ATTACHMENT G

SPECIAL CONDITIONS

THIS PAGE INTENTIONALLY LEFT BLANK

Import and Export Authorizations

Oakland County authorizes the export of wastes generated within the County to existing and future disposal facilities located in each of the other 82 Michigan counties and to existing and future disposal facilities located elsewhere. **No limitation is placed upon the amount of wastes that may be exported.**

Oakland County waste generators and service providers operating within Oakland County must understand that although this export authorization is broadly given, as Michigan law is currently written, the right to export to facilities located in a given Michigan county is subject to any limitations that may be imposed by the facility's host county's solid waste management plan and then finally subject to additional limitations that may be imposed by the facility operator. Caution must be exercised to ensure that anticipated exports are in fact permissible.

Oakland County authorizes the import of wastes generated within each of the other 82 Michigan counties to existing and future disposal facilities located in Oakland County subject to the following. **Limitations on the amount of wastes that may be imported into Oakland County from a given county will be equal to the limitations imposed by that county's solid waste management plan upon exports from Oakland County or upon a lower value if specified by the exporting other county.** Additional limitations may be imposed by the operators of existing and future Oakland County disposal facilities.

THIS PAGE INTENTIONALLY LEFT BLANK

ATTACHMENT H

Background Report:
Oakland County Solid Waste Plan Data

THIS PAGE INTENTIONALLY LEFT BLANK

FINAL REPORT

of the

Oakland County Solid Waste Planning Committee

on the

SOLID WASTE MANAGEMENT PLAN UPDATE

October 21, 1999

L. Brooks Patterson, County Executive

Oakland County Board of Commissioners

Fran Amos
Brenda A. Causey-Mitchell
Ron Colasanti
Eric Coleman
Dan Devine, Jr.
Nancy Dingleday
Sue Ann Douglas
Michelle Friedman-Appel
David N. Galloway
John P. Garfield
Vincent Gregory
Donald W. Jensen
Thomas A. Law
John P. McCulloch, Chairperson
Ruel E. McPherson
Tim W. Melton
Frank H. Millard
David L. Moffitt
Lawrence A. Obrecht, Vice-Chairperson
Charles E. Palmer
William R. Patterson
Kay Schmid
Terry L. Sever
George W. Suarez
Shelley Goodman Taub

Oakland County Solid Waste Planning Committee

Environmental Interest Groups
- Timothy Carpenter, EMEAC
- Dawn Furlong, VOCAL

General Public
- Loyola Koch, Clarkston
- Patrick Kresnak, Auburn Hills
- Mary Ann Ryan, Orion Township

Elected County Official
- Sue Ann Douglas, Commissioner

Elected City Official
- Nancy Bates, City Council Member

Elected Township Official
- Jill Bastian, Township Clerk

Solid Waste Industry
- Mike Csapo, RRRASOC
- Robert Leininger, Waste Management
- Dick Padlo, PMDS
- Thomas Waffen, SOCRRA

SEMCOG Representative
- Ardath Regan, AWQB Chairperson
- SWPC Chairperson

Industrial Waste Generator
- vacant

Elected Official's Designees
- William R. Patterson, Commissioner
- Thomas Biasell, Public Services Director
- Robert DePalma, Township Supervisor

October 21, 1999

To: The Oakland County Board of Commissioners

WHEREAS, the Oakland County Solid Waste Planning Committee (SWPC) has met with the Oakland County Designated Planning Agency (DPA) on 14 occasions since the fall of 1997 to review Oakland County's future solid waste management alternatives, and

WHEREAS, the Committee authorized the release of a draft solid waste management plan update document for public comment and this material, dated June 14, 1999, was widely distributed on that date, and

WHEREAS, notices of the availability of the document for public comment were widely published in newspapers covering the County on or about the same date, and

WHEREAS, notices of the September 16, 1999 public hearing were widely published in newspapers covering the County in mid-August, 1999, and

WHEREAS, a public hearing was held on September 16, 1999 and members of the public spoke of their questions and concerns on the draft plan update, and

WHEREAS, the public comment period was closed upon receipt of written comments postmarked no later than September 25, 1999 and numerous members of the public wrote of their questions and concerns, and

WHEREAS the SWPC, in addition to attending the public hearing, has reviewed the public hearing transcript and has reviewed each of the written comments received and has contemplated revisions to the draft document.

