below presents information regarding the 20 largest known accumulations of scrap tires in Ohio.

Local Solid Waste Management District Responsibilities

Goal #5 of the *1995 State Plan* required SWMDs to include, in their solid waste management plans, a strategy to address scrap tires. As the *1995 State Plan* did not prescribe standards to this goal, the specific activity(ies), program(s), or strategy(ies) that each SWMD elects to implement in order to meet this goal is left to the discretion of that SWMD. To assist with the development of the scrap tire strategy(ies), the SWMD's plan contains an evaluation of the generation, recycling, and ultimate disposition of scrap tires within the SWMD's jurisdiction. Based on the results of that evaluation and the need for management

Table VII-2: The 20 Largest Scrap Tire Accumulations in Ohio (by number of tires) as of January 2001[1]

County	Location	Number of Tires	Status[2]
Wyandot County	S.R. 231	15 Million Tires	A, E
Portage County	S.R. 225 Atwater Twp	1.2 Million Tires	E
Portage County	Alliance Rd	1.2 Million Tires	E
Morrow County	County Rd 25	750,000 Tires	E
Summit County	Akron-Cleveland Rd	750,000 Tires	C
Hancock County N.	Corey St and Fair St	703,000 Tires	A, E
Cuyahoga County	3970 W. 25th St	500,000 Tires	
Morrow County	U.S. 42 And C.R. 105	250,000 Tires	E
Harrison County	77371 Freeport/Tippecanoe Rd	237,643 Tires	C
Perry County	S.R. 669	2,048.8 Tons of Shreds/208,480 Ptes	
Muskingham County	3465 Baughman Run Rd	200,000 Tires	
Auglaize County	Geyer Rd	150,000 Tires	E
Belmont County	56619 Ferry Landing Rd	116,640 Tires	C
Lorain County	618 ½ Oberlin-Elyria Rd	110,000 Tires	E
Adams County	136 Lick Run Rd	100,000 Tires	
Clinton County	8539 U.S. 68 North	100,000 Tires	
Mahoning County	S. Hine St and Wilson Ave	100,000 Tires	
Montgomery County	5490 W. Third St	100,000 Tires	E
Muskingum County	Ridge Road	<100,000 Tires	E
Muskingum County	7215 Shannon Valley Road	75,000 Tires	

[1]This list is not a priority listing for state-financed abatement action. It is solely a listing of the largest accumulations reported to Ohio EPA by local health departments and solid waste management districts. This list includes both abandoned sites and currently operating scrap tire storage or recovery facilities. None of these sites are licensed facilities. Only a few made a token effort at registration as a facility and are now the subject of enforcement actions.

[2] Codes: A = Applied for registration or permit E = Enforcement action taken C = Consent agreement signed

The Kirby Tire Recycling, Inc. Abatement Project

Kirby's Tire Recycling, Inc. (Kirby Tire) is located in Sycamore, Ohio (Wyandot County). The Kirby Tire site consists of 110 acres and is estimated to contain 16 million to 20 million scrap tires. The site has been operated since the 1950s. The Kirby Tire site is the largest accumulation of scrap tires in Ohio and is one of the largest tire dumps in the nation. The Kirby Tire site is considered to be an un-permitted and un-licensed solid waste disposal facility and, as such, is an open dump. Ohio EPA and the Wyandot County Health Department have worked unsuccessfully with the owners of Kirby Tire for many years to bring the site into compliance. After numerous notices of violation letters and several sets of enforcement orders were issued to the owners of Kirby Tire, in September 22, 1998, Ohio EPA issued a scrap tire abatement order which required Kirby Tire to remove all of the scrap tires from the site by January 20, 1999. Kirby Tire failed to comply with that order, and, Ohio EPA hired a contractor to remove tires from the site.

From July 1, 1999 to May 30, 2000, the contractor hired by Ohio EPA to perform abatement of the Kirby site removed 1,825,084 PTEs from the site and, in doing so, created a 200 foot wide fire break. This activity was performed using $2,435,845 from the Scrap Tire Fund. On August 21, 1999, a section of the Kirby Tire site caught fire. In total, five to seven million tires were involved in the fire. U.S. EPA, Region V spent $2.2 million on emergency response activities directly related to that fire. Pyrolitic oil produced from the burning of tires seeped into the soil and into the surface water, requiring Ohio EPA to contract for testing and remediation of the contaminated surface water. Ohio EPA had budgeted $3,500,000 from the Solid Waste Fund for fire-related activities such as water/oil treatment, erosion control, security measures, and road restoration (Note, this is not money from the scrap tire fund, but, rather, money diverted from Ohio EPA's solid waste program).

Removal of tires from the Kirby Tire site ceased in September 2000 due to the unavailability of money from the scrap tire fund. Removal is expected to resume in September 2001 following the solicitation of contracts for abatement services. Once the new abatement contract is awarded, Ohio EPA expects to spend one million dollars on the removal of scrap tires from the Kirby Site in state fiscal year (SFY) 2001. In addition, however, Ohio EPA continues to incur expenses related to the fire. Ohio EPA expects these expenses to cost another one-half million dollars during SFY 2001 and for every year after until funds are made available to remove the buried fire residuals. The source of the funds to pay for fire-related expenses is unknown at this point. If money is taken from the scrap tire fund to pay for treating contaminated water, then scrap tire removal at the site will be slowed, and funds would not be available for cleanups at other sites around the state. The Solid Waste Fund cannot support these expenditures for an extended period of time. It is expected that passage of the $0.50 increase in the scrap tire fee by the General Assembly in the budget bill for SFY 2002-2003 will provide revenues needed for fire-related expenses at the Kirby Tire site, for payback of the funds borrowed from the solid waste program, to greatly increase the rate of tire removal from the Kirby Tire site, and to initiate cleanups at other high priority tire abatement sites.

options, the SWMD then develops the strategies that are appropriate for the SWMD's situation. Most SWMDs have strategies for educating and providing information to businesses and residents regarding the scrap tire regulations and local outlets for scrap tires. To this end, many SWMDs develop and/or distribute information in the form of pamphlets, brochures, and lists.

In addition to inventorying available outlets for scrap tires, the SWMD's plan is also required to inventory existing scrap tire dumpsites. This inventory helps Ohio EPA develop its statewide list of abandoned scrap tire sites. The inventories from the individual SWMDs are, therefore, crucial for the statewide identification and prioritization of abandoned sites for state-funded abatement actions.

Where funds are available to support local cleanup operations for abandoned scrap tire sites, the SWMD's plan may, but is not required to, allocate district resources to those cleanup efforts. Local SWMDs may also fund efforts by local law enforcement agencies and local health departments to enforce open dumping laws pertaining to scrap tires.

There are a number of SWMDs that also host scrap tire collection events for their residents. Typically, these collection events are temporary, one-day events to which residents can bring scrap tires either free-of-charge or for a minimal fee. The SWMD then arranges for the reuse, recycling, or disposal of the tires. In 1999, 30 SWMDs representing 55 counties held temporary scrap tire collection events. Several SWMDs allow residents to bring scrap tires to solid waste facilities that are operated by the SWMDs. Often times, these facilities are material processing facilities for source separated recyclables. Several SWMDs, however, collect scrap tires at county-owned solid waste landfill facilities. As a result, these SWMDs offer scrap tire collection to their residents on a continuous, rather than temporary, basis.

TABLE VII-3: Scrap Tire Cleanup/Abatement Projects Conducted by Local Governments/Private Entities

Year Performed	County	Funding Source	Number of Tires
1996	Auglaize	Private Funding	30,000
1996	Hamilton	Funded by the Hamilton County SWMD	600,000
1996	Mahoning	Funded by the Mahoning County SWMD	50,000
1996	Montgomery	Funded by a private source	47,000
1996	Trumbull	Funded by Geauga/Trumbull SWMD	500,000
1996	Trumbull	Funded by Geauga/Trumbull SWMD	50,000
1996	Tuscarawas	Funded by the Guernsey, Monroe,Morgan, Muskingum, Noble, Washington Joint County SWMD	225,000
1996	Stark	Funded by the Stark, Tuscarawas, Wayne Joint County SWMD	300,000
1997	Greene	Private funding	15,000
1997	Guernsey	Funded through a combination of health department and SEP[2] Funds	100,000
1997	Mahoning	Funded by the Mahoning County SWMD	6,200
1997	Medina	Funded by the Medina County SWMD and the health department	40,000
1997	Wayne	Funded by the Stark, Tuscarawas, Wayne Joint County SWMD	250,000
1997	Muskingum	Funded by Muskingum County	28,998
1998	Auglaize	Private funding	20,000
1998	Lorain	Funded by Lorain County	100,000
1998	Lucas	Funding source unknown	875,000
1998	Mahoning	Funded by the Mahoning County SWMD	2,000
1998	Summit	Funded by the Summit/Akron SWMD	1,143
1998	Wayne	Funded by SWMD	200,000
1999	Mahoning	Funded by the Mahoning County SWMD through a contract with the health department	68,000
1999	Mahoning	Funded by the Mahoning County SWMD	113,000
1999	Morrow	Five properties cleaned up with Morrow County funding to be repaid through a tax lien on properties.	10,000
1999	Muskingum	Funded by Muskingum County	134,000
1999	Ottawa	Private funding and Ottawa, Sandusky, Seneca Joint County SWMD beneficial use project funding	420,000
1999	Clark	50/50 funding by Clark SWMD and property owner (3 sites)	40,000
1999	Summit	Funded by the Summit/Akron Authority	50,000
2000	Franklin	Private funding	35,000
2000	Morrow	Funded by Morrow County to be repaid through tax lien on property	5,000
2000	Wood	Funded by private funding and the Wood County SWMD	400,000
2000	Vinton	Private funding	38,000
2001	Morrow	Funded by Morrow County to be repaid through tax lien on property	73,383
2001	Summit	Funded by the Summit/Akron Authority	30,000-40,000
2001	Fairfield	Coshocton, Fairfield, Licking, Perry Joint County SWMD, Fairfield HD, and Ohio EPA	600,000

[2]A Supplemental Environmental Project (SEP) is completed with funding resulting from an Ohio EPA enforcement action involving a monetary fine/penalty against an entity

A PROGRAM FOR MANAGING HOUSEHOLD HAZARDOUS WASTE

CHAPTER 8

ORC Section 3734.50(H) requires that "the director of environmental protection, with the advice of the solid waste management advisory council...shall prepare a state solid waste management plan to...establish a program for the proper separation and disposal of hazardous waste generated by households."

Background

Hazardous wastes are often thought to be chemicals used and discarded solely by large industries. However, many common household products can also be hazardous. Household products can contain the same chemicals found in industrial wastes, and those products require proper use, storage, and disposal to protect human health and the environment. Because these household products are hazardous wastes, they are referred to as household hazardous waste (HHW)

Household hazardous waste (HHW) means any material discarded from the home that may, because of its chemical nature, pose a threat to human health or the environment when handled improperly. Most HHW is hazardous because it exhibits one or more of the following properties:

- *flammable:* can be easily set on fire or ignited
- *toxic/poisonous:* capable of causing injury or death through ingestion, inhalation, or absorption
- *corrosive/caustic:* can burn and destroy living tissues when brought in contact
- *explosive/reactive:* can detonate or explode through exposure to heat, sudden shock, or pressure
- *radioactive*: can damage or destroy cells and chromosomal material.

Categories of common household products that may contain, or be comprised of, hazardous constituents include household cleaners, automotive products, home maintenance and improvement products, lawn and garden products, and other miscellaneous products such as batteries, photoprocessing chemicals and personal care products. According to Rathje, et al. (1988) in a report prepared for the U.S. EPA, HHW comprises barely one percent by weight of the solid waste disposal stream.

Although HHW can have many of the same properties as industrial hazardous waste, because of the low percentage of the waste stream generated from each source (i.e., household), it is specifically excluded from regulation as a hazardous waste by both the federal hazardous waste program in the Code of Federal Regulations [40 CFR § 261.4(b)(1)] and Ohio's hazardous waste program in OAC Rule 3745-51-04. By default, therefore, HHW that qualifies as solid waste (i.e. does not contain free liquids) is regulated as solid waste in Ohio. The result is that hazardous wastes generated by households can be disposed along with all other solid wastes as general MSW. It is important to understand that the same material, if generated by a business, more than likely would be regulated as hazardous waste and management of the material would be restricted to hazardous waste treatment and disposal facilities. The additive effects of HHW can be just as harmful to the environment as the effects of a single discharge from an industrial generator. Thus, it is important that households find alternatives to disposing of HHW whenever possible. That is why HHW is targeted by the State Plan.

Common methods for disposing of HHW are to include it with the trash, dump it down the drain or toilet, pour it down a storm sewer, or dump it in the backyard. These types of disposal practices can pose health risks to sanitation workers, hazards to equipment and threats to the integrity of the environment. Studies document instances where refuse collectors were burned, experienced eye injuries, or became nauseated from handling HHW. Some MSW is still being disposed in older, unlined landfill facilities where HHW can contribute to the toxicity of leachate generated and, therefore, threaten groundwater supplies. Hazardous chemicals entering a municipal wastewater system can harm the system or personnel. The discharge from the treatment plant into surface waters may contain harmful levels of chemicals. Dumping of HHW onto the ground or into a storm sewer can result in direct contamination of the soil, ground water, and surface water.

Recommendations from the *1995 State Plan*

The *1995 State Plan* emphasized the importance of education by recommending four areas where Ohio EPA needed to develop guidance to assist local governments in establishing programs for HHW. The first of these recommendations was to develop a bibliography of school curricula materials for kindergarten through grade 12. Ohio EPA maintains a file of curricula material developed by other states. In addition, staff at Ohio EPA provided technical assistance to ODNR, DRLP regarding their supplemental curricu-

lum project titled *Investigating Solid Waste Issues*. This document addresses HHW issues and provides suggested activities related to HHW.

As a second recommendation, the *1995 State Plan* directed Ohio EPA to develop general information brochures and flyers for public awareness campaigns. Since then, Ohio EPA has either developed or updated the following fact sheets for use by SWMDs and the general public:

- *A Guide to Safe Management of Household Hazardous Waste*
- *Household Photographic Chemical Wastes*
- *Pesticides*
- *Storage and Disposal of Paint*
- *Automotive Maintenance Products*
- *Gasoline and Fuel Oils*
- *Used Oil*
- *Lead-Acid Battery*
- *Household Batteries*

In addition, the following fact sheets and publications are made available and have been mailed to Ohio's SWMDs:

- US EPA's *Household Hazardous Waste Management: A Manual for One-Day Community Collection Programs*
- US EPA's *Reducing Lead Hazards When Remodeling Your Home*
- US EPA's *Protect Your Family From Lead in Your Home*
- Water Environment Federation's *Household Hazardous Waste: What You Should and Shouldn't Do*

The *1995 State Plan* indicated that Ohio EPA would provide guidance via a HHW hotline manual. This manual was originally made available prior to the adoption of the *1995 State Plan*. The manual, titled the *Household Hazardous Waste Telephone Advice Guidance Manual* was updated in February, 1997. The organization of the manual remained the same, but the text was updated, and errors found in the previous version were corrected. The manual also includes lists of recyclers and/or disposal companies that accept hazardous waste in the appropriate sections. Most of these lists are maintained by the Division of Hazardous Waste Management (DHWM) and OPP, with input from DSIWM. These lists, shown below, have all been updated (or created) since the last edition of the manual, and were included in the 1997 version:

- DHWM and OPP's *Vendor Information: Paint Recyclers and Firms Accepting Paint-Related Wastes*
- DHWM's *Fluorescent Lamp Recyclers and Ballast Recycling Services*
- OPP's *Mercury Recyclers*
- DHWM's *Gas Cylinder Recycling Services*
- DHWM's *Battery Recyclers/Brokers and Disposal Facilities*
- DSIWM's *HHW Program Contractors*

Ohio EPA is in the process of fulfilling the fourth recommendation. That recommendation was for the creation of a guidance document for setting up exchange and collection programs.

Prior to adoption of the *1995 State Plan*, SWMDs were not allowed to credit HHW that was reduced or recycled towards their WRRRs. Because many HHW materials, such as paint, paint-related products, and used oil, are liquids and therefore not solid waste, as that term is defined by Ohio law, the recycling of these materials previously was not considered in the calculation of the waste reduction rate. However, diversion of these materials from the solid waste stream is one method of achieving the goals established by H.B. 592 of protecting the environment and reducing our reliance on landfilling. Furthermore, collecting and managing HHW properly is a very costly endeavor. For these reasons, the *1995 State Plan* allowed HHW that was recycled to be included in the calculation of the waste reduction rate. In 1999, SWMDs reported having collected approximately 3,378 tons of HHW. Of this, approximately sixty percent was recycled and, therefore, included in the waste reduction rate.

Progress Since Adoption of the *1995 State Plan*

Since publication of the *1995 State Plan*, Ohio has seen some interesting trends in the management of HHW. In particular, SWMDs and local communities are becoming more flexible in terms of the types of collection programs being offered to residents. In their infancy, many SWMDs offered solely one-day collection events by hiring hazardous waste firms to operate the events and recycle or dispose of the collected material. Even though one-day collection events remain a popular means of collecting HHW, several SWMDs are providing more comprehensive and integrated programs. By being creative and working with local entities and the existing infrastructure, SWMDs are reducing the cost of collecting HHW while simultaneously providing safer alternatives to disposal for managing HHW.

Several SWMDs are utilizing local recycling facilities and transfer stations that accept HHW on-site. Others are working with local service departments, such as township garages, to provide collection centers. Perhaps the ultimate collection option in terms of convenience, curbside collection of HHW, is currently being utilized by one SWMD. In the past, county and local governments have been conservative when it comes to considering curbside collection of HHW due to liability issues. Furthermore, the hazardous waste collection industry historically has targeted commercial businesses and industrial generators as customers, and it was not until recently that the residential sector has been pursued as a viable market. These rea-

Collecting HHW at Residences

In April 1999, the Delaware, Knox, Marion, Morrow SWMD implemented a very innovative program for the collection of HHW. The program, called the Pay as You Throw Home Pickup Program, provides residents of the SWMD with a convenient opportunity for the collection of HHW. Rather than transporting their HHW to a centralized collection center, residents can have HHW picked up at their homes. The home pickup program is more convenient than the temporary collection events not only because the service provider comes to the resident, but also because the service is provided year-round. The service is provided via a contract with Curbside Inc., a division of the Safety-Kleen Company. Unlike the SWMD's temporary collection events, residents must pay a direct fee to participate in the program. Because the SWMD shares the cost of the service with the resident, however, the service is more affordable than if the resident were to arrange for pickup with Curbside, Inc. directly.

To have HHW picked up from their homes, residents of the SWMD call a toll-free hotline and provide the following information: address and age of the caller and the type and amount of material to be collected. The SWMD then provides the caller with an estimate of the cost, and a collection is scheduled. The pickup date is based on the next available collection day. The SWMD explains the program and safety procedures to the caller. Prior to the scheduled collection date, an HHW kit is sent, via UPS, to the resident's home. The kit can hold up to 75 pounds hazardous materials.

On the scheduled date, Curbside, Inc. collects the eligible HHW from the resident's home. Eligible materials include lubricants (including used oil), paint, batteries, cleaners, flammables (such as gasoline), poisons, hobby supplies, garden products, automotive products, fluorescent light bulbs, thermostats, thermometers containing mercury, aerosol cans, personal products (such as nail polish remover), and photography chemicals. Residents are not permitted to manage medical waste, radioactive waste, explosives, ammunition, and commercial chemicals in containers over five gallons through this program. Curbside, Inc. then transports the HHW to the appropriate facility for recycling and disposal. Participants in the Pay as You Throw Home Pickup Program are asked to complete a satisfaction survey card and then mail the completed card to the SWMD.