NOW THEREFORE BE IT RESOLVED THAT the Oakland County Solid Waste Management Committee does hereby recommend to the Oakland County Board of Commissioners that the Solid Waste Management Plan 1999 Update as amended by the Committee at the SWPC meeting of October 21, 1999 be approved and transmitted to the County's 61 municipalities for approval. Upon receipt of 41 affirmative municipal resolutions, the document should be transmitted to the Michigan Department of Environmental Quality for final approval by the Director, and

BE IT FURTHER RESOLVED THAT the Committee recognizes that the 1999 Plan Update as approved by the SWPC will be reformatted by the DPA to meet Michigan Department of Environmental Quality expectations prior to final approval by the Board of Commissioners and the DPA has provided that the representatives of the SWPC will be offered an opportunity to review and edit the final reformatted document to insure that the Committee's intents are carried through to the Board of Commissioners and the SWPC has appointed a "Final Edit Team" to work with the DPA to accomplish this task on behalf of the Committee, and

BE IT FINALLY RESOLVED THAT should the Board of Commissioners have objections to the recommended Plan Update that the SWPC will convene upon receipt of the objections and respond to the issues raised in a timely manner.

Solid Waste Planning Committee, October 21, 1999, Adopted Unanimously

1999 SOLID WASTE MANAGEMENT PLAN UPDATE
OAKLAND COUNTY, MICHIGAN

MDEQ ADMINISTRATIVE DETAIL PAGE

DATE SUBMITTED TO THE MDEQ:

Not Submitted to MDEQ for Final Approval
October 21, 1999 - Solid Waste Planning Committee Recommended Plan Update

1999 PLAN UPDATE:

This document, once approved by the Oakland County Board of Commissioners, by at least 41 (67% of 61) of Oakland County's municipalities, and subsequently by the MDEQ Director, supersedes and replaces all prior solid waste management plans for Oakland County.

PLAN REGION:

The Plan Update covers all Act 451, Part 115 non-hazardous solid wastes which are generated within Oakland County with the exception of those generated within the City of Northville. The City of Northville has been approved to be included in the Wayne County solid waste planning effort in concert with Section 11536 of Part 115 of the Natural Resources and Environmental Protection Act. Resolutions have been approved by each County Board of Commissioners covering this arrangement. See Appendix.

DESIGNATED PLANNING AGENCY PREPARING THIS PLAN UPDATE:

Offices of the Oakland County Executive

CONTACT PERSON:	Martin J Seaman
ADDRESS:	Solid Waste Planning One Public Works Drive Waterford, MI 48328-1907
PHONE:	248-858-1352
FAX:	248-858-1066
E-MAIL:	seamanm@co.oakland.mi.us

CENTRAL REPOSITORY LOCATION:

Solid Waste Planning Office Noted Above

TABLE OF CONTENTS

LIST OF EXHIBITS

FOREWORD

Solid Wastes - Basic Definitions

It is important that each participant in the solid waste management planning process have a common understanding of the definitions of the solid waste stream used throughout this document. The term "solid waste" includes all non-hazardous components of the solid waste stream prior to source reduction, reuse, composting, recycling or incineration and all residuals or residues resulting from processing or incineration of the waste stream. The current legal definition of "solid waste" by the Natural Resources and Environmental Protection Act excludes certain of these items such as materials separated for recycling or composting and others. Therefore, some caution must be exercised.