There have been 27 residential participants in the program since it was begun in 1999. The cost to the resident depends upon the materials being collected. If the material is a recyclable material such as paint, then the cost is $65 per residence. If the material is strictly HHW, then the cost is $125 per residence. The cost is the same regardless of the amount of HHW the resident needs to have collected.

sons, combined with the relatively prohibitive cost of the service to the average resident, have prevented curbside collection from being a popular management option. One SWMD has found, however, that by sharing the cost with residents who use the service, curbside collection of HHW can be a viable option in a comprehensive management program.

Of course, the best management alternative is to not generate HHW. Therefore, educating residents regarding safer alternatives to hazardous products continues to be an invaluable tool. Most of Ohio's SWMDs do provide education and information regarding HHW to the residents in one form or another.

General Strategies for Addressing HHW

The following section discusses several strategies that are available to SWMDs for developing programs to address HHW. The narrative associated with each type of strategy also contains information regarding the status of implementing that strategy statewide.

Education

Education regarding the dangers of improper use and disposal of products containing hazardous materials around the home is an essential aspect of HHW management. For example, the release of toxic fumes from such household products as paint removers, drain openers, and oven cleaners can cause indoor air pollution. Greater public awareness enables the consumer to make informed selections of products based on the relative toxicity of the product, the amount of product needed, and the product's ability to get the task done. Obviously, educational resources are critical to the success of HHW programs. Target audiences are school children (kindergarten through grade 12), adults, community leaders, and local government officials.

A variety of educational materials have been developed for the public that briefly describe the problems associated with hazardous materials, suggest proper disposal methods, and identify alternate nonhazardous products. These educational mate-

rials are available from a variety of sources, including U.S. EPA, Ohio EPA, and Ohio's SWMDs. In addition, recycling and the complete use of existing stocks of household products is often encouraged. Almost every SWMD in Ohio has included education regarding the proper management of HHW as a part of its general solid waste management education and awareness efforts.

Ohio's SWMDs provide a variety of programs geared towards educating and informing residents about the safe management of HHW. These educational programs include the following:

- Development and distribution of general information brochures and pamphlets
- Creation of videos
- Distribution of lists of local businesses that will accept HHW from residents, such as local automobile service centers that accept car fluids, local outlets for household batteries, and groups that take paint
- Promotion of local HHW collection events
- Incorporation of HHW information into school curricula
- Operation of dedicated HHW telephone hotlines
- Workshops
- Public service announcements and press releases
- Presentations to civic groups

Information "Hotline" for HHW

An information hotline is an effective way to provide the public with timely, accurate information. In addition to SWMD offices, County Cooperative Extension offices are an alternate choice for handling this task since Extension offices are already designed to answer questions on a variety of subjects. Other local agencies such as local health departments, county engineers, nonprofit groups, and litter prevention offices could also be candidates to operate the hotline. The agency or office selected should be highly visible and readily accessible to the public. A SWMD may also consider dedicating a phone line to answer questions regarding an upcoming HHW collection event. If the SWMD also has a web site, then the hotline can direct the caller to that site for more information regarding managing HHW in general or upcoming collection events.

Ohio EPA developed a manual to answer questions about HHW and distributed the manual to the SWMDs in May 1994. This manual, called the *Household Hazardous Waste Telephone Advice Guidance Manual*, presents a detailed, step-by-step procedure designed to assist the caller and the person answering the phone in determining the degree of hazard posed by particular materials, suggesting proper disposal methods, and identifying nonhazardous substitutes. Each section identifies possible outlets for the specific material addressed in that section. The manual can be customized. Thus, local communities should compile a list of local outlets, such as used oil collection points, paint exchanges, and other exchanges, and insert those lists into the manual for easy reference. The manual also addresses issues of liability for the person staffing the phone and the sponsoring agency. The Minnesota Pollution Control Agency's publication of the same name is the basis for the manual. Ohio EPA expects to update the information in the manual on an as needed basis.

35 SWMDs reported having provided telephone assistance for HHW issues to their residents during 1999. It is not known how many of these SWMDs provided assistance via a dedicated HHW hotline. The number of calls fielded by SWMDs varied considerably with a range of from one to two calls per month to 750 calls per month. There were nine SWMDs that reported having received more than 100 calls regarding HHW per month.

Exchange and Collection Programs

HHW is collected for the purposes of reusing, recycling, or diverting the hazardous material from solid waste landfills, incinerators, or other improper disposal. Collection of HHW can be accomplished by a variety of options ranging from single day, multi-material events to permanent sites that collect one or a limited number of materials.

A limited number of products used in the home may be recycled or reused by another party. Exchange programs help the reuse of easily recycled materials such as paints. Some products used in the home that cannot be recycled or reused must be sent to treatment and disposal facilities. Local collection programs are therefore needed to manage these kinds of materials safely. When properly organized and operated, these programs generally transport a large quantity of materials to a licensed hazardous waste facility.

Sponsoring agencies of collection programs must carefully consider the issues of liability and cost. Potential sources of liability include:

- personal injuries suffered at the collection site;
- spills of HHW when transported from the collection site to a disposal site; and
- future remediation at the disposal site which received the HHW.

Hiring an experienced hazardous waste contractor to handle the waste, package it, and transport it to a licensed disposal site minimizes risks from the first two potential liabilities. In addition, contracts with hazardous waste companies can be written so that the company assumes most of the risk from these programs. According to the U.S. EPA, potential risk from future remediation at the hazardous waste disposal site through the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) is minimal due to the small portion of the total amount of wastes that HHW would comprise at a facility.

Elements of SWMD Strategies for Managing HHW

SWMDs are required to include, in their solid waste management plans, at least one strategy that addresses the proper management of HHW. Local conditions can vary substantially regarding the types, quantities, risks, and management opportunities for such wastes. Therefore, in order to select the proper strategy(ies), the SWMD should assess the HHW waste stream and the existing management infrastructure. Additionally, The SWMD should evaluate the effectiveness of any existing strategies in updates to its solid waste management plan. An assessment and evaluation should include the following steps:

- Identification of the types of HHW in the local waste stream;
- Assessment of the risks posed by disposal of HHW
- Identification of the HHWs that the District will target for management activities;
- Identification of the existing management opportunities and the planned new activities to manage specific HHW;
- An inventory of the existing management opportunities in the District for used oil, fuels, appliances and batteries; and
- Measurement of the effectiveness of the programs selected.

The first element of a program focused on HHW should be an evaluation of the materials in the residential waste stream that have the potential for causing harm to human health and the environment. The SWMD's solid waste management plan should include an assessment of the hazardous constituents of the residential waste stream. There are several sources of information that may be used for such an assessment:

- National data;
- Tracking log of phone calls received from citizens regarding various types of HHW materials;
- Survey of haulers and solid waste facilities regarding any accidents occurring as a result of collecting HHW with the household garbage;
- Information from wastewater treatment plants and city maintenance departments;
- Complaints to local health departments or Ohio EPA district offices regarding the improper disposal of HHW;
- Reports from hospitals and poison control centers regarding accidents resulting from the improper use or disposal of HHW;
- Information from local retail merchants associations regarding what products are being sold in the community; and
- Waste sort of residential waste collected.

The second element of a HHW program should be to analyze the data collected in step one and evaluate which materials need to be targeted for separation and disposal. The following sources of information could be used in making this determination:

- Characterization of the SWMD's HHW waste stream (from above sources of information);
- Inventory of the facilities that can potentially be adversely affected by the handling of HHW (e.g., incinerator, resource recovery facility, transfer station, Materials Recovery Facility, sanitary sewer system, wastewater treatment plant); and,
- Inventory of natural resources that can potentially be adversely affected by the improper disposal of HHW (e.g., lakes, streams, ground water resources, parks, tourist attractions).

The information regarding the facilities and natural resources can then be used in combination with the waste stream characterization to select specific materials the SWMD will target when selecting the strategies for HHW management. For example, if a District has a resource recovery facility and has found that button batteries are being disposed in the garbage, then button batteries could be targeted for a collection program to reduce mercury emissions at the facility.

As a third element, the program should include an assessment of the existing and needed infrastructure for the proper management of HHW. This includes an inventory of existing facilities and businesses that handle

various types of materials. Based on this assessment, the SWMD should then incorporate needed strategies in its solid waste management plan. These strategies should be geared towards the materials targeted in the second step of the program. The SWMD can select from the following set of strategies for the proper management of HHW:

- Educational programs - Programs for both children in kindergarten though grade 12 and adults should be given a high priority at the local level. Various existing civic groups might be target audiences for presentations, and the SWMD could identify locations for placement of HHW brochures, used oil brochures, and other materials. For planning purposes, the SWMD should consider estimating the number of people to be reached and the delivery method used.

- Telephone hotline - The SWMD should consider selecting an agency or office to handle HHW telephone calls via a hotline. Methods of publicizing the hotline need to be explored. The information gained from the telephone hotline can be used to evaluate the success of the HHW program. For example, the SWMD may find that in a given month, 40 calls are received regarding the proper method for disposing of used oil. This may be an indication that further education and outreach is necessary to inform the public regarding disposal locations.

- Exchange and collection programs - While collection programs and exchange projects are important options for districts, the priority of such programs should be based upon the magnitude of the problem as well as available funding. To assist in documenting the implementation of HHW programs, the SWMD should compile data on all collection and exchange programs, and make a written report available to the public and the Ohio EPA. The report should include:

  - Costs of the program;
  - Participation rates and eligibility;
  - Type and quantity of materials brought to the collection site;
  - How liability issues were handled; and
  - A brief description of the planning process used for the event.

- Single-material programs - These programs are similar to exchange or collection programs, except that a specific material is targeted. Based upon the results of the waste stream analysis and infrastructure inventory described above, the SWMD should evaluate whether single-material programs are required for any type of hazardous material generated by households.

  For example, the SWMD may negotiate an arrangement with local businesses and a button battery recycler to collect and recycle batteries. Or, based upon telephone calls received at the hotline, the SWMD may decide to initiate a paint collection and exchange program to be held in spring and autumn.

The SWMD can select any one or a combination of the above strategies, (or alternate strategies) that include the elements of the program outlined above. The SWMD should tailor its HHW program to the needs of its residents. In doing so, however, the specific program(s) or activity(ies) selected should be based on a demonstration of the types and quantities of HHW in the residential waste stream, the materials targeted for separation and proper disposal, and the availability of a system to ensure that collected materials will properly handled and managed (i.e. recycled or disposed as appropriate).

As the final element of a HHW program, the SWMD should provide a means of measuring the effectiveness of the strategy(ies) selected. Thus, the SWMD should outline, in its solid waste management plan, which parameters will be measured and evaluated. These parameters may include the sources of information used in making the initial assessment of the waste stream. Finally, the SWMD should maintain records of all aspects of HHW management for inclusion in updates to the solid waste management plan and ADRs. Education projects should record numbers of attendees at meetings and the issues discussed. Staff members handling telephone hotlines should track the number of calls received and types of questions asked. SWMDs hosting collection events should record data regarding the amounts and types of materials collected, costs associated with offering the events, and the number of participants in collection events. Furthermore, the SWMD should make some effort to determine the factors contributing to a successful collection event. All of this information is vital for the SWMD to document efforts made to reduce HHW generation and disposal.

The SWMD must balance the possibility of incurring liability as a result of conducting a collection program with the liabilities it could assume while maintaining "status quo" or continuing to dispose of HHW in solid waste landfills. Municipalities that send waste to these facilities are potentially liable for cleanup costs. HHW collection programs may reduce the risk that a solid waste landfill will need to be remediated in the future.

In reducing liability by hiring a hazardous waste contractor rather than conducting its own program, however, a sponsoring agency will be increasing the costs associated with the collection programs. Average figures for collection events can be about $100 per participant. Costs and liability can be minimized by limiting the types of materials accepted at the collection event (particularly large volume, easily recycled materials such as paint). In addition, costs can be reduced by writing requests for proposals emphasizing the recycling of materials favored over disposal. For example, latex paint can be recycled at a much reduced cost over bulking and disposing of it in a hazardous waste facility.

SWMDs may also consider establishing permanent collection sites. The benefits of permanent sites include the following:

- The collection of materials can be staggered over time to facilitate packing for disposal;
- A wider variety of materials can be collected;
- Materials can be stored until bulk quantities are accumulated for more cost-effective recycling or disposal; and
- The site can serve as a location for exchange programs.

The same concerns regarding liability and costs arise for a permanent site as for a single-day collection event. For example, only trained staff should handle materials brought to the site, and unattended drop-off of materials should be strongly discouraged.

According to information submitted by SWMDs via ADRs and other correspondence, 37 SWMDs either hosted or participated in some type of collection event in 1999. These ranged from permanent, full-service collection locations to limited material, temporary collection events. Of the 37 SWMDs having collection events, 29 hosted or participated in temporary collection events, four sponsored permanent collection facilities, three hosted limited material, temporary collection events, and five hosted, in conjunction with ODA, pesticide collection events. [Please note that several SWMDs hosted or participated in multiple collection events.]. Activities performed by SWMDs during 1999 that are related to each of these types of collection opportunities are described in the narrative that follows.

Temporary, General HHW Collection Events

By far, the most popular type of HHW collection event held in Ohio in 1999 was the temporary, general HHW collection event. In total, 29 SWMDs, representing 51 counties, either hosted or participated in temporary, multi-material collection events (There were three SWMDs that hosted limited material, temporary collection events. Those events are summarized later in this section]. Table VIII-1 provides data for these collection events. [Note: the data in the columns labeled "cost per pound", "cost per car", and "pounds per car" is explained later in this narrative.] Most temporary collection events are held for a duration of one or two days, many times on a weekend. Some SWMDs hold several temporary collection events while others hold only one. The number of collection events held usually depends on the size of the SWMD as well as available funding.

Many multiple county SWMDs hold a collection event in each of the counties that comprise the SWMD. However, there are several single county SWMDs that also hold multiple collection events for their residents.

While most hazardous wastes that are generated by households are accepted at these events, many SWMDs do place restrictions on the types of waste that can be brought to the events. The most common restrictions are on ammunition, explosives, and radioactive materials. Ohio law prevents SWMDs from accepting hazardous waste from businesses and institutions regardless of the amount of material that business generates. Thus, many SWMDs' publications point out that only hazardous waste generated by households will be accepted at collection events. Many SWMDs also advertise that infectious waste, scrap tires, appliances, and general solid waste will not be accepted at collection events.

Interest in HHW collection events has increased substantially in Ohio since the first known HHW collected event was held in 1988. There has been an increase in the number of collection programs sponsored by SWMDs every year, except for 1997 and 1998, since then. In fact, the number of collection programs held in 1999 was more than double that for 1995. While some SWMDs discontinued collection events and others are holding collection events less often, the State saw a net increase in the number of SWMDs hosting and participating in collection events. This is a testament to how popular HHW collection events are with residents. Holding such events may be one of the most visible ways a SWMD makes itself available to its residents.

To evaluate participation in and costs of HHW collection events, there are three general statistics that are considered. These are the cost per car served by a collection event, the pounds of HHW collected per car, and cost per pound of HHW collected during an event. Table VIII-3 presents these statistics, along with the number of SWMDs that sponsored collection events, for 1988 through 1999.

As can be seen from Table VIII-3, the average cost per pound for general HHW collection dropped from $0.80 in 1995 to $0.55 in 1999. Until 1998, the average reported costs had been dropping. From 1998 to 1999, the average cost per pound dropped again, although the average reported cost paid in both years was higher than the all-time-low which occurred in 1997. As well, the highest cost per pound paid for HHW collection event in 1999 ($0.93) was less than in 1995 ($1.08). While overall costs seem to be lower in 1999 than in 1995, there is still quite a disparity between the highest cost per pound paid by a solid waste management district and the lowest cost per pound paid - a difference of $0.66.

There are many factors which are believed to have contributed to the overall decrease in the cost per pound paid for HHW collection events over time. More competition from hazardous waste contractors has resulted in lower overall bids being proferred by those contractors. Combined with the more sophisticated bids being generated by SWMDs, such competition has resulted in reduced costs associated with holding HHW collection events. SWMDs are more experienced in terms of what aspects of a collection event need to be handled by a contractor and which can be dealt with by the SWMD itself. All else being equal, the fewer services that the contractor must provide, the less expensive the bid will be. Many SWMDs are recycling more of the material that is collected. The disposal of the collected material is often the most expensive portion of a collection event. Thus, the less material the SWMD must dispose of, the cheaper the total cost of the collection event is likely to be.

In terms of the cost per car served by a temporary, multi-material collection event, the average cost per car paid by a SWMD was less in 1999 than it was at the time the 1995 State Plan was adopted. Thus, in 1999, SWMDs paid, on average, $62.00 per car to hold a collection event. The range of costs per car paid by SWMDs in 1999 was $16.00 to

Table VIII-1: Temporary HHW Collection Events Held in Ohio in 1999

SWMD	Host County	Number of Events	Number of Cars	Cost	Total Pounds Collected	Total Tons Collected	Cost per Car	Pounds per Car	Cost per Pound
AC	Not Indicated	1	20	$ 1,020.00	Not Indicated	Unknown	$ 51.00	Unknown	Unknown
ACHMSU	one in each	6	3,210	$129,045.00	327,927.00	163.96	$ 40.20	102.16	$0.39
Ashland	Ashland	1	384	$ 37,910.07	94,830.00	47.42	$ 98.72	246.95	$0.40
Auglaize	Auglaize	1	200	$ 8,870.00	9,501.00	4.75	$ 44.35	47.50	$0.93
Brown	Brown	1	241	$ 21,335.00	45,917.00	22.96	$ 88.53	190.53	$0.46
Butler	Butler	1	687	$ 40,734.66	97,818.00	48.91	$ 59.29	142.38	$0.42
CCH	Not Indicated	1	77	Not Reported	6,108.00	3.05	Unknown	79.32	Unknown
Clinton	Clinton	1	850	$ 36,446.76	65,790.00	32.90	$ 42.88	77.40	$0.55
CFLP	one in each	4	1,709	$ 78,762.51	137,746.00	68.87	$ 46.09	80.60	$0.57
Cuyahoga	Cuyahoga	2	15,608	$401,831.62	1,495,829.00	747.91	$ 25.75	95.84	$0.27
DKMM	one in each	4	2,697	$140,716.49	268,203.00	134.10	$ 52.18	99.44	$0.52
FHPR	Pickaway	1	250	$ 10,094.35	35,418.00	17.71	$ 40.38	141.67	$0.29

Franklin	Franklin	8	3,441	$213,151.00	284,000.00	142.00	$ 61.94	82.53	$0.75
GT	one in each	4	2,696	$254,544.09	677,599.00	338.80	$ 94.42	251.33	$0.38
Greene	Greene	1	1,482	$ 65,597.60	166,834.00	83.42	$ 44.26	112.57	$0.39
GMMMNW	Guernsey	1	141	$ 10,123.65	17,932.00	8.97	$ 71.80	127.18	$0.56
	Monroe	1	58	$ 6,990.38	7,951.00	3.98	$120.52	137.09	$0.88
	Morgan	1	136	$ 9,681.83	17,460.00	8.73	$ 71.19	128.38	$0.55
	Muskingum	1	548	$ 24,424.02	54,232.00	27.12	$ 44.57	98.96	$0.45
	Noble	1	64	$ 5,889.99	6,872.00	3.44	$ 92.03	107.38	$0.86
	Washington	1	620	$ 32,860.00	76,192.00	38.10	$ 53.00	122.89	$0.43
Hancock	Hancock	1	484	$ 25,166.17	50,625.00	25.31	$ 52.00	104.60	$0.50
Lake	Lake	2	3,733	$124,595.80	318,840.00	159.42	$33.38	85.41	$0.39
Logan	Logan	1	Not Reported	$ 42,396.00	123,509.00	61.75	Unknown	Unknown	$0.34
Lorain	Lorain	1	2,178	$ 95,841.00	200,786.00	100.39	$ 44.00	92.19	$0.48
Mahoning	Mahoning	1	2,000	$132,347.71	185,905.00	92.95	$ 66.17	92.95	$0.71
Miami[1]	ACHMSU	2	85	$ 5,500.00	Unknown	Unknown	$ 64.71	Unknown	Unknown
Montgomery	Montgomery	2	352	$ 21,314.00	23,174.00	11.59	$ 60.55	65.84	$0.92
OSS	one in each	3	1,500	$138,073.54	189,224.00	94.61	$ 92.05	126.15	$0.73
Portage	Portage	7	3,500	$ 55,000.00	120,000.00	60.00	$15.71	34.29	$0.46
Preble	Preble	1	181	$ 16,148.50	21,771.00	10.89	$ 89.22	120.28	$0.74
Richland	Richland	1	566	$ 50,230.00	86,077.50	43.04	$ 88.75	152.08	$0.58
Warren	Warren	3	1328	$ 64,266.46	130,645.00	65.32	$ 48.39	98.38	$0.49
Wyandot	Wyandot	1	184	$ 15,414.00	25,196.00	12.60	$ 83.77	136.93	$0.61
Totals				$ 2,315,302.20	5,369,996.50	2,685.00	$ 1,981.80	3,581.22	$17.03
Averages							$ 61.93[2]	115.52[3]	$0.55[4]

[1] The residents of the Miami County SWMD participated in two of the North Central SWMD's collection events - those for Champaign and Shelby Counties. While the number of cars from and cost to the Miami County SWMD are tracked separate from the same figures for the North Central SWMD, the total tons collected from the Miami County SWMD are not.

[2] Because the Gurnsey, Monroe, Morgan, Muskingum, Noble, Washington (GMMMNW) Joint County SWMD provided separate data for each collection event and two SWMDs did not provide the data necessary to calculate this statistic, 32 programs were used to determine the average cost per car ($1,981.80/32 = $61.93 per car).

[3] Because the Gurnsey, Monroe, Morgan, Muskingum, Noble, Washington (GMMMNW) Joint County SWMD provided separate data for each collection event and three SWMDs did not provide the data necessary to calculate this statistic, 31 programs were used to determine the average pounds per car (3,581.22lbs/31 = 115.52 lbs per car).

[4] Because the Gurnsey, Monroe, Morgan, Muskingum, Noble, Washington (GMMMNW) Joint County SWMD provided separate data for each collection event and three SWMDs did not provide the data necessary to calculate this statistic, 31 programs were used to determine the average cost per pound ($17.03/31 = $0.55 per pound).

Table VIII-2: Statistics for Temporary HHW Collection Events Held From 1988 to 1999

		Cost per car		Cost per pound		Pounds per car	
Year	Total Number of SWMDs [1] Offering Programs	Average	Range	Average	Range	Average	Range
1988	1	$75.00	N/A				
1989	1					64	N/A
1990	2					56	N/A
1991	3					116	100-140
1992	8	$128.00	$70-$186	$0.84	$0.82-$0.84	128	86-136
1993	9	$81.00	$48-$157	$0.99	$0.70-$1.23	73	69-216
1994	13	$67.00	$40-$113	$0.96	$0.65-$1.27	63	55-123
1995	14	$68.00	$36-$202	$0.80	$0.39-$1.08	84	56-129
1996	24	$67.00	$22-$187	$0.62	$0.20-$1.40	103	55-328
1997	22	$85.00	$24-$205	$0.50	$0.19-$1.20	183	23-503
1998	22	$62.00	$20-$195	$0.59	$0.18-$2.92	125	20-368
1999	29	$62.00	$16-$121	$0.55	$0.27-$0.93	116	34-251

[1] The total number of District programs includes only those temporary programs where either general HHW was accepted or multiple materials were accepted. Collection events that were focused on only one or two specific materials (e.g. used oil, batteries, etc.) were not included.

$121.00. In 1995 SWMDs paid, on average, $68.00 per car with a range of $36.00 to $202.00.

Oddly, the average pounds of HHW per car brought to a collection event was higher in 1999 than in 1995. This is odd because it is generally accepted that the pounds of HHW brought per car in subsequent years will decrease over time as stockpiles of HHW are eliminated and residents bring only what was generated during the preceding year. In 1999, SWMDs reported having received, on average, 116 pounds of HHW per car. The range of pounds per car accepted in 1999 was 34 pounds to 251 pounds. In 1995, SWMDS reported having accepted, on average, 84 pounds of HHW per car with a range of 56 pounds to 129 pounds per car.

Of all of the materials collected in 1999, more tons of paint and related paint products were collected than any other material type. Paint and related paint products have consistently comprised the greatest tonnage of material collected during collection events. In 1999, approximately 2,044,477 pounds of paint products were reported as having been collected. Data organized by material collected was not available for 1995. For 1996, however, the tonnage of paint products collected was reported as 2,309,851 pounds. As a point of reference, the category of flammables, pesticides, and chlorinated products comprised the next highest tonnage, by material category, collected in 1999. In total, 462,523 pounds of flammables, pesticides, etc. were collected in 1999. Thus, in 1999, the amount of paint collected was 4.4 times greater than the amount of material in the next highest category. In 1996, the first year material by material information is available, 1,099,392 pounds of flammables, pesticides, etc. were collected.

In terms of how the collected materials were managed in 1999, approximately sixty percent was recycled, reused, or burned for energy recovery, 24 percent was landfilled or incinerated, and 16 percent was managed in unknown ways. In 1996, approximately seventy percent of the waste collected was reused, recycled, or burned for energy recovery, 25 percent was landfilled or incinerated, and the remaining five percent was managed in unknown ways.

Permanent HHW Collection Facilities

In 1999, four SWMDs operated permanent HHW collection locations, three more than were available in 1996. These programs are summarized in Table VIII-3. Two of the permanent collection locations were for the collection of limited materials while the remaining two were for the collection of general HHW. Three of the SWMDs that had permanent collection locations also hosted temporary collection events.

The evaluation statistics (cost per pound, pounds per car, and cost per car) were not calculated for the per-

Table VIII-3: Permanent HHW Collection Facilities

SWMD	Host County	Number of Car	Cost	Total Tons Collected	Cost Per Car	Pounds Per Car	Cost Per Pound
Crawford[1]	Crawford	Unknown	$9,134.17	7.72	Unknown	Unknown	$0.61
Montgomery[2]	Montgomery	Unknown	$137,349	236.02	Unknown	Unknown	$0.29
Portage	Portage	See Table VII-2	See Table VII-2	See Table VII-2	See Table VII-2	See Table VII-2	See Table VII-2
Summit[3]	Summit	8,665	$547,455.23	704.09	$63.18	165.51	$0.39

[1]The SWMD limits materials collected to household batteries, paints, fluorescent light bulbs, pesticides, used oil, and antifreeze.

[2] The SWMD limits materials collected to paint, paint-related materials, automotive fluids, and types of household and automobile batteries

[3]The SWMD operates the facility from April through September.

manent collection programs because the SWMDs offering those programs either do not track the data needed to calculate the statistics, or the data is reported in conjunction with the data for temporary collection events.

Material-Specific Collection and Exchange Programs

A variant of the full-service collection program is a program that collects only certain types of materials. A community may want to target only certain materials in the waste stream for removal. As a result, the community implements some sort of a collection event geared towards those materials.

Limited-material collection programs can be conducted as temporary collection events, permanent collection locations, or as drop-off locations.

Temporary and Permanent Limited Material Collection Events

As was mentioned earlier in this chapter, three SWMDs hosted limited material, temporary collection events and two SWMDs operated limited material, permanent collection locations. The following materials were targeted by these collection opportunities:

- Household batteries
- Lead-Acid batteries
- Paint and related paint products
- Fluorescent light bulbs
- Pesticides
- Used Oil, antifreeze, and other automobile fluids

In addition, five SWMDs held, in conjunction with ODA, pesiticide collection events.

A Permanent Site for Collecting HHW

In April 1996, the Summit/Akron Solid Waste Management Authority (Authority) opened its HHW Recycling Center (Center) to provide residents of the Authority with a means of managing their HHW. The Authority opted to provide this Center after hosting a temporary collection event. The event was overwhelmed by the number of participants some of whom had to wait in line for hours. Other participants were turned away. Based upon their experiences with the temporary collection event, the Authority decided to offer a more long-term solution for managing HHW.

The Center is open to residents two days a week from the beginning of April until the end of September. Summit County residents are welcome to bring unwanted HHW to the Center during the posted hours of operation. The materials that are accepted at the facility include paints, oils, gasoline, automotive fluids, pesticides, herbicides, household and car batteries, fluorescent light tubes, propane tanks, aerosols, mercury, and asbestos. The Authority also accepts scrap tires for a $1.00 per tire fee. Prohibited materials include waste from businesses, MSW, medical waste, any waste from out-of-county sources, recyclables, explosives, radioactive waste, ammunition, major appliances, and scrap metal.

In 1999, the Center took approximately 1,408,175 pounds (704 tons) of HHW from a total of 8,665 cars. Of the HHW collected, 45 percent, or approximately 636,000 pounds were recycled.

HHW Drop-off Locations

Thirteen SWMDs hosted drop-off locations for HHW in 1999. SWMDs generally accept limited materials at these locations. For drop-off programs, SWMDs often target materials that are less expensive or easier to manage individually rather than as part of a general collection program. Furthermore, drop-off programs are often conducted by SWMD staff rather than by a contracted hazardous waste contractor. A meaningful assessment of the total amount of materials collected through and the total cost for drop-off programs is not possible given the way reporting is performed.

The type of material selected for collection at any of the limited-material collection opportunities depends upon several factors, including:

- what materials contain the most hazardous constituents?
- what materials have hazardous effects on haulers or sanitary sewer systems?
- what materials are brought to collection events in large quantities?
- what materials generate many questions to the hotline regarding disposal methods?
- what materials have no existing infrastructure for safe disposal?

The most common materials targeted for limited-material collection opportunities are used oil, paint and paint products, pesticides, and household batteries.

Recycling and Reuse of Electronic Equipment

In recent years, the variety, availability, and low costs of electronic equipment have resulted in making the recycling, reuse, and disposal of obsolete and defunct electronics hot topics. Televisions, radios, personal computers, video cassette recorders (VCRs), digital video display (DVD) units, compact disc players, etc are all items that are becoming more commonplace in homes. Given the rapid pace of technological change and the increasing affordability of electronics, items that used to be considered "durable" are now becoming more and more disposable. As a result, more electronic equipment is finding its way into the waste stream. Of particular concern are personal computers as that is the electronics classification experiencing the greatest rate of turnover. To illustrate the extent of the problem that unwanted electronics may pose, consider the following statistics regarding the consumption and discarding of personal computer equipment:

- In 1996, it was estimated that there were over 300 million cathode ray tubes (CRTs) in items such as televisions and computer monitors in use in North America alone. That same year, approximately 42 million CRTs were sold in the United States and 79 million computers were retired.
- It was predicted that about 325 million personal computers would become obsolete between 1985 and 2005 in the United States.
- Growth in sales of personal computers has increased by more than 23 percent per year since 1985.
- In 1998, 44 percent of all households had personal computers.
- The lifespan of personal computer central processing unit is decreasing. By the year 2005, the lifespan is expected to be only two years.
- The lifespan of a personal computer manufactured in 1999 is 3.1 years, and the lifespan of a CRT is between four and seven years.
- 20.6 million personal computers became obsolete in 1998 alone.
- By 2007, the cumulative total of obsolete personal computers is expected to increase to almost 500 million units.

Consumer electronics (television sets, radios, and VCRs) accounted for 27 percent of all lead discards in MSW in 1986. The sources of the lead were soldered circuit boards and leaded glass in televisions. Interestingly, the statistics from 1986 did not account for the lead in CRTs as the disposal of CRTs had not yet begun to be problematic. Thus, the potential for lead to enter the waste stream is increased dramatically when CRTs are taken into account. CRTs from televisions and computer monitors are now one of the most common components of electronics in the municipal solid waste stream. Using the U.S. EPA Toxicity Characteristic Leaching Procedure (TCLP), the lead leachability from CRTs was studied. The average concentration of lead in CRT samples was determined to be 18.5mg/L which far exceeds the regulatory limit of 5.0mg/L. As was mentioned in Chapter IV, one state, Massachusetts, has banned the disposal of CRTs in landfill facilities located within that state.

According to the National Recycling Coalition, approximately 11 percent of computer equipment is recycled and three percent is reused nationally. Due to the poor economics of refurbishing older equipment and the lack of strong markets for the resale of used and/or refurbished electronics, most of electronic equipment that is collected is processed for material recycling. In this manner, the equipment is dismantled and the components that have value are sold and those that don't are discarded.

Based on a mix of electronic equipment, the most common materials recovered are as follows:

Steel	40%
Plastic	40%
Aluminum	7-10%
Copper	5%
Gold, silver, misc.	Balance

Infrastructure for Recycling Electronic Equipment

One of the biggest obstacles to widespread collection of electronics for recycling is the lack of available infrastructure to facilitate the process. There just are not enough outlets for

the collected materials, and those outlets that are available are generally too far away to make it economically viable to ship collected units to them. However, there have been several developments on both the national level and in individual states regarding the reuse and recycling of computer equipment.

National Electronics Recycling and Reuse Infrastructure

On the national level, IBM Corp. has instituted a program for recycling obsolete electronic equipment. In November, 2000, IBM launched a program, known as the IBM PC Recycling Service, which gives individual consumers and small-business owners a means of getting rid of unwanted computer hardware. Through this service, IBM accepts all types of computer equipment from any manufacturer's personal computers for a fee of $29.99. The program uses the United Parcel Service to ship the equipment to a recycling company in Pennsylvania. The equipment is then either refurbished and donated to Gifts in Kind International or dismantled and recycled.

Ohio Electronics Recycling and Reuse Infrastructure

In Ohio, both the federal and state correctional departments have established computer refurbishing and demanufacturing programs. The program established by the Ohio Department of Rehabilitation and Correction is called Computers for Education Program of Ohio. This program, administered by the Ohio Penal Industry, was created to transfer used but usable computers from corporations and other donors to schools that need those computers. Companies and other organizations ship used computer equipment to one of the Ohio prisons where the equipment is evaluated to determine if it is usable. Equipment that is usable is then refurbished by the inmates in the Industrial Training Program and placed in schools. Equipment that is not usable is dismantled, and, the components are recycled or sold as scrap.

Another option for managing used computer equipment is administered through the federal prison system at the correctional facility located in Elkton, Ohio. The Elkton facility is one of three federal correctional institutions under the Federal Bureau of Prisons that offers computer demanufacturing services. The service is offered as a product of UNICOR, the trade name for Federal Prison Industries, Inc. Businesses and government agencies can send any type of obsolete computer equipment to the three institutions where usable equipment is sold and scrap material is recycled.

There are also a number of individual businesses that refurbish obsolete and non-working but usable computers throughout Ohio. Unfortunately, at this point in time, due to Ohio's hazardous waste regulations, these companies are not permitted to accept computer equipment for the sole purpose of recycling it.

SWMD Collection Events

In 2000, three SWMDs sponsored collection events for electronic equipment. The Erie County SWMD held its first collection event for electronics in June of 2000. Residents were able to bring old computers, telephones, audio equipment, and other unwanted electronics to the event. In total, 679 electronic devices were collected. Some of the collected material was recycled locally, and the remainder was shipped to the federal prison in Elkton, Ohio. The event was funded by the Sandusky/Erie County Community Foundation.

The Carroll-Columbiana-Harrison Joint County SWMD held its first electronics collection events in 2000 as well. Electronic components were collected at three events (one in each county). Residents were able to bring televisions, VCRs, computers, printers, radios, facsimile machines, and telephones to the event. Collected materials were transported to the federal correctional facility located in Elkton, Ohio. In total, 60 cubic yards, approximately 6 tons, of electronic equipment was collected.

The Cuyahoga County SWMD sponsored a collection event, called the Old Computer Round-up, in 2000 for the collection of residential computer equipment. The four-hour collection event was held in August. Residents were able to take old computer equipment to one of 24 locations throughout the county. In total, 1,661 CPUs, 1,398 monitors, 1,146 keyboards, 624 printers, 835 mice, and 373 pieces of misc. peripheral equipment were collected. The Cuyahoga County SWMD has planned two more Computer Round-ups in 2001.

Other States' Electronics Recycling and Reuse Infrastructure

In Minnesota, Sony Electronics, Inc., in conjunction with Waste Management, Inc. and the Minnesota Office of Environmental Awareness, implemented a program which allows residents and commercial business owners to take Sony electronics to various collection locations around Minnesota at no cost. Sony then pays Waste Management, Inc. to recycle the donated components at WMI's eight electronic scrap recycling facilities which are located throughout the United States.

The Rhode Island Resource Recovery Corp. is in the process of establishing a permanent collection site for computer equipment at an existing material recovery facility. Once implemented, this program will be the first permanent statewide computer recycling program.

Recommendations

Governmental Responsibilities

Proper disposal of HHW is widely recognized as an important component of the overall management of solid waste for state and local governments. Management of HHW is most effective if it takes place at the local level, under the direction of SWMDs. At the state level, Ohio EPA may be most effective by de-

veloping resource materials and guidance documents, and maintaining contacts with the appropriate state agencies, businesses, and other parties interested in providing these resources.

State Responsibilities

In the past, Ohio EPA has focused its efforts related to HHW management on developing and distributing fact sheets, brochures, and other sources of information for use by SWMDs and the general public. Ohio EPA believes that this approach is the most appropriate at the state level and will continue to develop informational materials as warranted. At this time, DSIWM has plans to develop fact sheets for the following materials:

- Electronics
- Fluorescent light bulbs
- Smoke detectors
- Mercury/thermostat

Local Responsibilities

With implementation of this State Plan, SWMDs will now be required to provide at least two strategies geared towards HHW management. As presented in the *1995 State Plan*, Ohio EPA and SWAC believe that the specific programs and activities implemented by SWMDs for purposes of addressing general HHW management should continue to be left to the discretion of each SWMD. Thus, while the requirement that SWMDs provide a strategy in their solid waste management plans to address HHW will remain, this amended State Plan retains the flexibility afforded in the *1995 State Plan*. As was discussed in chapter 3, however, SWMDs will also be required to provide a strategy geared specifically to the generation and management of electronics equipment. As with the general HHW strategy, the specific strategy chosen by a SWMD to address electronics equipment is left to the discretion of that SWMD.

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RECYCLING MARKET DEVELOPMENT

CHAPTER 9

ORC Section 3734.50(G) requires the State Plan to "establish a strategy that contains specific recommendations for legislative and administrative action to promote markets for products containing recycled materials generally and for promoting the use by state governments of products containing recycled materials."