Throughout this work, the solid waste stream is broken into several components. These are municipal solid wastes (MSW), construction and demolition debris (CDD) and industrial special wastes (ISW). The MSW component is further broken into even smaller components being solid wastes generated by the single family residential, multi-family residential, commercial and industrial land uses. MSW (approximately 84% of Oakland County's total solid waste stream) must be disposed of in Type II landfill facilities. The industrial component of MSW (generally comprised of industrial housekeeping wastes such as packaging, cafeteria and washroom wastes, and office wastes) is exclusive of industrial special wastes, such as foundry sands. ISW is comprised of those wastes that are of such a character that they do not have to be disposed of in Type II landfills but may be disposed of in lessor standard Type III facilities because of their relatively benign nature. Construction and demolition debris (CDD) may also be disposed of in Type III landfill facilities. It should be noted that much CDD and ISW is in fact disposed of at higher standard, and therefore higher priced Type II facilities, simply because of the logistics of the business.

Oakland County's Solid Waste Stream Prior to Volume Reduction Efforts

Principal Waste Category	1998 Waste Stream (tons per day)			%
Municipal Solid Wastes (MSW)				
Residential				
Single Family	1,845.18			34.51%
Multi-family	364.56			6.82
Residential sub-total		2,209.74		41.33
Commercial		2,014.72		37.69
Industrial		275.89		5.16
MSW total			4,500.35	84.18
Construction and Demolition Debris (CDD)			452.15	8.46
Industrial Special Wastes (ISW)			393.61	7.36
Act 451, Part 115 Solid Wastes			5,346.11	100%

Act 451 of 1994, the NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION ACT

ARTICLE II, POLLUTION CONTROL

CHAPTER 3: WASTE MANAGEMENT

PART 115 SOLID WASTE MANAGEMENT

Sec. 11506. (1) "Solid waste" means garbage, rubbish, ashes, incinerator ash, incinerator residue, street cleanings, municipal and industrial sludges, solid commercial and solid industrial waste, and animal waste other than organic waste generated in the production of livestock and poultry. Solid waste does not include the following:

(a) Human body waste

(b) Medical waste as it is defined in part 138 of the public health code, Act No. 368 of the Public Acts of 1978, being sections 333.13801 to 333.13831 of the Michigan Compiled Laws, and regulated under part 138 of Act No. 368 of the Public Acts of 1978 and part 55.

(c) Organic waste generated in the production of livestock and poultry.

(d) Liquid waste

(e) Ferrous or nonferrous scrap directed to a scrap metal processor or to a reuser of ferrous or nonferrous products

(f) Slag or slag products directed to a slag processor or to a reuser of slag or slag products.

(g) Sludges and ashes managed as recycled, or nondetrimental materials appropriate for agricultural or silvicultural use pursuant to a plan approved by the department. A by-product from the processing of or a residual from fruits, vegetables, sugar beets, or field crops; wood ashes resulting solely from a source that burns only wood that is untreated and inert; lime from kraft pulping processes generated prior to bleaching; or aquatic plants may be applied on farmland for an agricultural or silvicultural purpose, or used as animal feed, as appropriate, and such an application or use does not require a plan described in this subdivision or a permit or license under this part. In addition, source separated materials approved by the department for land application for agricultural and silvicultural purposes and compost produced from those materials may be applied to the land for agricultural and silvicultural purposes and such an application does not require a plan described in this subdivision or permit or license under this part. Land application authorized under this subdivision for an agricultural or silvicultural purpose, or use as animal feed, as provided for in this subdivision shall occur in a manner that prevents losses from runoff and leaching, and if applied to land, the land application shall be at an agronomic rate consistent with generally accepted agricultural and management practices under the right to farm act, Act No. 93 of the Public Acts of 1981, being sections 286.471 to 286.474 of the Michigan Compiled Laws.

(h) Materials approved for emergency disposal by the department.

(I) Source separated materials.

(j) Site separated material.

(k) Fly ash or any other ash produced from the combustion of coal, when used in the following instances:

(I) With a maximum of 6% of unburned carbon as a component of concrete, grout, mortar, or casting molds.

(ii) With a maximum of 12% unburned carbon passing M.D.O.T. test method MTM 101 when used as a raw material in asphalt for road construction.