Background

The existence of strong recycling markets is widely acknowledged as one critical component of the continued success of all types of recycling programs in Ohio. Strong markets, meaning strong market demand for recyclable materials, translates into higher prices paid for those materials. This increases the economic incentive for the collection of the materials, stimulates investment by private waste companies in improved processing and collection systems, and may lead to a more aggressive expansion by private companies of their customer base. Strong markets also make the creation and expansion of recycling services more attractive for the public sector, as the net costs associated with these programs decrease due to the increased return on the collected materials. These same dynamics make recycling more attractive for commercial and industrial generators of waste. Ultimately, stronger markets result in increased demand, improved economic return, and lower costs associated with recycling activities, thereby making recycling a more attractive choice when compared to the alternative management option – disposal of the materials in landfills.

Unfortunately, there has been great volatility in the markets for recyclable materials over the last ten years. At the time the *1995 State Plan* was adopted, prices for many recycled materials were at all-time highs. Shortly after adoption of the *1995 State Plan*, prices for many of these materials dropped dramatically. Since then, prices for some of these materials have rebounded. This price volatility has not been unique to Ohio, but is a national phenomenon. Figure IX-1 illustrates the price volatility of certain materials processed at the Portage County SWMD, one of several SWMDs that operate a recycling processing center. Figure IX-2 illustrates the value of recyclable materials collected through curbside programs in the Puget Sound Area of Washington, expressed as the weighted average of the entire bundle of commodities collected. As can be seen by both graphs, prices have varied significantly over time, in some instances decreasing to a fifth of the previous value within one year.

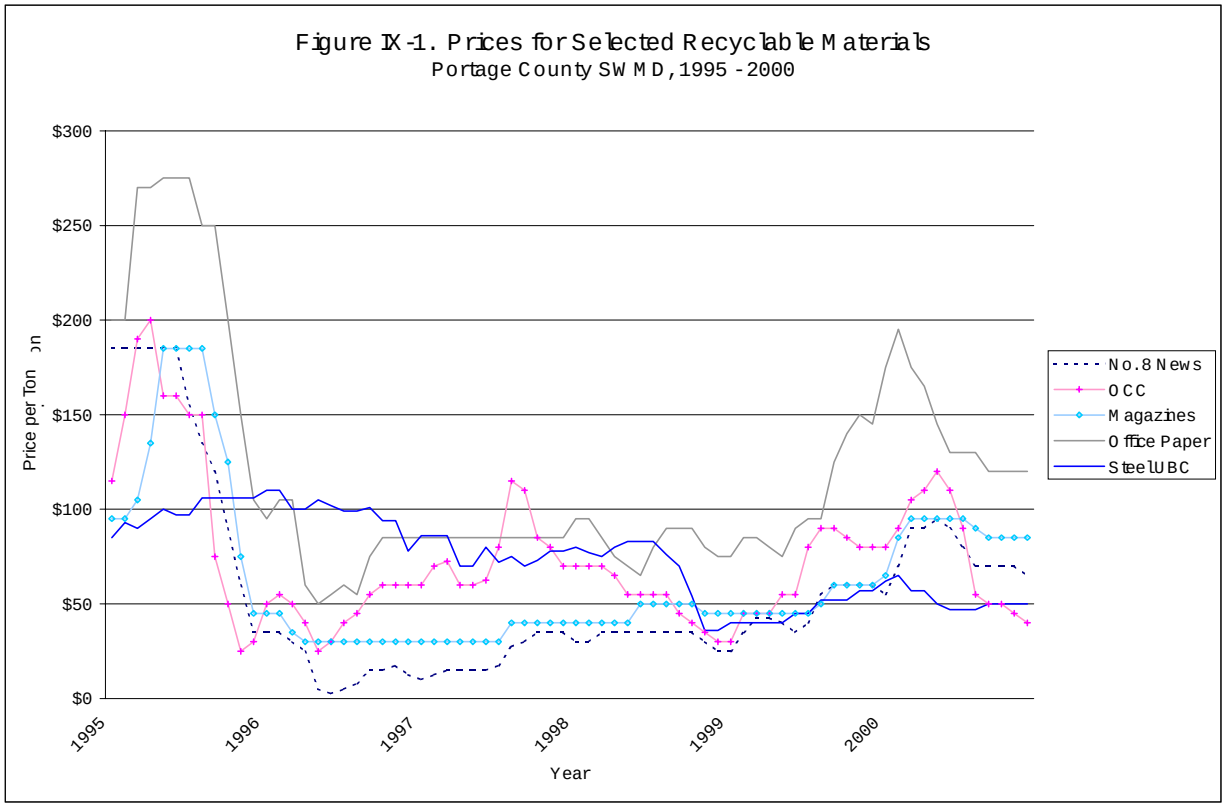
What causes the volatility in these markets? There are a number of factors, including the contraction or expansion of the U.S. economy, changes in overall demand for manufactured goods, economic conditions in foreign economies (such as the recession in Asia in the late nineties), industry-specific conditions (i.e. changes in the glass, steel, or aluminum industries), and price or supply changes in the virgin materials that compete with recycled feedstocks.

While many of the factors that influence price volatility occur at a national or international level, statewide or local factors can also have a significant impact on the value of recyclable materials that are collected (or potentially collected). Particularly for low-value commodities, the existence of end-users in Ohio, the level of demand these end-users have for the materials, and the proximity of the end users to the processors of recyclable materials are important factors affecting the economic viability of recycling programs.

In addition to these demand-oriented factors, issues associated with the supply of these materials are also significant. While the existence of recycled material end-users in Ohio has the potential to increase the value of the materials collected, these potential end-users need consistent supplies of high-quality materials. If the supply of these materials in Ohio is inconsistent or low-quality, the chances of attracting new users of the materials or expanding production by the existing users diminishes.

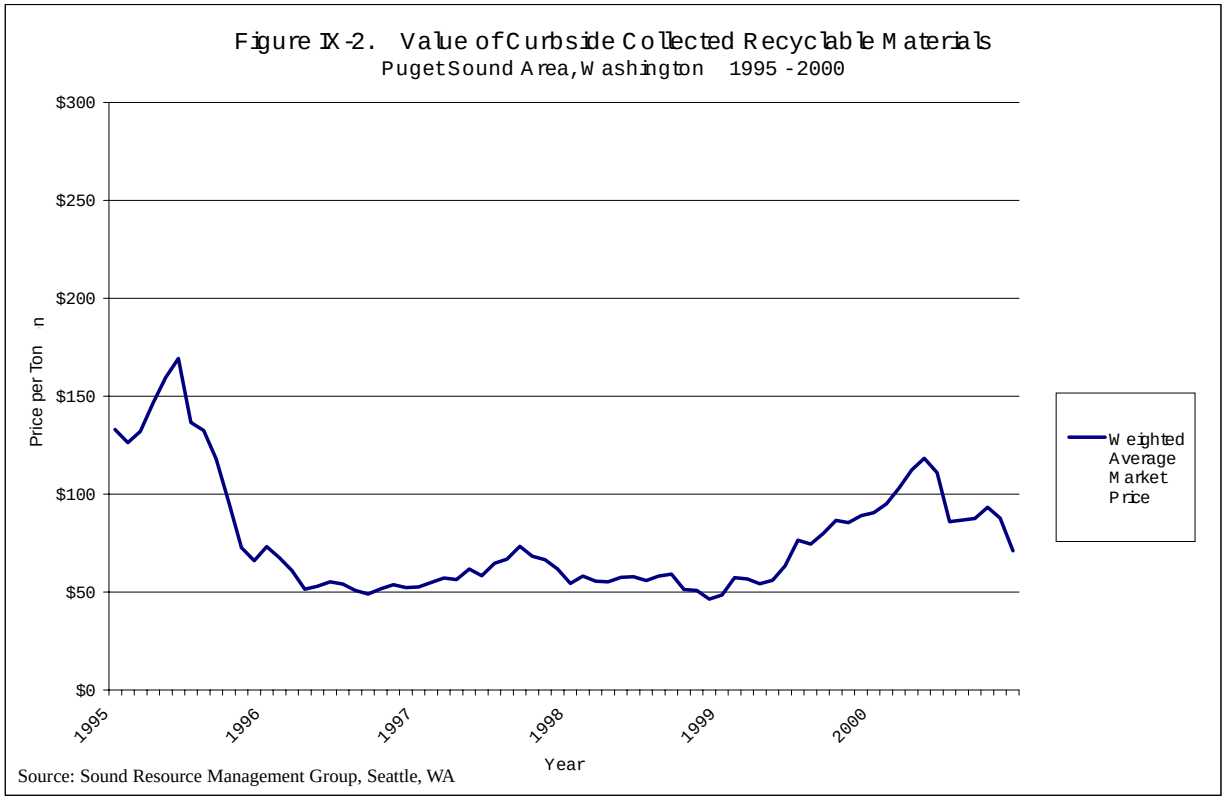
Ultimately, the value of potentially recyclable materials is heavily dependent on the demand for the end product that is made from the recycled material. For this reason, significant effort has been put forth by educators in the recycling field to publicize the "Buy Recycled" message. This effort is focused on educating consumers to "close the loop" by not only recycling the waste that they produce, but also buying products made from recycled material. Effort has also gone into educating businesses and government agencies on the importance of buying products made out of recycled materials as a way to support market development.

To address the various issues associated with recycling markets, the *1989 State Plan* identified four broad objectives and numerous strategies to meet the objectives. In addition, the *1995 State Plan* identified fifteen recommendations for state agencies to pursue. The *1995 State Plan* also identified recommended steps for SWMDs to pursue to develop market development strategies and iden-



tified a number of possible programs that SWMDs could pursue.

The remainder of this chapter will: a) provide an update on the status of the fifteen recommendations for state agencies identified in the *1995 State Plan*; b) provide an update on the types of market development programs that SWMDs have pursued since the adoption of the *1995 State Plan*, and; c) identify recommended strategies to be pursued with the adoption of this State Plan. (Note: for an update on the status of the numerous projects and strategies that have been initiated to achieve the four objectives contained in the *1989 State Plan*, please refer to Appendix E.)



Source: Sound Resource Management Group, Seattle, WA

1995 State Plan
Recommendations for the State

The *1995 State Plan* included fifteen recommendations for various state agencies. The recommendations are shown below in italics, followed by a discussion of the status of each one.

- *All state government departments/offices should be encouraged to participate in an Advisory capacity to the Interagency Workgroup for Market Development (IAWG)...*

  All state agencies are encouraged, through the State Recycling Coordinators infrastructure and a newsletter, to promote recycling and to buy recycled-content products. While no additional agencies are providing direct input to the IAWG, ODNR does facilitate communication between IAWG and other state agencies through the State Recycling Coordinators workgroup.

- *The IAWG and the associated task forces should continue to explore strategies for expanding the demand and supply of recyclable materials...*

  In the process of creating the biennial *Recycling Market Development Plan,* the IAWG continues to explore activities to increase recycling market development and include them in the next plan. The Material Specific Task Forces were originally active during the Spring and Summer of 1995 to develop recommendations and strategies for improving the markets for their specific material.

  In the fall of 1999, IAWG developed three material-specific workgroups to once again examine issues and develop strategies for improving recycling markets within Ohio. Based upon the recommendations of Ohio solid waste districts, the three materials chosen for focus were plastics, tire/rubber, and glass. The task forces consisted of volunteer representatives from private industries and solid waste districts and were facilitated by IAWG members. The focus groups met throughout 6 months to develop strategies and make recommendations, all of which are included in the most recent IAWG *Ohio Recycling Market Development Biennial Plan, 2000.*

- *The IAWG and the associated task forces should explore the feasibility of adopting a voluntary plastic recycled-content agreement similar in nature to the Voluntary Newspaper Agreement.*

  There has been no progress on this recommendation. Industry has not expressed strong interest in a plastic recycled-content voluntary agreement, and as a result, the IAWG and ODNR have focused resources on other higher priority projects.

- *The program to electronically trade recycled glass, PETE, and HDPE plastics on the Chicago Board of Trade (CBOT) should be monitored and promoted....*

  CBOT program information brochures were provided to Ohio's community recycling representatives and recycling processors. Also, in conjunction with the National Recycling Coalition and the CBOT initiative, a special session on the CBOT program was integrated into the state's 1995 recycling conference held in Sharonville, Ohio.

  On December 31, 1999, the Chicago Board of Trade's Recyclables Exchange ceased operations. The exchange began in 1995 as a result of a partnership between the CBOT, the U.S. EPA, and the National Recycling Coalition. While there were a number of "watchers" on the CBOT Exchange, there were very few users. Much had to do with the tremendous increase in internet-based trading sites that had been developed and some of CBOT's traffic moved to those venues. In addition, funding from the U.S. EPA had ended and apparently there was not enough traffic to warrant continuing it without grant funding.

- *The Department of Administrative Services (DAS) should continue to integrate the Buy-Recycled option within the local government cooperative purchasing events...*

  DAS Local Government Cooperative Purchasing "town meetings" were discontinued and have been replaced with "How to Do Business with the State" meetings. Although the purchase of recycled-content products is no longer a component of these events, ODNR continues to work with DAS to add new recycled-content products to state contracts.

  With assistance from ODNR, DAS, State Purchasing, now has 18 state term contracts that include a variety of recycled-content products. Those contracts are now easily identifiable for the users as they have the ODNR "Recycle, Ohio!" logo placed on the cover sheets.

- *DAS should review and evaluate the new "recycled product procurement" guidelines issued from the U.S. Environmental Protection Agency...*

  DAS continues to receive the new U.S. EPA procurement guidelines, and adds new recycled-content products to state contracts when feasible.

- *The Ohio Department of Natural Resources and the IAWG should strive to implement all feasible recommendations made by the material-specific task forces set up by the workgroup.*

  Progress has been made on satisfying 18 of the 25 recommendations made by the IAWG in the Recommendations and Strategies document that was published as a follow-up to the initial Recycling Market Development Plan.

In the fall of 1999, IAWG narrowed the scope of the Recommendations and Strategies to three specific materials. These materials were identified as "problem" materials by Ohio's solid waste districts. Three task forces were formed and new strategies and recommendations were created. Those are listed in the most recent IAWG *Ohio Recycling Market Development Biennial Plan, 2000.*

- *DAS and the State Architect should research the feasibility and use of recycled-content products in the construction and/or renovation of state-owned and leased buildings.*

  In 1997, as a result of the Design Decisions seminar (described below) for sustainable building design, the State Architect and ODNR-DRLP linked their homepages in an effort to increase access to recycled-content product information.

- *ODNR and DAS should work with organizations such as the Building Industry Association, U.S. Department of Agriculture, the National Homebuilders Association...to plan and conduct a statewide seminar on the use of recycled-content materials in the building trades industry.*

  In 1997, ODNR-DRLP, the State Architect's office and the Solid Waste Authority of Central Ohio planned and conducted "Design Decisions". This was a seminar primarily for architects and engineers to help them understand the environmental impacts of their design decisions and to provide increased awareness about recycled-content products being utilized in the construction industry.

  Over the last 5 years, ODNR – DRLP has been participating in the Multi-Client Project, a national project dedicated to developing standards for recycled-plastic lumber (RPL). Efforts to develop standards through the American Society of Testing and Materials (ASTM) focused on the structural and mechanical properties of RPL in outdoor residential decking and marine applications. ASTM Standards provide complete product credibility to architects and engineers involved in projects that potentially may utilize RPL. To date, seven (7) ASTM standards have been approved. A number of pilot projects have been conducted across the country, one at Kelly's Island, Ohio, in order to monitor the use, the environmental effects, and to showcase the use of RPL.

- *Private sector construction projects receiving state funds should consider the use of recycled-content building materials.*

  There has been no progress to date on this recommendation.

- *The Ohio Department of Development should continue to incorporate a Buy Recycled component into its annual "Buy Ohio" conference.*

  The "Buy Ohio" conference was replaced with the "Ohio Business Expo." However, both of these events have now been discontinued.

- *ODNR should evaluate the feasibility of expanding the Ohio Recycling Information Communication System (ORICS) to include more information on what recycled-content products are being purchased, by whom, and who is selling them.*

  ORICS was replaced with ODNR-DRLP's new web page, located at:

  www.dnr.state.oh.us/recycling/

  As a result, DRLP's "Directory of Ohio Vendors of Recycled Products" is now available via the Internet. Also, for individuals without Internet access, recycled-content product information was available via DRLP's FaxBack System. The FaxBack System ended in 1999 with the maturity of the ODNR – DRLP website and tremendous growth of the internet. Access to information about recycled-content products is now readily available through private manufacturers' sites as well as government sites.

  As a replacement, the Ohio Material Exchange (OMEx) was created. It is a statewide reuse and recycling service promoting the use of one company's unwanted material as another's raw material. It is an information clearinghouse for available by-products, virgin products and other forms of unwanted industrial materials. Funding has traditionally been provided by the Ohio EPA, ODNR, and ODOD, with additional assistance from the Association of Ohio Recyclers (AOR). AOR has contracted with Waste Alternatives, Inc. OMEx serves its clients through a bi-monthly newsletter, website and dedicated phone line/fax retrieval system. Its third year's accomplishments (May 2000 – 2001) include 80,546 tons of waste exchanged; $3.2 million in avoided businesses' disposal costs; and over 1,500 calls fielded. The amount of materials exchanged was doubled from the previous year.

- *ODNR should increase recycled-product procurement use/information to organizations…by offering to submit articles for their monthly newsletters and to participate in seminars and conferences.*

  DRLP's "Directory of Ohio Vendor's of Recycled Products" was updated in 1996 and distributed to all of DRLP's local recycling programs and all the local SWMDs. As mentioned above, it was also placed on the DRLP website and FaxBack system. From 1996-1998, over $800,000 was awarded by DRLP to local governments for increasing their purchase of products containing

at least 5 percent post-consumer material.

- *ODNR should establish a toll free recycled-content product "hotline" to improve awareness and access to information regarding procurement of recycled-content products.*

  In place of a toll free recycled-content product hotline, ODNR-DRLP established a web page and toll free FaxBack system that contain recycled-content product information.

  ODNR - DRLP efforts continue to be focused on providing information via its website.

- *ODNR should continue its efforts in establishing and expanding the Ohio Buy Recycled Business Alliance (OBRBA) in an effort to increase private business purchase of recycled-content products.*

  Since its inception in 1995, the Alliance's membership grew from the 12 original founding members to almost 150 members. The overall goal of this organization is to document and increase businesses' purchase and use of recycled-content products. In the late 1990s, the Alliance concentrated on expanding its membership and determining a permanent funding mechanism to sustain the organization and its services. However, a permanent funding source was never established. At this point, OBRBA is no longer an active project at ODNR – DRLP. It was the desire of ODNR – DRLP that the organization become self-sustaining. That has not happened, and as a result OBRBA is inactive at this time.

Projects Implemented BY SWMDs to Promote Markets for Recyclables

Although SWMDs are not required to provide market develop programs as part of their solid waste management plans[1], many SWMDs continue to implement programs to help develop markets for recyclable materials. The *1995 State Plan* recommended that SWMDs include market development activities for local communities, and suggested one or more of the strategies below shown in italics. Under each of these strategies are examples of programs implemented by SWMDs.

- *Pilot projects demonstrating the use of a recycled-content products:*

  The Mahoning County SWMD has purchased recycled-content products such as plastic lumber, drainage pipe, and pavement crack sealant, and uses these materials in construction projects (e.g. a building at the county fairgrounds) to demonstrate their effectiveness. Other SWMDs, such as the Summit County SWMD, have received grant money from ODOD's tire market development grant program to install athletic tracks made from scrap tire derived crumb rubber at area schools. The Cuyahoga County SWMD has also funded installation of playground surfaces made of recycled tires to demonstrate the viability of the product.