(iii) As aggregate, road, or building material which in ultimate use will be stabilized or bonded by cement, limes, or asphalt.

(iv) As a road base or construction fill that is covered with asphalt, concrete, or other material approved by the department and which is placed at least 4 feet above the seasonal groundwater table.

(v) As the sole material in a depository designed to reclaim, develop, or otherwise enhance land, subject to the approval of the department. In evaluating the site, the department shall consider the physical and chemical properties of the ash including leachability, and the engineering of the depository, including, but not limited to, the compaction, control of surface water and groundwater that may threaten to infiltrate the site, and evidence that the depository is designed to prevent water percolation through the material.

(l) Other wastes regulated by statute.

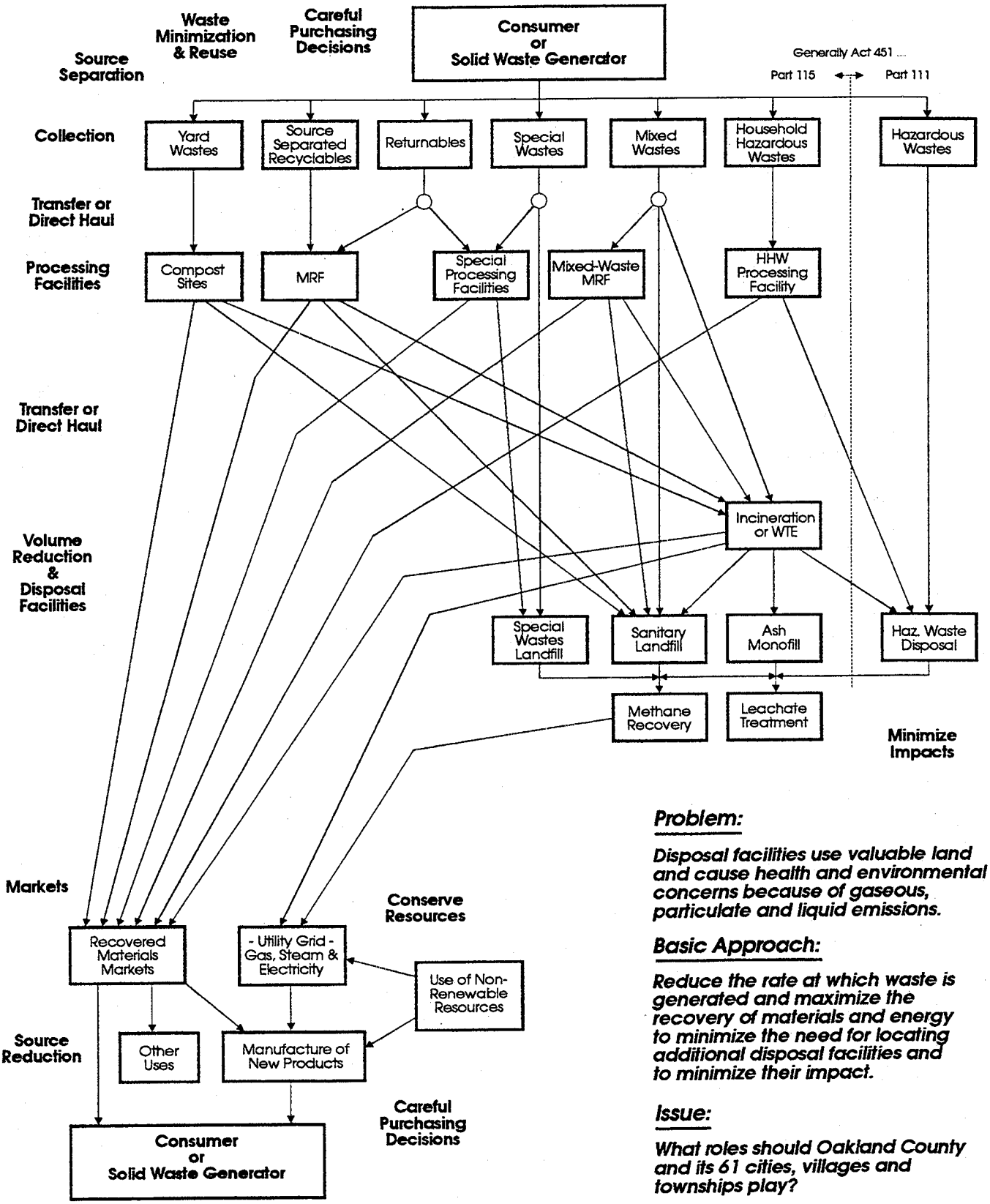
Sec. 11505. (7) "Site separated material" means glass, metal, wood, paper products, plastics, rubber, textiles, garbage, yard clippings, or any other material approved by the department that is separated from solid waste for the purpose of conversion into raw materials or new products. Site separated material does not include the residue remaining after glass, metal, wood, paper products, plastics, rubber, textiles, or any other material approved by the department is separated from solid waste.

Sec. 11506. (6) "Source separated material" means glass, metal, wood, paper products, plastics, rubber, textiles, garbage, yard clippings, or any other material approved by the department that is separated at the source of generation for the purpose of conversion into raw materials or new products.

Sec. 11506. (7) "Yard clippings" means leaves, grass clippings, vegetable or other garden debris, shrubbery, or brush or tree trimmings, less than 4 feet in length and 2 inches in diameter, that can be converted to compost humus. Yard clippings do not include stumps, agricultural wastes, animal waste, roots, sewage sludge, or garbage.

Solid Waste Generation, Collection, Handling, Processing and Disposal

It's a Complex and Continuous Process . . .



Problem:

Disposal facilities use valuable land and cause health and environmental concerns because of gaseous, particulate and liquid emissions.

Basic Approach:

Reduce the rate at which waste is generated and maximize the recovery of materials and energy to minimize the need for locating additional disposal facilities and to minimize their impact.

Issue:

What roles should Oakland County and its 61 cities, villages and townships play?

EXECUTIVE SUMMARY

Highlights:

Oakland County waste generators have access to more than a sufficient amount of disposal capacity to serve their needs to some point beyond the end of the current 10 year planning period. However, within a short period of time (five to seven years), existing landfills located within the County will have reached their currently designated capacity and will have been closed. When this occurs and without expansion of at least one of the existing landfills or the location of a new landfill within the County, all of the Act 451 solid wastes will have to be exported to disposal opportunities located elsewhere. With increasing distances and travel times between the point of generation and the point of disposal, a major transition will occur in the manner in which wastes are collected and transported.

Currently, wastes are collected at the site of generation and, for the most part, transported directly to the landfills in the collection vehicles. With depletion of in-county disposal opportunities, economics will dictate that wastes be transferred to more efficient vehicles for transport to distant landfills. This will require the construction and operation of transfer stations. Initially, transfer station operations will be needed to serve waste generators within the northeastern quadrant of the County. Over time and as landfill capacity located in contiguous counties gradually becomes unavailable and as the more remote disposal opportunities start to be used, transfer station operations will be required throughout all areas of the County.

The basic questions remaining on transfer stations essentially relate to precisely when and where such facilities should be authorized and what will the impact on disposal economics be? The economic issues relate not only to the design, construction and operation of the transfer facilities but also to the distances involved in the transfer operations to the remote disposal locations.

One of the existing landfills in Oakland County can be expanded. If this occurs in a timely fashion, it is conceivable that the required transition to large scale transfer station operations may be pushed into the future by more than 10 years. Owners of the facility have approached the host community to determine if the host community agreement can be amended to allow an expansion to occur. It is recommended that should no decision be reached on this potential expansion by the end of year 2001, that Oakland County initiate a Solid Waste Management Plan amendment process to thoroughly examine other alternatives. The alternatives include but are not limited to the approval of new landfill capacity within the County, the establishment of new transfer station sites, some combination of these two, and others.