- *Providing limited financial incentives for local governments to use recycled-content products:*

  Several SWMDs, including the Ashtabula, Clinton, Coshocton-Fairfield-Licking-Perry, Darke, Lorain and Ottawa-Sandusky-Seneca SWMDs offer grants to local communities which can be used to purchase recycled-content products. Other SWMDs, such as the Clark County SWMD, purchase items directly to be used at area parks and other facilities. Many other SWMDs, such as the Auglaize County SWMD, provide technical assistance to local governments on the purchasing of recycled content products, but may not provide direct financial assistance. Finally, some SWMDs, such as the Butler County SWMD, have worked to establish preferential procurement policies within the County government for recycled content materials.

- *Coordinating waste exchanges:*

  Several SWMDs have initiated or participate in waste exchanges, including the Ashland, Adams-Clermont, Clinton, Cuyahoga, Franklin, Hamilton, Lake, Lucas, Mahoning, Mercer, Montgomery, Ottawa-Sandusky-Seneca, and Warren SWMDs. Some of these exchanges are facilitated through distribution of a newsletter, while many are internet-based services. In addition, many other SWMDs, such as the Ashtabula, Clark, Huron, Putnam, and Stark-Tuscarawas-Wayne SWMDs, promote the use of the state-wide OMEx waste exchange service.

- *Coordinating cooperative buying and marketing programs for local entities:*

  The Cuyahoga County SWMD has implemented a cooperative marketing program to assist local communities in selling their newspapers and residential mixed paper. In addition, the Athens-Hocking, Gallia-Jackson-Meigs-Vinton, and Guernsey-Monroe-Morgan-Muskingum-Noble-Washington (Southeastern Regional) SWMDs have participated in a cooperative marketing

[1]Goal #7 of the 1995 and current State Plans encourages SWMDs to develop market development strategies to promote the use of recycled products and to develop local markets for recovered materials. Unlike most other Goals, however, this Goal is voluntary for SWMDs. In other words, they have the option of including these strategies as part of their SWMD plans, but are not required to include strategies if they choose not to.

project focusing on recycled glass. Several other SWMDs provide technical assistance to local communities or specific waste generators regarding available markets for recyclable materials.

- *Seeking out businesses in the district that could improve markets for hard to market materials and assist them in applying for ODNR market development grants:*

  Numerous SWMDs have received ODNR market development grants which have focused on hard to market materials. The following are examples of some of the SWMDs that have had projects funded through ODNR grants:

  - The Cuyahoga County SWMD with Cleveland Reclaim Industries, Inc. (Turtle Plastics), to manufacture fire and rescue products made from colored HDPE.
  - The Guernsey-Monroe-Morgan-Muskingum-Noble-Washington (Southeastern Regional) SWMD with Mondo Polymer to increase the use of recycled plastic feedstock in the production of a highway guardrail block.
  - The Lucas County SWMD with Plastic Technologies, Inc., to develop a process to turn curbside generated post-consumer PET into a resin that meets FDA guidlines for direct food contact.
  - The Allen-Champaign Hardin-Madison-Shelby-Union (North-Central) SWMD with Theco, Inc. to purchase equipment and improve their facility to allow it to process mixed colored glass to be used by the fiberglass insulation industry.
  - The Stark-Tuscarawas-Wayne SWMD and Rittman Paperboard to purchase equipment to increase their use of post-consumer "mixed paper" in their raw material feedstock from 15% to 50%.

- *Providing technical assistance to local governments and local businesses wishing to use recycled-content materials:*

  The Solid Waste Authority of Central Ohio (SWAC), the SWMD for Franklin County, continues to provide technical assistance to businesses. SWACO worked closely with the Columbus Chamber of Commerce to promote waste reduction by conducting seminars for businesses and conducting general publicity campaigns to promote waste reduction and encourage buying recycled-content products. The Cuyahoga and Mahoning County SWMDs also have specific programs designed to promote or facilitate the purchase of recycled content materials by area businesses. Many other SWMDs also promote a "Buy Recycled" message to their area governments and businesses.

- *Providing education to the public, local governments, and businesses through seminars, presentations to local organizations and associations, news releases, and a SWMD newsletter on options available for market development:*

  The Darke County SWMD continues to implement the "Model Community Program" which educates local businesses and organizations on ways to reduce waste, recycle more materials, and increase purchase of recycled-content products. The Lake County SWMD sponsors a Business Waste Reduction Committee comprised of members of industrial and commercial establishments and the materials recovery private sector. This committee meets throughout the year and strives to develop new business recycling opportunities and promote waste reduction and recycling in the business, government, and not-for-profit communities.

- *Other Strategies Implemented by SWMDs but not specifically identified in the 1995 State Plan:*

  - The Coshocton-Fairfield-Licking-Perry SWMD provides grants to local industries to expand capacity to process or use recycled content materials.
  - The Butler County SWMD has developed a recycled content procurement policy for the County
  - The Cuyahoga County SWMD has assisted a local not-for-profit agency in the development of a program to rebuild mattresses and appliances for sale to low-income families.

Strategies to be Implemented with this State Plan Update

The following list identifies the recommended strategies to be implemented with the adoption of this State Plan. To address the issues identified earlier in this chapter, the following strategies are generally designed to help: identify and expand end uses for materials that historically have few available uses or markets (i.e. scrap tires); address supply, quality, or transportation issues for materials that historically have low end value (i.e. mixed glass); support the establishment or expansion of businesses that use all types of recycled content feedstocks; and stimulate the purchase of recycled content materials.

1. Support the continued development and implementation of the *Ohio Market Development Plan*.

   The *Ohio Market Development Plan* is created by the Interagency Recycling Market Development Workgroup(IAWG), which consists of a partnership among the ODNR, ODOD, ODOT, DAS, and Ohio EPA. IAWG was created by Ohio's General Assembly in 1994 to promote recycling market development by providing and coordinating state assistance for the production and use of recycled materials in Ohio. The IAWG is responsible for publishing the *Ohio Recycling Market Development Plan* every two years. The most recent plan was published in 2000. The plan not only coordinates state assistance for recycled materials, but also identifies broad strategies to promote recycling markets statewide. The Plan represents the most logical forum for state agencies to develop and implement strategies for the promotion of recycling markets.

2. Develop and implement a plan to increase state agency procurement of recycled-content products.

   This strategy is identified as part of the State Strategies identified in Chapter III.

3. Examine whether the current scrap tire rules impede the development of scrap tire markets in Ohio. In addition, identify the barriers, regulatory or otherwise, to expanded use of tire derived fuel in Ohio. Develop and implement a plan to revise the rules and/or reduce those barriers.

   As mentioned earlier in this document, while the use of scrap tires is not widespread in Ohio, a number of nearby states are expanding their use of scrap tires as a fuel source (i.e. tire-derived fuel). In fact, a significant number of Ohio tires are being transported out-of-state for use as TDF. Since this appears to be a viable alternative for the use of a large number of scrap tires, Ohio should explore the barriers for this use and work to reduce those barriers. In addition, there may be some components of the scrap tire rules that impede the development of other markets in Ohio. These issues should be explored and resolved.

4. Monitor the current efforts to recycle the FGD produced by Ohio's coal burning power plants. If current plans to recycle FGD do not materialize, identify the barriers to utilize the material and develop and implement a strategy to reduce those barriers.

   As mentioned earlier in this document, the production of FGD in Ohio has had a significant impact on both the State and individual SWMD recycling rates. It appears that current plans will result in the recycling of significant amounts of this material into gypsum board. If this project doesn't materialize, Ohio EPA should explore the barriers towards future recycling of this material and implement a strategy to reduce these barriers.

5. Research the factors influencing the supply, demand, and market price of glass and plastics in Ohio, and develop a strategy to improve the markets for these materials (these are two of the three materials identified in the *2000 Ohio Recycling Market Development Plan* as most in need of assistance).

   During the development of the current market development plan, several SWMDs identified glass and plastics as two of the most problematic materials to collect and market. At the same time, some end-users of glass and plastic in Ohio have indicated that they have greater demand for these materials than is currently being supplied from Ohio processors. Several factors were identified that appear to contribute to this situation. However, a greater understanding of these market dynamics is needed in order to develop more effective strategies.

6. Monitor and support the development of markets and infrastructure for the collection and recycling of electronic materials from residential sources.

   As explained in Chapter VIII, the number of electronic components being disposed by the residential sector is rapidly growing, and many of these components have potentially harmful constituents. Furthermore, many electronic components are highly recyclable. While the awareness of this issue has expanded significantly, the infrastructure and processing capacity in Ohio for handling these materials has not yet developed to handle the potential supply. A number of SWMDs have already started to sponsor collection events for electronic materials. Continued development of the processing capacity statewide is very important if more of these materials are going to be diverted from landfill disposal in the future.

APPENDIX A

WRRRs by SWMD for Calendar Years 1995 and 1999

Table A-1 WRRRs for the Residential/Commercial Sector, by SWMD, for calendar years 1995 and 1999

SWMD	Residential Commercial Sector WRRR in 1995 (%)	Residential Commercial Sector WRRR in 1999 (%)	SWMD	Residential Commercial Sector WRRR in 1995 (%)	Residential Commercial Sector WRRR in 1999 (%)
Adams-Clermont	14.4	8.7	Hancock	21.8	23.6
Allen-Champaign-Hardin-Madison-Shelby-Union	4.0	7.6	Henry	33.6	27.7
Ashland	14.0	4.2	Holmes	7.8	6.6
Ashtabula	3.9	20.4	Huron	12.9	32.6
Athens-Hocking	13.8	13.6	Lake	18.3	30.3
Auglaize	12.8	19.6	Lawrence-Scioto	34.6	46.0
Belmont-Jefferson	0.69	20.8	Logan	15.8	16.6
Brown	9.1	6.2	Lorain	3.3	10.2
Butler	18.5	13.1	Lucas	10.3	10.1
Carroll-Columbiana-Harrison	3.5	5.5	Mahoning	13.4	10.0
Clark	21.2	27.0	Medina	22.0	24.9
Clinton	14.2	13.9	Mercer	4.4	13.2
Coshocton-Fairfield-Licking-Perry	14.9	21.4	Miami	20.3	28.7
Crawford	18.8	1.9	Montgomery	45.5	10.2*
Cuyahoga	25.0	22.8	Ottawa-Sandusky-Seneca	8.3	10.4
Darke	14.5	24.9	Pike	4.8	4.8
Defiance-Fulton-Paulding-Williams	22.7	20.6	Portage	7.5	15.7
Delaware-Knox-Marion-Morrow	13.0	15.5	Preble	10.0	7.2
Erie	6.7	11.1	Putnam	36.4	9.7
Fayette-Highland-Pickaway-Ross	11.7	19.9	Richland	26.4	24.1
Franklin	8.1	21.9	Stark-Tuscarawas-Wayne	8.2	14.0
Gallia-Jackson-Meigs-Vinton	9.6	29.2	Summit	6.3	17.1
Geauga-Trumbull	9.9	21.1	Van Wert	23.2	36.1
Greene	12.2	23.3	Warren	4.0	11.5
Guernsey-Monroe-Morgan-Muskingum-Noble-Washington	5.0	8.2	Wood	9.8	22.8
Hamilton	23.6	24.7	Wyandot	3.4	4.5

*Closure of the incinerator facilities in this SWMD had a significant impact on the WRRR.

Table A-2 WRRRs for the Industrial Sector, by SWMD, for calendar years 1995 and 1999

SWMD	Industrial Sector WRRR in 1995 (%)	Industrial Sector WRRR in 1999 (%)	SWMD	Industrial Sector WRRR in 1995 (%)	Industrial Sector WRRR in 1999 (%)
Adams-Clermont	1.9*	1.4*	Hancock	82.7	78.2
Allen-Champaign-Hardin-Madison-Shelby-Union	75.2	79.6	Henry	68.9	83.7
Ashland	81.4	92.0	Holmes	88.7	89.0
Ashtabula	9.2	13.5	Huron	80.4	83.6
Athens-Hocking	0.0	87.4	Lake	71.2	80.8
Auglaize	80.2	98.6	Lawrence-Scioto	42.0	0.1
Belmont-Jefferson	93.9	97.9	Logan	94.9	88.4
Brown	18.4	4.3	Lorain	88.2	97.1
Butler	38.4	40.2	Lucas	53.9	69.3
Carroll-Columbiana-Harrison	78.4	83.0	Mahoning	79.3	86.8
Clark	95.0	97.6	Medina	91.1	90.8
Clinton	74.9	78.1	Mercer	82.0	85.8
Coshocton-Fairfield-Licking-Perry	33.4**	51.2**	Miami	63.2	78.8
Crawford	88.6	84.2	Montgomery	48.4	36.4
Cuyahoga	47.9	64.4	Ottawa-Sandusky-Seneca	27.8	27.0
Darke	88.9	61.1	Pike	73.6	92.6
Defiance-Fulton-Paulding-Williams	72.4	69.1	Portage	14.9	91.0
Delaware-Knox-Marion-Morrow	78.6	89.0	Preble	76.4	88.9
Erie	88.8	87.6	Putnam	82.1	98.2
Fayette-Highland-Pickaway-Ross	91.5	96.5	Richland	68.5	97.8
Franklin	79.8	54.3	Stark-Tuscarawas-Wayne	56.5	69.3
Gallia-Jackson-Meigs-Vinton	1.0***	2.2***	Summit	80.0	83.8
Geauga-Trumbull	83.6	73.1	Van Wert	61.7	82.0

continued

SWMD	Industrial Sector WRRR in 1995 (%)	Industrial Sector WRRR in 1999 (%)	SWMD	Industrial Sector WRRR in 1995 (%)	Industrial Sector WRRR in 1999 (%)
Greene	53.4	69.6	Warren	52.0	84.8
Guernsey-Monroe-Morgan-Muskingum-Noble-Washington	85.1	89.3	Wood	77.0	91.3
Hamilton	47.8	54.6	Wyandot	45.3	58.0

*Excluding FGD disposed in the Zimmer Landfill Facility in Clermont County from the calculation of the industrial WRRR results in a WRRR of 83.1 percent in 1995 and 83.0 percent in 1999.

**Excluding FGD disposed in the Conesville Residual Waste Landfill Facility in Coshocton County from the calculation of the industrial WRRR results in a WRRR of 61.2 percent in 1995 and 80.1 percent in 1999.

***Excluding FGD disposed in the Gavin Residual Waste Landfill Facility in Gallia County from the calculation of the industrial WRRR results in a WRRR of 54.8 percent in 1995 and 86.1 percent in 1999.

APPENDIX B

Summary of the Requirements in Senate Bill 165

With the passage of S.B. 165, Ohio was able to establish a comprehensive program which provides the State with the ability to manage scrap tires appropriately. The first facet of this new program is the regulatory framework established in the Ohio Revised Code. Not only did S.B. 165 provide Ohio EPA with the authority to develop and adopt rules governing all facets of scrap tire management, but it also provided a funding source - a $0.50 per-tire fee on the first (wholesale) sale of new tires - to support the implementation of those rules.

The scrap tire law was designed to address not only new and currently operating, viable entities involved in managing scrap tires, but also existing, non-compliant and illegal operations.

In addition to creating a comprehensive regulatory framework, S.B. 165 also provided a number of incentives to encourage the recycling of scrap tires rather than disposing of them. Thus, S.B. 165 mandates that a portion of the money generated by the new tire fee be allocated to research and development. S.B. 165 also earmarked money to be used for grants and loans to be awarded by ODOD to recyclers making scrap tire-derived products.

The Requirements Established by S.B. 165

Scrap Tire Management Fund

ORC Section 3734.901, enacted by the passage of S.B. 165, established a 50-cents-per-tire fee on the first sale of new tires. This fee generates approximately $3.5 million per year which is deposited into Ohio's Scrap Tire Management Fund. Money deposited into the Scrap Tire Management Fund was initially earmarked for the following four uses:

- *Research and Development* - As adopted, S.B. 165 allocated up to $150,000 per year, for five years, to the Institute of Polymer Science at the University of Akron (Institute) for research and evaluation of alternative methods of recycling scrap tires. This money was to be distributed to the Institute as an annual grant from the Scrap Tire Management Fund beginning in state fiscal year 1994 and ending in state fiscal year 1999.

- *Cleanup Efforts* - Ohio EPA uses the majority of the money from the Scrap Tire Management Fund to clean up scrap tire dumps in Ohio. Ohio EPA is required by law, through the scrap tire abatement program, to place the highest priority on sites with a million tires or more and those that pose the most serious threats to public health and the environment. The abatement program provides a much-needed supplement to ongoing efforts by Ohio EPA, local health departments, SWMDs and local law enforcement officials to force scrap tire facility operators and those responsible for illegal stockpiling and disposal of tires to clean up the problem sites that they created. These funds are intended to be reimbursed to Ohio EPA from costs recovered from the responsible parties. Recovered funds can then be channeled into additional cleanup projects.

Cleanup and abatement of the many tire dump sites in Ohio requires coordination of local governments and law enforcement agencies, local health departments, SWMDs, Ohio EPA, and private sector contractors. S.B. 165 established approximately $10 million in funding over a five-year period to cover removal actions and administrative expenses associated with those actions. This funding was intended to enable the state to address the largest scrap tire piles and/or those which constitute the most serious threats to public health and the environment. Before any state funding can be used for a removal and cleanup operation, vigorous enforcement efforts must be made to make the responsible party clean up the site. The law also specifies that state funding shall not be used for removal actions against any premises where not more than 100 scrap tires are present. One hundred and twenty days after the Director of Ohio EPA has ordered the removal of scrap tires from a site, the Director may award a contract for removal of the tires while legal action to recover the cost of abatement continues. If the person(s) responsible for the accumulation fails to pay the full cost of abatement, a lien may be placed against the property.

While the Scrap Tire Management Fund provides a necessary resource for cleaning up the larger, illegal scrap tire sites, local resources are still needed to clean up many of the smaller abandoned scrap tire piles in the state. As a result, the law allows solid waste management districts to spend money collected via statutory fees (i.e. tiered disposal fees and generation fees) on scrap tire removal actions.

S.B. 165 directs Ohio EPA in contracting for scrap tire pile cleanup and removal operations to tire preference to the companies which will reuse the scrap tires in beneficial use projects, recycling, or energy recovery over companies proposing to dispose of the scrap tires. The

law also sets the following priorities for sites to be addressed through the State Scrap Tire Management Fund:

- Accumulations that constitute a fire hazard or threat to public health;
- Accumulations that contain more than one million scrap tires;
- Accumulations located in densely populated areas;
- Accumulations that are determined by the local approved health department to constitute a public nuisance; and
- Accumulations located on a premises operating as a scrap tire facility without a valid license.

Ohio EPA also evaluates and prioritizes illegal scrap tire sites for consideration for state funding for removal based on whether the site is located in proximity to state scenic rivers and natural areas, to public water supplies, and other surface waters are also of concern due to the possibility of off-site migration of air and water pollutants in the event of a tire fire at the site.

With roughly 30 to 40 million tires already abandoned across the state, it is clear that state-financed cleanup programs must continue to be augmented by a number of other funding and enforcement mechanisms. Local officials attempting to address the many smaller accumulations of abandoned scrap tires can expect assistance from Ohio EPA and the State Attorney General's Office in enforcement efforts aimed at pursuing responsible parties. Local SWMDs may also be able to provide funding for cleanup of tire dump sites that are unlikely to be addressed in the near future through the state Scrap Tire Management Fund. Environmental penalty monies and credit projects carried out by those fined for other environmental violations are also a potential source of cleanup activities. Perhaps most importantly, the new shipping paper requirements and regulatory program should serve as a significant deterrent to further dumping. Operators of existing tire storage and recovery facilities will also be under new state requirements to draw down the size of their storage piles.

- *Compliance Monitoring and Enforcement* - Ohio EPA's DSIWM receives up to $750,000 per year from the Scrap Tire Management Fund to support compliance monitoring and enforcement of the scrap tire law and regulations and to allow Ohio EPA to oversee state contracts for cleanup of scrap tires.
- *Financial Assistance* - A portion of the Scrap Tire Management Fund is used to provide grants, low-interest loans, and other financial assistance to scrap tire recyclers. Under the terms of S.B. 165, this financial assistance was administered through ODOD. One million dollars per year from 1994 to 2000 was earmarked from the scrap tire management fund for this purpose. Funds designated for this purpose are placed into ODOD's Facility Establishment Fund where loans and grants are issued in amounts ranging from $25,000 to $150,000. Loans are provided on a first-come, first-served basis to companies that can demonstrate they will create new scrap tire-derived products. ODOD can also provide funds for qualifying beneficial use projects where whole or processed scrap tires are proposed to be substituted for other more expensive materials (on projects which have been pre-approved by Ohio EPA). Funding is designated as "take-out" financing whereby a business must complete its project utilizing financing from a conventional lender as its equity. Upon completion of the project, funds from the Facility Establishment Fund are then disbursed. Preferential interest rates and terms are available for qualifying companies locating or expanding in "distressed" areas. ODNR will assume responsibility for this program from ODOD in state fiscal year 2002 and will develop new guidelines regarding how ODNR will administer these funds.

APPENDIX C

The Scrap Tire Regulatory Program

Scrap Tire Generators

Under Ohio's scrap tire law and the regulations adopted in accordance with that law, most scrap tire generators (which include tire dealers, auto repair shops, tire retreading shops, trucking terminals, and individuals) are exempt from registration, PTI, and license requirements as long as they manage their scrap tires such that they remain within the specific exemption limits set forth in the law.

All generators are responsible for ensuring that they are using a registered scrap tire transporter to remove and deliver scrap tires. Generators must retain records for three years documenting their scrap tire shipments. The generators also must properly store any scrap tires in order to avoid creating a nuisance, a threat to public health and safety, or a fire hazard.

Scrap Tire Transporters

Ohio's regulatory program requires anyone who transports more than ten scrap tires that originate or terminate in the state of Ohio and who does not qualify for an exemption to register annually with Ohio EPA. At the time the *1995 State Plan* was adopted, Ohio law also required each scrap tire transporter to obtain financial assurance in an amount that is at least $50,000. In February, 1996, Substitute H. B. 545 was enacted thereby reducing the amount of financial assurance required to $20,000 per registered transporter. The reduction was intended to allow more transporters to qualify for registration while maintaining an acceptable level of financial assurance on all tire transporters.

Scrap tire transporters may deliver scrap tires only to a licensed scrap tire facility, an approved beneficial user, another registered transporter, a solid waste incinerator or energy recovery facility, or an out-of-state facility operating in compliance with the laws of that state. Scrap tire transporters must use shipping papers for all scrap tires and submit annual reports summarizing their scrap tire activities.

Scrap Tire Collection, Storage, Recovery and Disposal Facilities

Under the scrap tire law and regulations, scrap tire facilities are required to obtain a PTI or registration from Ohio EPA and an annual solid waste license from the approved local health department. Specific exemptions from registration or permitting is included in the law if certain facilities such as tire dealers and tire retreaders meet specific requirements. Annual reporting and shipping paper requirements for all licensed facilities will enable the state to track shipments of tires moving legally to recycling activities or disposal facilities.

Scrap Tire Collection and Storage

Scrap tires may be managed above ground if the proposed site is registered or permitted and licensed, meets Ohio EPA regulations, and is in compliance with local zoning, fire, and health codes. The site will serve as a holding facility until the tires can be recycled or properly disposed. The scrap tire regulations established the following standards for storage and collection facilities.

Scrap Tire Storage Facility

- Stores only whole scrap tires;
- Scrap tire storage piles are to be no greater than 2,500 square feet in area;
- Registered scrap tire storage facilities cannot exceed 10,000 square feet in area (for example, four individual storage piles of 2,500 square feet);
- Permitted scrap tire storage facilities cannot exceed three acres in area and are only approved if the storage facility is owned by a registered or permitted scrap tire recovery or monofill/ monocell facility;
- Adequate fire lanes must be created and maintained in and around each scrap tire pile located outdoors. These aisles are to be free of obstructions and combustibles at all times;
- Open burning or flames on premises where scrap tires are stored is prohibited within fifty feet of a scrap tire storage pile;
- Effective control measures for mosquitoes and other vectors must be implemented. Such control may include the application of cover material (in no case shall cover materials consist of soil), pesticide or larvicide, shredding the tires to a size that can be demonstrated to not hold water, or other methods approved by the Director of Ohio EPA. Where cover materials are utilized as such control measures, scrap tires are to be covered at all times except when tires are being added or removed from the pile.

Scrap Tire Collection Facility

- Receives only whole scrap tires from the public.
- All scrap tires are to be stored in portable containers only.
- The maximum storage area is five thousand cubic feet.

- Effective control measures for mosquitoes and fire must be implemented at the facility. Effective controls may include covering the tires, pesticide or larvicide, and security for the facility.

Scrap Tire Recovery

A scrap tire processing facility that uses a controlled combustion, thermal, mechanical, chemical, or other process to extract or produce usable products, materials, or energy from the scrap tires is a scrap tire recovery facility. A scrap tire shredder, either fixed or mobile, is also considered to be a scrap tire recovery facility. Scrap tire baling equipment is not considered to be a recovery facility unless it is used to produce a final product. These facilities are allowed to have on-site a temporary tire storage area that does not require an additional registration or license as long as the temporary storage area is in compliance with the storage requirements for the area. Whether or not a scrap tire recovery facility must be registered or permitted by Ohio EPA is based on the facility's Daily Designed Input Capacity (DDIC).

The scrap tire rules address three classes of scrap tire recovery facilities - mobile facilities, Class I facilities, and Class II facilities.

Mobile Scrap Tire Recovery Facilities (OAC Rule 3745-27-67)

- Include any tire cutting, baling, or shredding equipment that is moved from site to site for the purpose of processing scrap tires at the site of before the scrap tires are removed from the site.
- Must be registered with Ohio EPA and licensed annually with the local health department if the primary business location is in that county.
- Out-of-state primary business locations are licensed by Ohio EPA.
- Are required to have financial assurance of at least $50,000
- Must comply with general handling and storage requirements contained in OAC Rule 3745-27-67 and 3745-27-60 or 3745-27-65.

Class I Scrap Tire Recovery Facilities

- A scrap tire recovery facility with a DDIC of 200 tons of scrap tires per day or greater
- Must be permitted by Ohio EPA and licensed annually by the local health department
- Must comply with siting criteria established in OAC Rule 3745-27-63
- Are required to have financial assurance in an amount that is commensurate with the number of tires stored at the facility
- Must comply with operational criteria established in OAC Rule 3745-27-65, including mosquito and vector controls, storage area and pile size limitations, fire lane availability, fire contingency plans, fire response and prevention requirements, and record keeping and reporting requirements.
- Must perform final closure activities in accordance with OAC Rule 3745-27-66.

Class II Scrap Tire Recovery Facility

- A scrap tire recovery facility with a DDIC of less than 200 tons of scrap tires per day
- Must be registered with Ohio EPA and licensed annually by the local health department
- Must meet siting criterial established in OAC Rule 3745-27-62
- Are required to have financial assurance in an amount that is commensurate with the number of tires stored at the facility
- Must comply with operational criteria established in OAC Rule 3745-27-65, including mosquito and vector controls, storage area and pile size limitations, fire lane availability, fire contingency plans, fire response and prevention requirements, and record keeping and reporting requirements.
- Must perform final closure activities in accordance with OAC Rule 3745-27-66.

Scrap Tire Disposal

Scrap Tire Monocell/ Monofill Facilities

Scrap tires that cannot otherwise be beneficially reused should be segregated from the solid waste stream and disposed in monofill/monocell facilities.

Monocell

A scrap tire monocell is an individual area or cell within a solid waste landfill that accepts only shredded or processed tires. A monocell can be either contiguous or non-contiguous to other cells, phases, or units of the solid waste landfill facility, and can be established at either a municipal solid waste landfill facility or an industrial solid waste landfill facility. In order to establish a monocell, the owner or operator of the solid waste landfill facility must obtain a permit to install. If the monocell is contiguous to the solid waste landfill facility, then the application for the permit to install is submitted in accordance with either OAC Rule 3745-27-06 or OAC Rule 3745-29-06, whichever is applicable. If noncontigous to the solid waste landfill facility, then the permit to install application is submitted in accordance with OAC Rule 3745-27-70.

In addition to having to obtain a permit to install, the owner/operator of the scrap tire monocell must also comply with requirements for construction, operation, closure, post-closure, and financial assurance. For contiguous units, these are the same, with minor excep-

tions for operational requirements, as the requirements contained in OAC Rules 3745-27-06 to 3745-27-20 (for monocells located at municipal solid waste landfill facilities or OAC Rules 3745-29-06 to 3745-29-20 (for monocells located at industrial solid waste landfill facilities).

There is only one scrap tire monocell facility currently operating in Ohio. That facility is located at the Pike Sanitation Landfill in Pike County

Monofills

A scrap tire monofill is a sanitary landfill facility that accepts only shredded or processed scrap tires. Because processing tires typically results in a reduction of up to 75 percent in the volume of material being disposed, monofill space is conserved. In addition, scrap tires placed in a monofill may be "mined" at a later date when the technologies for reuse and recycling are more economical and become more prevalent in the region.

The requirements for scrap tire monofills are contained primarily in OAC Rules 3745-27-70 to 75 and are as follows:

- Permit to Install - The owner or operator of a scrap tire monofill must obtain a permit to install in accordance with OAC Rule 3745-27-70
- Siting Criteria - A scrap tire monofill must be located in compliance with siting criteria that are specified in OAC Rule 3745-27-71.
- Construction - A scrap tire monofill must be constructed in accordance with OAC Rule 3745-27-72
- Final Closure - Scrap Tire Monofills must be closed in accordance with OAC Rule 3745-27-73
- Post-Closure Care - The owner or operator of a scrap tire monofill must perform post-closure care in accordance with OAC Rule 3745-27-74
- Operation - A scrap tire monofill must be operated in accordance with OAC Rule 3745-27-75.
- Can accept processed scrap tires for disposal
- Can accept whole tires for disposal but must process all tires, except large off-the-road tires, prior to disposal

In addition, owners and operators of scrap tire monofills must obtain an annual operating license and provide financial assurance. The financial assurance requirements for scrap tire monofills, as for all landfill facilities, are contained in OAC Rules 3745-27-15 through 3745-27-17.

There are two operating scrap tire monofill facilities in Ohio. Those facilities, both of which are located in Stark County, are the American Tire Monofill and the C & E strip mine reclamation project.

Scrap Tire Beneficial Use

The person(s) wanting to beneficially use scrap tires is required to notify Ohio EPA of their intent and provide detailed information in writing concerning the use of the scrap tires. If the proposal(s) does not qualify as a beneficial use, then the applicant may be required to obtain a license and a PTI or registration as a scrap tire facility. Without some kind of authorizing document, the applicant may be cited for open dumping. Some categories of beneficial uses are approved in the rules and do not require specific Ohio EPA authorizing documents, provided the uses do not violate local fire or zoning requirements. The number of scrap tires stockpiled for the beneficial use cannot be greater than the total needed for the beneficial use Furthermore, stockpiled scrap tires must be stored in accordance with the storage requirements for less than 30 days unless a longer duration is explicitly approved in Director's Findings and Orders.

Using pieces of scrap tires or crumb rubber to manufacture or assemble commercial products is a means of recycling scrap tires. However, since those products are considered to be

commodities for sale or exchange, the use of such products does not meet the definition of beneficial use for purposes of applying the scrap tire rules and is not, therefore, restricted by the scrap tire rules. Beneficial use, as covered by the scrap tire rules, does apply to any end use of whole, cut or shredded tires that results in the material being placed into or on the ground or waters of the state. Such placement may constitute disposal.

The *1995 State Plan* indicated that beneficial use would also apply to any end use of crumb rubber as a soil conditioner, compost filler, or other applications that place the crumb rubber directly into or on the ground or waters of the state. The regulations, as adopted, regulate neither the storage of crumb rubber nor the use of crumb rubber as a soil conditioner. Ohio EPA maintained that, due to the high cost involved in processing scrap tires into a powder-like material, crumb rubber has enough "value added" to prevent a company from wasting or illegally disposing of the material. Furthermore, according to studies considered during the drafting of the scrap tire rules, leachate from crumb rubber products is not considered to be detrimental to public health or the environment. Thus, the definition of "scrap tire" in the rules was drafted in such a way as to exclude crumb rubber products which have been processed down to a size that is no longer visually identifiable as scrap tires and which no longer contains wire or fiber. The definition of "scrap tire" was limited in this way to provide regulatory relief, thereby encouraging the use of crumb rubber produced from scrap tires.

The *1995 State Plan* indicated that the use of crumb rubber as compost filler would be regulated as a beneficial use. As adopted, however, the scrap tire rules allow shredded tires to be used as a compost bulking agent. That beneficial use of shredded tires is approved by rule; that is such use requires only notification to Ohio EPA prior to conducting the use. The use of shredded tires as a compost bulking agent is restricted to shredded bias ply tires or tire shreds with all metal removed. Of course, before shredded tires can be used as a compost bulking agent, Ohio EPA must issue an approval for an alternate bulking agent to the owner/operator of the composting facility.

Persons purchasing or accepting whole, cut, or shredded tires from a scrap tire recovery facility or any other source may have to provide beneficial use notification to Ohio EPA if they plan to place the whole or processed tires in or on the ground or waters of the state. The notification requirements will not apply to such common sense uses by individual homeowners as a single tire swing or flower planter at a single family residence or to items manufactured or assembled from pieces of scrap tires for temporary use on the ground such as mats, road culvert pipes, etc. Ohio EPA approval must be sought for any use of tires for erosion control, fill, drainage layers, submerged reefs, and so on. Ohio EPA has already issued guidance governing the use of shredded or chipped tires in the construction of solid waste landfill leachate collection systems and freeze-thaw protection layers. The owner/operator of a scrap tire facility or solid waste facility seeking to place whole, cut, or shredded scrap tires on or into the ground or waters of the state in any manner not covered by their facility registration or PTI and license must also file a beneficial use notification.

APPENDIX D

Scrap Tire Management Program - Projects For Which Funds Have Been Disbursed and Encumbered Through Grants and Loans Administered by ODOD

Disbursed or Encumbered:	Fiscal Year	Grant/ Loan Amount
American Scrap Tire Recyclers, Inc.	00	$ 190,000.00
Ashland County Solid Waste District	98	175,000.00
Ashland County Solid Waste District II	00	481,000.00
Avon Local Board of Education	01	52,506.91
Brecksville-Broadview Heights City School Dist.	00	66,103.00
C&E Coal, Inc.	97	250,000.00
C & E Coal, Inc.	00	250,000.00
CFLP Solid Waste District / Licking County	00	85,676.00
Cloverleaf Local Schools	00	113,032.84
Columbiana Exempted Village Schools	02	52,631.00
Columbus Grove Local School District	00	79,250.00
Continental Exempted Village Schools	02	52,631.00
Crestview Local Schools	02	23,000.00
Crooksville Exempted Village Schools	02	53,631.00
Durable Corporation	02	73,000.00
E. Canton Community Sports Complex Committee	01	52,631.00
Elida Board of Education	00	159,315.00
Fairborn City Schools	02	52,631.00
FIFO Manufacturing, Inc.	97	40,000.00
Firelands Local School District	01	100,000.00
Franklin Monroe Local School District	00	64,450.00
Howland Local Schools	01	52,631.00
Jefferson Local Schools	00	180,000.00
Johnstown-Monroe Local Schools	00	147,503.00
Licking Valley Local School District	00	76,500.00
Lima City School District	00	194,500.00
Lorain City School	01	52,631.00
Louisville City Schools	01	49,637.50
Lucas County Solid Waste District	00	500,000.00
Lucas County Solid Waste District	02	52,631.00

Disbursed or Encumbered:	Fiscal Year	Grant/ Loan Amount
Mahoning County Solid Waste Management District	02	52,631.00
Marion Local School District	02	52,631.00
Muskingum County Commissioners	02	52,631.00
National Feedscrew & Machining/LOAN	97	250,000.00
Newark Catholic High School	00	126,949.00
New Bremen Local School District	00	102,868.00
Newton Falls Exempted Village Schools	01	52,631.00
North Central Local Schools	01	72,000.00
North Fork Local School District	01	94,740.00
Northridge Athletic Boosters	02	90,028.00
NFM/Welding Engineers	99	800,000.00
Otsego Community Sports Complex	00	52,631.00
Ottawa/Sandusky/Seneca Jt.Solid Waste Mngt. Dist. I	96	125,000.00
Ottawa/Sandusky/Seneca Jt.Solid Waste Mngt. Dist. II	01	73,394.23
Parkworks, Inc.	01	40,888.50
Parkworks, Inc.	02	67,111.50
Perry Local Schools	00	92,250.00
Pleasant Local Schools Board of Education	00	144,240.84
Ravenna City School District	00	250,000.00
Renewable Energy Products, Inc.	97	250,000.00
Ridgemont Local Schools	02	60,000.00
Ridgewood Local Board of Education	01	52,631.00
Ripley Union Lewis Huntington	02	130,000.00
Smithfield Township Board of Trustees	00	194,001.97
Summit Akron Solid Waste Management Auth. I	00	237,589.50
Summit Akron Solid Waste Management Auth. I	02	178,890.00
Summit/Akron Solid Waste Management Auth. II	01	52,631.00
Tiffin City Schools	01	52,631.00
Tri-Valley Local School District	00	67,736.40
United Local School District	02	52,631.00

APPENDIX D

Scrap Tire Management Program - Projects For Which Funds Have Been Disbursed and Encumbered Through Grants and Loans Administered by ODOD

Disbursed or Encumbered:	Fiscal Year	Grant/ Loan Amount
Vinton County Local Schools	02	100,000.00
Warren Local School District/City of Warren	01	215,900.00
Washington-Nile Local School District	01	52,631.00
Wayne County Rubber, Inc.	02	135,000.00
Western Reserve Local School District	00	115,250.00
	TOTAL DISBURSED AND ENCUMBERED	$8,311,670.69

APPENDIX E

Market Development Projects Initiated to address the four recycling market development objectives identified in the 1989 State Solid Waste Management Plan

In an attempt to address the "discontinuities between supply and demand", the *1989 State Plan* listed four major recommendations for recyclables market development at the State level. This appendix discusses each of those objectives and presents information regarding the various programs that have been undertaken by Ohio's State government, and/or participated in by State government since the adoption of the *1995 State Plan*. This information is taken from the "Review of the 1995 State Solid Waste Management Plan", issued by Ohio EPA on June 10, 1998. The actual language for each objective is shown in italics.

1989 State Plan - Objective A

The state should legislatively establish a program within the Department of Development to develop markets for recycled goods. The program should focus on industries using recycled goods. This program should include a legislatively developed low-interest loan program for market development, and for research and development of recycled goods and markets.

Activities that have been implemented since the adoption of the *1995 State Plan* that have contributed to the accomplishment of Objective A are as follows:

- House Bill 345 — Recycling Market Development Plan: This legislation, effective in July 1994 requires the state to prepare a recycling market development plan every two years. The second *State Recycling Market Development Plan* was published in December 1996, and includes commitments from five state agencies (Natural Resources, Environmental Protection, Transportation, Administrative Services, and Development) to implement projects designed to improve markets for recyclable material. The third biennial plan is scheduled to be completed by December 1998.
- ODNR Plastic Pallet/Lumber Research: The Ohio Department of Natural Resources, in conjunction with and the U.S. Department of Energy, completed a plastic pallet research and demonstration project. This project demonstrated that using a recycled plastic pallet for storing/handling 55 gallon drums of hazardous materials was feasible and cost effective. Also, in 1997, Battelle Research Laboratories, Inc., with support from ODNR, was able to obtain approval for five American Society for Testing and Materials (ASTM) standards for recycled plastic lumber.
- Pollution Prevention Loan Program: This program was established in 1994 as a joint effort between Ohio EPA and the Ohio Department of Development. From 1994 through February 1998, small and medium-sized companies throughout Ohio have been awarded low interest loans totaling approximately $3,634,000 for construction and/or purchase of equipment to complete pollution prevention activities. While Ohio EPA has reviewed the technical aspects of 62 projects since 1995, twenty of these projects have received funding from the Department of Development. From 1995 through February 1998, four projects have been funded which include solid waste recycling as well as four projects with solid waste source reduction components.

1989 State Plan - Objective B

The buying of recycled content products will be promoted in the State of Ohio.

The following activities, which have contributed to the Accomplishment of Objective B, have been implemented since the adoption of the *1995 State Plan*:

- ODNR Pilot 'Recycled Product" Projects: There have been no new pilot projects since 1995.
- Ohio Newspaper Association Voluntary Recycled Newsprint Procurement agreement: In 1996, the Ohio Newspaper Association reported that its members used 312,168 metric tons of newsprint containing recycled fiber. The aggregate recycled fiber content was 26 percent, down slightly from the 30.3 percent in 1995. This total still exceeds the 23 percent goal established for 1996 in the Ohio Voluntary Newsprint Agreement.
- House Bill 25 state agency report: ODNR's Division of Recycling and Litter Prevention (DRLP) continues to actively promote the concept of "buying recycled" to state employees through publications, displays, training and other awareness materials. Reports required under House Bill 25 indicate that Ohio state agencies purchased $7,674,729 in state fiscal year 1996 and $3,162,412 in state fiscal year 1997 of recycled content products. The decrease from 1996 to 1997 is in large part due to two factors: 1) incomplete reporting, and 2) a decrease by the Ohio Lottery Commission in its purchase of lottery tickets.

In 1997, Ohio Governor Voinovich challenged state agencies to increase their purchase of recycled-content products by 15 percent in fiscal year 1998. As a result, the Ohio Departments of Natural Resources, Transportation, Administrative Services, Development and Ohio EPA signed Memoranda of Understanding committing to increase their Departments' recycled content purchases by 15 percent. The Governor directed all other departments to meet the 15% increase as well.

- Ohio's Recycled Product Vendor's Guide: This guide was updated and distributed for the third time in 1996. The guide was also made available through the ODNR-DRLP web page at: http://www.dnr.ohio.gov/odnr/recycling
- Buy-Recycled Grants: ODNR-DRLP continued to provide funds to Ohio local governments for the purchase and testing of recycled-content products. From 1996-1998, over $ 800,000 was awarded through the *Recycle, Ohio!* grant to increase local purchase of recycled-content products.
- Ohio Buy-Recycled Business Alliance: Since its inception in 1995, the Alliance's membership has grown from the 12 original founding members, to almost 150. The overall goal of this organization is to document and increase businesses' purchase and use of recycled-content products. Recently, the Alliance has been concentrating on expanding its membership and determining a funding mechanism to sustain the organization and its services.
- University of Toledo Research project: The Ohio Department of Transportation sponsored research with the University of Toledo, College of Engineering, on the cost effectiveness of using recycled-content materials. The research was to develop a procedure for performing life cycle cost analysis for recycled materials such as rubber, glass, paper and plastics.

1989 State Plan - Objective C

Efforts will be directed to promote the expansion of existing industries and attract industries to Ohio that will use recycled materials.

Activities that have been implemented since adoption of the *1995 State Plan* that have contributed to the accomplishment of Objective C are as follows:

- Senate Bill 165 - Scrap Tire recycling market development: See Chapter VI for a discussion of the on-going programs implemented as a result of Senate Bill 165.
- ODNR Recycling Market Development Grant Program: ODNR-DRLP awarded over $1.2 million, from 1996-1998, to 16 Ohio local businesses for the implementation of projects to improve the markets of post-consumer recyclables in Ohio. For a summary of those grants, see Appendix D.
- ODNR Demonstration projects: In an effort to target mixed color glass and residential mixed paper, two recycled materials with limited markets, ODNR-DRLP funded two demonstration programs - one with Strategic Materials, Inc, in Cleveland, and one with Central Fiber Corporation in Dayton.

  Also, ODNR-DRLP, in conjunction with the Butler and Hamilton County SWMDs, City of Forest Park, Cincinnati Recycled Fibers, Browning Ferris Industries, Rumpke Recycling, and the American Forest and Paper Association, planned and implemented a pilot "residential mixed paper" collection program in Butler County. The pilot ran for 10 months and many valuable things were learned from this pilot.

1989 State Plan - Objective D

The State of Ohio will actively pursue the development of regional markets for products containing recycled materials.

Since the adoption of the *1995 State Plan*, the following activities have been implemented, contributing to the accomplishment of Objective C:

- Ohio Materials Exchange: A partnership between Ohio EPA, Department of Natural Resources, Department of Development and the Association of Ohio Recyclers has resulted in a statewide materials exchange program, OMEx. OMEx provides Ohio businesses with a mechanism for finding an alternative to disposal for their company's waste. Materials exchanges facilitate turning one company's waste into another company's raw materials, thus avoiding landfilling of such materials. OMEx began operations in early 1998.
- Cooperative Marketing Initiative: In 1997, ODNR-DRLP facilitated several meetings with many of Ohio's public recycling facility managers in an effort to increase the cooperative marketing of various recyclable materials. As a result of these meetings, seven regional groups were identified that ODNR-DRLP will be able to work with to improve markets for recycled materials. Two of the regions have already initiated activities that should improve markets for residentially generated recyclables in their region.

APPENDIX F

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** SWAC Member - Appointed - Term Expires 6/23/2003

*** SWAC Member - Ex Officio

1 Chairperson 2 Vice-chairperson 3 Secretary

Responsiveness Summary for Comments Received on the Draft *2001 State Solid Waste Management Plan* dated June 19, 2001

This document summarizes the interested party comments received on the draft "2001 State Solid Waste Management Plan" dated June 19, 2001 with the Agency's response to those comments.

In an effort to help you review this document, the Agency has organized the information in a consistent format and used different fonts to distinguish among comments and responses. The document is organized as follows:

- **Comment #:** This section provides a summary of interested party comments by similar or general subject type. For some comments, only an excerpt of the comment is provided. These excerpts are, however, direct quotes from the interested party comments.
- **Response #:** *This section has language in italics and summarizes the Agency's response to the corresponding comment section.*

Finally, it should be noted that a number of changes have been made in response to interested party comments. These changes consisted of minor punctuation and format corrections and are included in the final version of the "2001 State Solid Waste Management Plan." These minor changes are not summarized in this document. The comments that are summarized in this document were obtained during the public comment period that was open from July 23, 2001 to August 21, 2001 and five public hearings held on August 15, 16, 17, 20, and 21, 2001. The Agency has reviewed all of these comments and provides the responses contained in this document.

Comment 1: Why does the Ohio EPA and county health departments not consider unusually foul and offensive smell coming from landfills a hazard? The smell of garbage and sludge is more than just a nuisance!

Response 1: *Ohio's solid waste statute and regulations do address odors emanating from landfill facilities, though odors are considered to fall under the realm of a nuisance condition rather than a threat to human health, safety, and the environment.*

Rule 3745-27-19(E)(6) of the Ohio Administrative Code requires owners and operators of municipal solid waste landfill facilities to "...manage the facility in such a manner that...odors are strictly controlled so as not to cause a nuisance or a health hazard." Landfill owners and operators are prohibited, by rule 3745-27-07(H)(4)(c) of the Ohio Administrative Code, from placing solid waste within 1000 feet of a domicile. This requirement was established to address nuisance-type issues, such as odors. In addition, landfill owners and operators are required, by rule 3745-27-19(F) of the Ohio Administrative Code, to apply daily cover to all exposed solid waste by the end of the day to control, among other things, odors. Ohio EPA believes that these provisions appropriately establish specific operational requirements to control odors emanating from landfill facilities.

As is described in the draft "2001 State Solid Waste Management Plan," municipalities and townships can utilize zoning as a means of specifying where landfill facilities can and can't be built as well as their proximity to residential areas. Ohio EPA has always and continues to maintain that zoning is the appropriate tool for addressing and controlling localized impacts of landfill facilities.

No changes have been made to the draft "2001 State Solid Waste Management Plan" in response to this comment.

Comment 2: ...an EPA spokesperson was quoted as saying American Landfill in Waynesburg, OH is allowed to accept sludge, New Jersey Sludge nonetheless. Why here in Ohio?

Response 2: *Landfill owners and operators are allowed to accept sludge wastes that meet the definition of solid waste. Rule 3745-27-01(B)(43) of the Ohio Administrative Code states, in pertinent part, "Solid wastes means such unwanted residual, solid or semisolid material as results from industrial, commercial, agricultural, and community operations..." That rule goes on to define "semisolid material" as material that "...does not contain liquids which can be readily released under normal climactic conditions, as determined by method 9095 (paint filter liquids test) in SW-846: 'Test methods for Evaluating Solid Wastes, Physical/Chemical Methods'." At this point in time, Ohio cannot legally prohibit owners and operators of solid waste landfill facilities from accepting sludge material from out-of-state generators, or any other material for that matter, that qualifies as solid waste simply because the material is generated in another state. Several federal court decisions have ruled that such a prohibition would violate the commerce clause of the U. S. Constitution.*

No changes have been made to the draft "2001 State Solid Waste Management Plan" in response to this comment.

Comment 3: Current regulations allow a water aquifer to be no less than 15 feet from the bottom of a dump! Conceivably, this regulation could be strengthened!

Response 3: *The Agency's position, based on experience and scientific review, is that fifteen feet of separation between the bottom of the liner and the top of the uppermost aquifer system provides sufficient distance to protect the uppermost aquifer system from contamination due to a potential leachate release through the liner. The distance is necessary to not only provide a natural or constructed barrier to leachate migration but also to provide natural attenuation of any contaminates by providing a minimum amount of soil or lithified material to act as a media for chemical reactions to take place. Based upon our survey of surrounding states' solid waste landfill regulations, Ohio's 15 foot isolation distance requirement provides the greatest amount of required separation. While each state's program varies, the other states have standards that range from a 10 foot minimum (Michigan, Indiana, and Wisconsin) to no specified minimum required distance (Illinois and Minnesota) with several states somewhere in between with 4-5 feet minimums (Pennsylvania, West Virginia, Kentucky, New York, and Iowa). Combined*

with Ohio's other siting and landfill design requirements, the current 15 foot isolation distance offers significant protection to ground water resources.

No changes have been made to the draft "2001 State Solid Waste Management Plan" in response to the comment.

Comment 4: Is it fair for one district to be bombarded with landfills, due to the abundant strip mining done there in the past!

Also: One Solid Waste Management district should not be responsible for disposing of the whole state's trash, or other state's garbage for that matter. I suppose other states dump here, because their regulations are stricter; meaning more expensive.

Also: Why can't landfills be forced to stay within the geological landscape (elevation). I believe coal mines are held to these standards for reclamation purposes. I am specifically referring to a requested vertical expansion at Countywide Recycling and Disposal Facility located in Stark County. If granted, this mountain of trash will be the tallest point in all of Stark County.

Response 4: *Ohio EPA recognizes that proposals to establish landfills in areas are frequently controversial and often unpopular. However, Ohio EPA must consider a proposal based on its technical merits and its ability to meet the siting, design, construction, operation, closure, and post-closure requirements of Ohio's solid waste regulations. Ohio EPA bases its decision to approve or deny a landfill permit to install application on whether or not these criteria are met. Development of these criteria was required by the Ohio General Assembly to ensure the protection of human health and the environment. The rules which establish these criteria were developed after exhaustive research and study and with substantial input from the Solid Waste Management Advisory Council, environmental groups, local governmental agencies, other state agencies, private citizens, and other interested parties.*

As is discussed on pages V-9 to V-12 of the "2001 State Solid Waste Management Plan," there are several tools that can be used by local governments to address where landfills are sited and to address localized impacts of solid waste facilities. Chief among these tools is zoning. While Ohio EPA may issue a permit-to-install based on compliance with Ohio's solid waste regulations and applicable statutes, the issuance of a permit-to-install does not override local zoning or preclude the enforcement of local zoning. The Agency believes that it is most appropriate for local government to determine whether appropriate and valid zoning exists and to be free to enforce local restrictions.

At this point in time, Ohio cannot legally prohibit owners and operators of solid waste landfill facilities from accepting for disposal materials that meet the definition of solid waste from out-of-state generators simply because the material is generated in another state. Such a prohibition would violate the commerce clause of the U. S. Constitution.

When it was passed in 1988, House Bill 592 included provisions concerning controlling the flow of waste (i.e. flowcontrol). As such, these provisions required each solid waste management district to designate a list of disposal and recycling facilities in its solid waste management plan, and all waste and recyclable materials generated by the solid waste management district would legally have to go to those facilities. Flow control has been the subject of much controversy not only in Ohio but nationwide. In 1993, Ohio's solid waste statute was revised to make flow control permissive instead of mandatory. In 1994, a U. S. Supreme Court decision overturned a local flow control ordinance in New York on constitutional grounds.

Ohio EPA supports the creation of federal legislation to restore flow control and allow states to limit receipts of out-of-state waste. In fact, on August 1, 2001, Ohio EPA's Director, Christopher Jones, testified in front of the U.S. House of Representatives Subcommittee on the Environment and Hazardous Materials, expressing his support for recently introduced Federal legislation and encouraging the members of the House to move forward on this issue. Ohio's Governor Bob Taft is also on record as supporting Federal legislation restoring to the states the ability to restrict out-of-state waste. However, until Federal legislation is enacted, Ohio's ability to address this issue is extremely limited.

While the siting criteria in Ohio's solid waste regulations do not address aesthetic qualities of landfill facilities (such as size, harmony with surrounding landscape, and overall appearance of the landfill), they do address technical considerations such as the stability of the landfill. Landfill facilities must be constructed in such a way that both interim and final slopes are stable. This requirement, to some extent, does limit the final elevation of the landfill.

Additional information regarding flow control and the constitutional issues associated with the restriction of out-of-state waste have been added to Chapter 1 of the draft "2001 State Solid Waste Management Plan" in response to these comments.

Comment 5: Is it logical to place a landfill over a regional aquifer?

Response 5: *Regional aquifers exist under most areas of Ohio. Siting criteria have been developed to protect these aquifers. In particular, a minimum separation distance of fifteen feet is required between the bottom of the landfill liner and the top of the aquifer system. The landfill siting criteria do prohibit locations where the regional aquifer is a federally-designated sole source aquifer or the yield of an unconsolidated regional aquifer exceeds 100 gallons per minute.*

Comment 6: Allow concerned citizens, the ability to get third party non-biased studies done by certified and accredited firms. Whether that be groundwater testing or geological studies. The current laws rely on the landfills to do honest and ethical testing! (Is this trustworthy?) How about some peace of mind!

Response 6: *While Ohio law does not specifically provide a mechanism for concerned citizens to get third party non-biased studies done by certified and accredited firms, environmental regulations do not preclude the opportunity. However, access to a site by a third party to conduct field investigations is the landowner's decision. It might be anticipated that the landowner would be concerned with the identification and selection of a non-biased third party and the type of certification or accreditation.*

Ohio EPA does seek and welcome geologic and/or ground water information during the public input process. In fact, this type of information has been submitted to Ohio EPA on several occasions. Often this information is generated by consultants hired by concerned citizens groups. These consultants will usually review the information submitted with the application, other public documents, and technical sources.

Ohio EPA shares the concern that information is correct and representative of the site conditions. In reviewing the information submitted by the facility, the Agency does exercise a healthy dose of skepticism and often requires additional technical explanation and information. This is evidenced in a number of ways. The Agency reviews submitted information using our collective experience and expertise shared through Agency guidance, staff training and discussion of issues, peer review, and supervisory oversight. The Agency's review and the rules do go beyond simply reviewing the reported results by dealing with the manner that the information is collected, analyzed, and reported. Rules and permits will specify sampling methodologies, analytical procedures, and quality assurance procedures. Where available and appropriate, the Agency requires methodologies and procedures recommended and endorsed by national professional and standardized testing organizations. Ohio EPA also does site visits and inspections to verify that procedures are being appropriately performed. Ohio EPA can also take it's own samples or "split samples" with the facility and have them independently analyzed to verify the facility's results. Finally, the Agency does seek to foster public participation and inquiry through public notice of landfill permit applications, access to public documents, and public meetings are held on significant applications.

While most environmental programs do rely on information obtained and submitted by the facility operator, significant sanctions for dishonest and unethical behavior exist under Ohio law. Failure to comply with requirements is a serious matter and significant violations or falsification are subject to both civil and criminal enforcement action and may result in the denial or revocation of permits and/or licenses.

No changes have been made to the draft "2001 State Solid Waste Management Plan" in response to the comment.

Comment 7: The Ohio EPA should review and clarify all definitions placed within the glossary of the new Format. Definitions pertaining to Goal #1 and Goal #2 (i.e., subscription, commercial waste, industrial process waste, industrial solid waste, and exempt waste) should be reviewed via the Ohio EPA/OSWDO Workgroup.

Response 7: *Ohio EPA intends to review all definitions currently contained in the "District Solid Waste Management Plan Format, version 3.0" and revise those definitions as appropriate when preparing the revised "District Solid Waste Management Plan Format" document. In doing so, Ohio EPA will work with Ohio's solid waste management districts to refine the definitions, and Ohio EPA fully intends to utilize the Ohio EPA/solid waste management district workgroup as a forum for these discussions. No changes to the draft "2001 State Solid Waste Management Plan" have been made in response to the comment.*

Comment 8: The State has committed to improve the data collection process, through Strategy #3 ("Explore means of obtaining improved reporting on the part of processors, haulers, and industrial generators - III-17). The Ohio EPA should begin immediately this exploration.

Also: The Ohio EPA should consider managing processors, haulers, and industrial generators in the same fashion as the scrap tire program. According to page VII-5, "...under Ohio's scrap tire regulatory program, each transporter and licensed facility is required to submit annual reports to OEPA. These reports are intended to provide a comprehensive picture of scrap tire movement within Ohio." This same enthusiasm should be utilized to collect a comprehensive picture of recyclables within the State, as mentioned on page II-14. Once again, the OEPA/OSWDO Workgroup would be a good vehicle to utilize for the development of a reporting program for entities handling and managing recyclables.

Also: Survey data submitted by industries is not complete, accurate or timely. In the last survey, 33% of our industries reported on the survey of recycling activities, which is a good rate of response. This still leaves 67% of the industrial recycling activities unreported. Ohio EPA allows waste generation numbers to be extrapolated from the survey responses, but the recycling numbers cannot be extrapolated from the survey results. We do not believe that survey data results will increase significantly in the future without requirements for industries to submit recycling data to the District. This would greatly enhance our chances of meeting the recycling goal.

Response 8: *Implementing such a change in Ohio's solid waste regulatory program would require a change to Ohio's solid waste statute. Industrial generators are currently regulated under Ohio's statutory authority only insofar as they cannot illegally dispose of solid waste. In order to establish mandatory reporting requirements, any change to the Ohio's statutory solid waste provisions would need to provide Ohio EPA with the authority to require industrial generators to submit annual reports. In the past, Ohio EPA has advocated that Ohio's General Assembly address reporting of data by private sector entities in some fashion. Although the General Assembly did not act on Ohio EPA's request, Ohio EPA remains committed to trying to resolve this issue, as is indicated by Strategy #3 in Chapter III of the "2001 Draft State Solid Waste Management Plan". However, if history is any indicator on this issue, it is highly doubtful that the General Assembly will grant the authority to structure a mandatory reporting system for industrial generators of solid waste.*

The draft "2001 State Solid Waste Management Plan" commits Ohio EPA to explore means of obtaining improved reporting on the part of processors, haulers, and industrial generators. While Ohio EPA will investigate the need for a legislatively-based solution,

mandatory reporting requirements are only one potential means of facilitating the collection of data from these entities. Ohio EPA will also explore voluntary partnerships and simplified data collection processes as potential solutions.

No changes to the draft "2001 State Solid Waste Management Plan" have been made in response to these comments.

Comment 9: State Strategy #2 (Explore an Ohio-specific waste characterization and generation study) should be pursued immediately. The national averages for waste generation in Ohio's residential/commercial sector are not accurate, either being too high or too low. This inaccuracy skews the estimation of waste generation within a District, as well as the State's figures.

Response 9: *Ohio EPA, in concert with the Ohio Department of Natural Resources has had several discussions regarding this strategy over the last year and a half. While Ohio EPA believes obtaining Ohio-specific generation information should be a priority for the State, it is clear that such a study will require a significant outlay of time, money, and labor. Regardless, Ohio EPA fully anticipates that discussions concerning this issue will continue in the future. Ohio EPA strongly supports the pursuit of such a study, but it may take some time to secure adequate funding for this strategy.*

No changes have been made to the draft "2001 State Solid Waste Management Plan" in response to the comment.

Comment 10: Until the State of Ohio can provide the District some tool for better data collection, we believe you should postpone any increase in the Industrial Recycling percentage.

Also: We realize that the 66% is a goal, but we are currently at 33% and believe it will be difficult to achieve even 50%. We provide free waste assessments to companies, work with the Chambers of Commerce, and provide information to businesses but do not foresee that these efforts and others will make any large changes in our ability to achieve the goal. Goals are to be attainable, but this goal for our community may be unreachable. In communicating with other districts, we have been informed that some also struggle with this goal.

Also: We would recommend keeping the 50 percent goal the same...

Response 10: *Based upon information submitted to Ohio EPA by solid waste management districts, the State of Ohio achieved a waste reduction and recycling rate for the industrial sector of 51.8 percent in 1999. On an individual solid waste management district basis, 44 of Ohio's 52 solid waste management districts reported having achieved an industrial waste reduction and recycling rate of 50 percent or more in 1999. Of those, 38 solid waste management districts reported a waste reduction and recycling rate for the industrial sector of 66 percent or better.*

The draft "2001 State Solid Waste Management Plan" gives solid waste management districts that can't demonstrate being able to recycle/reduce at least 66 percent of the

industrial solid waste several options that, when fulfilled, can lead to approval of their solid waste management plans. To begin with, solid waste management districts will have the ability to demonstrate that the composition of the industrial waste stream will prevent the solid waste management district from achieving the 66 percent industrial waste reduction and recycling rate. Such a demonstration will have to prove that the waste material that isn't being recycled is inherently unrecyclable thereby making it impossible for the solid waste management district to demonstrate compliance with the industrial sector component of Goal #2. To receive approval of its solid waste management plan, the solid waste management district will need to identify the industrial waste that is problematic and explain why the waste cannot be recycled. As part of this demonstration, the solid waste management district will have to prove that at least 66 percent of the remaining industrial waste generated in the solid waste management district's jurisdiction is being recycled.

The draft "2001 State Solid Waste Management Plan" also contains a provision that will allow Ohio EPA to consider approving a solid waste management plan that demonstrates achieving an overall waste reduction and recycling rate of 50 percent and a residential/commercial waste reduction and recycling rate of at least 25 percent but that cannot demonstrate an industrial waste reduction and recycling rate of 66 percent.

Finally, solid waste management districts that cannot demonstrate achieving the industrial waste reduction and recycling rate have the option of demonstrating compliance with Goal #1. As with the "1995 State Solid Waste Management Plan", solid waste management districts have the option of choosing to demonstrate compliance with either Goal #1 or Goal #2. In fact, fully two-thirds of all of the solid waste management districts that have obtained approved solid waste management plans have done so by demonstrating compliance with Goal #1. Ohio EPA believes that the draft "2001 State Solid Waste Management Plan" provides more than enough flexibility concerning the demonstration for compliance with Goal #2. No changes have been made to the draft "2001 State Solid Waste Management Plan" in response to these comments.

Comment 11: Consideration of Alternative Methodologies for Calculating Access to Recycling Drop Off Opportunities. The DKMM Solid Waste District welcomes the consideration of alternative methods for calculating access to recycling opportunities other than a single political subdivision. The fear DKMM has is the decision will be made in a vacuum with no public input. The DKMM Solid Waste District has offered to participate Ohio EPA supervised in study at a September 7, 2000 Work Group meeting. We recommend SWAC hold these discussion in public. Allow for Districts comments to be taken into consideration before setting new population methodologies for recycling drop offs.

Response 11: *Over the last year and half, Ohio EPA has made an unprecedented effort to solicit input from Ohio's solid waste management districts concerning the contents of the "2001 State Solid Waste Management Plan." To this end, Ohio EPA has held numerous meetings of SWAC and the Ohio EPA/solid waste management district workgroup, has sent out correspondence, both electronic and hard copy, and has participated in telephone conversations with solid waste management districts concerning the contents of the draft*

"2001 State Solid Waste Management Plan". Ohio EPA fully intends to continue this approach and to utilize the expertise and knowledge of the solid waste management districts in developing these alternative methodologies.

The Ohio Revised Code clearly specifies that the role of the Solid Waste Management Advisory Council is to assist Ohio EPA with the development of the state solid waste management plan. While Ohio EPA also utilizes SWAC to help establish broad policy and provide a general direction for solid waste planning in Ohio, the "District Solid Waste Management Plan Format," the document that will establish the alternative methodologies for demonstrating compliance with Goal #1, is a very lengthy document that is technical in nature and requires a significant amount of experience or technical knowledge to discuss in a productive manner. Thus, Ohio EPA does not intend to use SWAC for a point-by-point discussion of the details of the "District Solid Waste Management Plan Format". As development of the revised "District Solid Waste Management Plan Format" progresses, there may be some overriding policy issues that will be discussed at meetings of the Solid Waste Management Advisory Council for general guidance purposes. However, the document itself will not be developed during meetings of the Solid Waste Management Advisory Council.

Ohio EPA fully intends to develop the alternative methodologies for calculating access to recycling drop off opportunities in concert with the solid waste management districts. While the appropriate venue for holding these discussions is the Ohio EPA/Solid Waste Management District Workgroup, it is important to understand that the Workgroup was never intended to be a decision-making body. As a result, any discussions concerning the alternative methodologies held during workgroup meetings will likely be focused on the discussion of issues, the sharing of ideas, and the gathering of input from solid waste management districts rather than on actually developing language for the "District Solid Waste Management Plan Format."

No changes to the draft "2001 State Solid Waste Management Plan" have been made in response to the comment.

Comment 12: Single County Service Areas Goal #1. The DKMM Solid Waste District once again requests that you allow more than one county in a Goal #1 service area. When determining access service areas size. The DKMM Solid Waste District believes this would allow us to better serve our communities. It would allow us to place recycling drop offs where they are needed rather than in an inflexible matrix.

Presently the State Plan discourages multi-county solid waste districts from staying together and encourages their break up. There is nothing to be gained by multi-county solid waste districts if each county is a single service area. There must be efficiencies gained for staying together.

Response 12: *The intent behind Goal #1 is to provide solid waste management districts that cannot demonstrate compliance with Goal #2 with an alternative means of facilitating recycling based on providing a minimal level of recycling opportunities to residents and businesses. Ohio EPA's position is that it is important that recycling opportunities be*

provided on a county by county basis to ensure that as many residents as possible have adequate access to those opportunities. The comment has received discussion at meeting of both the Solid Waste Advisory Council and the Ohio EPA/solid waste management district workgroup. Ohio EPA finds that there is no general solid waste management district consensus on the issue with some solid waste management districts expressing opposition to expanding the service area to encompass more than one county.

While Ohio EPA has concerns regarding the expansion of service areas to allow a multiple county management district to be one service area, Ohio EPA has committed to evaluating several alternative means of calculating access to drop-off recycling opportunities. One of these methodologies will allow solid waste management districts to gain access credit in one county for opportunities that are located in another county close to the border. To some degree, this "softens" the singe-county service area concept. Taken as a whole, Ohio EPA believes that these new methodologies provide significant flexibility to solid waste management districts to address the concerns expressed in this comment.

No changes have been made to the draft "2001 State Solid Waste Management Plan" in response to the comment.

Comment 13: The DKMM Solid Waste District opposes the use of competitive recycling grants.

Also: ...to require districts to consider giving communities economic incentives to participate in available programs would not be fiscally responsible.

Also: ...additional work needs to be done by the EPA on the marketing end of increasing recycling and not adding additional mandates that in the end will cost businesses and county government additional expense.

Response 13: *The evaluation of the feasibility of implementing economic incentives is not new to solid waste management districts that demonstrated compliance with Goal #1 of the 1995 State Solid Waste Management Plan. These solid waste management districts were required to perform this evaluation in their solid waste management plans. By elevating the evaluation to a goal of the "2001 State Solid Waste Management Plan", all solid waste management districts will now be required to provide an evaluation in their solid waste management plans.*

Goal #6 of the draft "2001 State Solid Waste Management Plan" does not require solid waste management districts to implement an economic incentive program nor does it require solid waste management districts to use competitive recycling grants. The goal simply requires that solid waste management districts, in their solid waste management plans, ***evaluate the feasibility*** *of implementing an economic incentive program and then state whether or not such a program has been or will be implemented. Fulfillment of this goal will be accomplished by providing an evaluation in a solid waste management plan. Solid waste management districts will* ***not*** *be required to implement any programs, activities, or strategies to demonstrate compliance with Goal #6.*

No changes have been made to the draft "2001 State Solid Waste Management Plan" in response to the comment.

Comment 14: We would recommend...removing the industrial materials that have traditionally not been landfilled in municipal solid waste landfills from the industrial recycling goal calculation.

Response 14: *As specified in the "District Solid Waste Management Format, Version 3.0," Ohio EPA currently does not include the following materials in its calculation of the waste reduction and recycling rate:*

- *Scrap metal from demolition operations*
- *Train boxcars*
- *Ferrous metals resulting from salvage operations*

These materials historically have not been managed by being disposed in landfill facilities.

Furthermore, as was discussed in the response to comment 9, solid waste management districts will have the opportunity to exclude materials that it can prove to be inherently unrecyclable from the calculation of the industrial waste reduction and recycling rate. Consequently, no change to the draft "2001 State Solid Waste Management Plan" was made in response to this comment.

Comment 15: Streamline and reduce agency review time for permits offering recycling/waste reduction

Also: ... an 8th goal should be added to page 1 in chapter 2. This goal should state "The Ohio EPA should implement a process to streamline the processing of permit applications for recycling infa-structure to allow SWMD's the ability to increase recycling expeditiously.

Response 15: *Traditional recycling opportunities that are provided by solid waste management districts (such as curbside recycling services and drop-off recycling locations) and recycling operations that qualify as legitimate recycling facilities are not required to be permitted or licensed under Ohio's solid waste program. Ohio EPA supported a statutory change that allows over 600 composting facilities to hold a free and simple registration versus obtaining a solid waste permit-to-install. Only municipal solid waste composting facilities (i.e. Class 1 composting facilities) are required to be permitted and licensed.*

Ohio EPA does have a very strong interest in exploring new technologies for reducing the amount of solid waste landfilled. In fact, Strategy 10 in Chapter III of the draft "2001 State Solid Waste Management Plan" is focused on this very idea. However, Ohio EPA's first obligation, exercised through the implementation of the various statutory and regulatory requirements, is to protect human health and the environment. Therefore, to the extent that the establishment or operation of facilities utilizing new technologies falls under the environmental laws that are administered by Ohio EPA, the Agency will conduct a thorough review of these new technologies prior to granting the appropriate permit, license, etc. For technologies that are new to Ohio or that have not been tested elsewhere, this may involve requiring the submission of enough information, testing data,

etc. to assure that the technology can be implemented in a manner that will be protective of human health and the environment. Unfortunately, this may result in a slower timeframe for the approval of a facility utilizing a new technology when compared the approval of traditional facilities.

Acknowledging these issues, Ohio EPA remains committed to considering alternative technologies for managing solid waste.

No changes to the draft "2001 State Solid Waste Management Plan" have been made in response to the comment.

Comment 16: ...each district within the OEPA should have a designated recycling manager.

Response 16: *This is certainly an interesting idea that may merit attention at some point in the future. However, given Ohio EPA's current budget and allocations for staffing, it is doubtful that such positions could be created at this point in time.*

No changes to the draft "2001 State Solid Waste Management Plan" have been made in response to the comment.

Comment 17: OEPA to foster a relationship with the Ohio Department of Development to actively attract and recruit businesses that use recycled materials to develop new materials.

Also: The Ohio EPA has fostered a relationship with ODNR that has proven to be successful in increasing recycling opportunities in Ohio. Now the Ohio EPA should seek to foster a similar relationship with the State of Ohio Department of Development (ODOD) to attract new businesses into our state that consume recyclable materials.

Also: An incentive package must be created to lure these businesses to Ohio as other states compete for the same businesses.

Response 17: *Ohio EPA works closely with the Ohio Department of Natural Resources and the Ohio Department of Development through the InterAgency Workgroup on market development (IAWG) on these issues. The focus of IAWG, as the name suggests, is to improve the recycling markets in Ohio. As all three agencies are members of IAWG, the relationships requested by this comment have already been developed. Furthermore, the Ohio Department of Development and the Department of Natural Resources, like Ohio EPA, are members of SWAC, the body responsible for assisting Ohio EPA with the development of the state solid waste management plan. Ohio EPA fully intends to continue its working relationships with both the Ohio Department of Natural Resources and the Ohio Department of Development on furthering the creation of markets for recyclable materials in Ohio.*

No changes to the draft "2001 State Solid Waste Management Plan" have been made in response to the comment.

Comment 18: Reduced financial support for the Ohio EPA.

Also: In order to meet the draft State Solid Waste Management Plan goal of 50%, Ohioan's will need to reduce or recycled another 10,112,000 tons. At current rates, this will reduce the fee money to the Ohio EPA by $17,696.000 or about 18 million dollars. How will the financial future of the Ohio EPA be protected as we look to meet the State Goal of 50% recycling? Will the OEPA look to manage their programs with fewer employees? Will programs be cut? Will fees be increased?

Also: The Ohio EPA and in particular, the Northeast District Office has already acted as a barrier to new technology transformation designed to add reduction/recycling to our State. The reason for this barrier: fee money.

Also: The Royalton Road Sanitary Landfill requested a 180 day demonstration approval to use Class 1 compost. The demonstration waiver was granted on March 20th, 1998. The facility operators and the Cuyahoga County Board of Health found that the initial results were quite favorable. As such, the Royalton Road Sanitary Landfill submitted a request for a second 180 demonstration waiver. The approval was submitted on November 30th, 1999. This time, however, the Northeast District of the Ohio EPA approved the waiver, but with 2 changes; one of which was that fees be levied on all compost used at the facility. In discussion, it was revealed that the Ohio EPA is concerned about lost revenue from fees as the Class 1 material is used for beneficial re-use as opposed to disposal.

Response 18: *The Ohio legislature enacted the law establishing the Ohio EPA solid waste funding mechanism and would need to determine whether any changes in the funding mechanism would be appropriate. It is theoretically possible that Ohio would be able to increase recycling effects to the point where the tonnage of solid waste being disposed decreases and available revenues are no longer sufficient to support Ohio EPA's existing solid waste programs. Ohio EPA would need to adjust services to match the level of funding or look to the legislature to determine whether any changes in the funding mechanism would be appropriate.*

It is highly unlikely that Ohio will realize this goal in the near future. Recycling activity in Ohio has increased over the last ten years, and Ohio is recycling more tonnage now than when House Bill 592 was passed. However, because the overall amount of waste generated has increased, the tonnage of waste disposed has increased as well. While Ohio EPA would like to see significant increases in recycling, there is no reason to believe that a reversal of trends in the rate of waste generation and disposal in Ohio will occur in the short to mid-term at least. As a result, Ohio EPA anticipates that the current fee of $0.75 per ton of solid waste will be adequate to fund the Agency's solid waste program for the next several years.

Regarding Ohio EPA's collection of the State disposal fee, Ohio EPA has historically required that the $1.75 per ton of solid waste be collected on all solid waste that is deposited within the limits of waste placement in a solid waste landfill facility. This includes solid waste used as alternative daily cover. Ohio EPA has approved numerous projects to alternatively manage solid waste through the Agency's Interim Alternative

Waste Management Program where DSIWM has recommended that the payment of disposal fees on the waste used through those projects be waived. For these projects, the waste is being utilized or placed in an area outside of the limits of waste placement of a landfill facility.

No changes to the draft "2001 State Solid Waste Management Plan" have been made in response to the comment.

Comment 19: We would request that an amendment, an appropriate amendment be prepared to include the solid waste districts' policy committees in the selection of siting, either as an equal basis or at least as a substantial impact along with the Director's determination for the siting facilities.

Response 19: *Local governments already have some control over where solid waste management facilities can be located via zoning restrictions. Thus, while local governments cannot override the siting criteria established in the solid waste statute and rules, they can address criteria that are of concern at the local level and, in effect, limit where a facility can be located to those areas determined to be the most appropriate.*

Zoning can be supplemented by the tools and authorities that are given to solid waste management districts. Chapter V of the "2001 State Solid Waste Management Plan" contains a discussion of these tools and authorities.

No changes to the draft "2001 State Solid Waste Management Plan" have been made in response to the comment.

Comment 20: I think that it should be incorporated into the Ohio Administrative Code, that solid waste authorities establish siting criteria and are charged with enforcing those criteria as a protection?

Response 20: *Section 3734.53(A)(7) of the Ohio Revised Code requires a solid waste management district's plan to contain an identification of additional solid waste management facilities and the amount of additional capacity needed to dispose of wastes projected to be generated within the solid waste management district. Section 3734.53(A)(8) of the Ohio Revised Code requires the plan to contain a strategy for identification of sites for the additional solid waste management facilities and capacity that is needed to manage the waste projected to be generated. If a solid waste management district, in its solid waste management plan, concludes that no additional facilities and capacity are needed, then the District's plan is not required to contain a siting strategy. Requiring solid waste management districts to establish siting criteria would require a change to Ohio's solid waste statute.*

No changes to the draft "2001 State Solid Waste Management Plan" have been made in response to the comment.