Oakland County's volume reduction achievement levels (through source reduction, reuse, recycling and yard waste composting) must be dramatically improved upon. Few municipalities outside those involved in the two well organized waste management authorities (RRRASOC and SOCRRA) aggressively set solid waste program basics and establish high minimum standards for

their community's solid waste services. Some municipalities have reduced program offerings and others are even considering the elimination of program elements to achieve short term savings. Although the economic times are excellent and few wish to even be involved in a healthy discussion of solid waste issues, such short sighted approaches to solid waste management are simply unacceptable.

It is imperative that all of the County's municipalities become and remain involved to at least the same level as is currently exhibited by the top performing authority municipalities. Additionally, all individual waste generators, not just those that are currently heavily involved, must actively participate in volume reduction programs to allow achievement of even higher success levels across all elements of the waste stream if the 30% reduction goal is to be met by the year 2010. It is recommended that the remaining communities consider combining their resources into authority efforts as these approaches provide an excellent administrative and economic basis for the provision of necessary and specialized solid waste services.

As the disposal opportunities increasingly involve remote facilities, municipalities must be increasingly aware that restrictions may be placed upon the imported waste stream by the host county solid waste management plans, by conditions contained within host community agreements, or by the facility operator. Municipalities must be totally aware of the minimum basic program levels provided to their generators, be aware of the volume reduction levels achieved, and be capable of certifying that specific minimum program elements and achievement levels exist. The communities must not be caught in a position of not being able to find a relatively economical location to dispose of their wastes.

The items cited above are summarized further in the following paragraphs of the Executive Summary and are discussed in greater detail in the later sections of the document.

Executive Summary Detail:

The Oakland County Solid Waste Management Plan has been prepared on behalf of Oakland County and its municipalities under the provisions of Part 115 of Act 451, the Natural Resources and Environmental Protection Act. This plan focuses upon and addresses the future solid waste management needs of Oakland County to ensure that all non-hazardous waste generated within the County is collected, processed, and disposed of in a timely and proper manner.

The study area contained in this plan (the planning area) includes all of Oakland County with the exception of that area lying within the City of Northville. Northville has chosen to be included within the Wayne County solid waste planning effort. This local option has received the approval of both counties.

The primary goal of the Oakland County Solid Waste Management Plan is the identification of a plan of action which, when implemented, will minimize future adverse impacts upon the public

health, the environment and the landscape as a result of the generation, handling, processing and disposal of Act 451, Part 115 non-hazardous solid wastes.

To achieve this goal, the plan of action has focused upon the objectives following.

- Minimize the future amounts of solid wastes generated within Oakland County.
- Ensure that solid wastes are source separated so that imbedded resources may be easily collected, processed and recovered.
- Achieve a reduction in the percentage of solid wastes that are destined for either incineration and/or landfilling of at least 30% through source reduction, reuse, recycling and composting by the year 2010 over that achieved in 1990.
- Ensure that solid wastes, source separated recyclable materials, and yard wastes are collected and removed from the site of generation frequently enough to protect the public health.
- Ensure that such materials are handled, processed and disposed of at properly licensed and operated facilities.
- Minimize pollution resulting from solid wastes thereby preventing adverse effects on the public's health and the environment (including the groundwater and surface water quality, air quality and land quality) which may result from improper solid waste collection, transportation, processing or disposal.
- Approve and locate new solid waste handling, processing and disposal facilities only as may be required to meet local needs while carefully respecting and blending with the topography and surrounding land uses.
- Ensure that all Oakland County solid waste generators have access to a full range of solid waste handling, processing and disposal services.

The current population of the planning area (1998) is estimated to be 1,172,276 people. The population is projected to increase by 6.6% to 1,269,053 by the year 2010 and by an additional 6.9% to 1,356,879 by the year 2020. Oakland County businesses in the planning area employed some 780,855 persons in 1998 and this value is projected to dramatically increase by 13.0% to 882,302 by the year 2010. Beyond 2010, employment is projected to stabilize with an additional increase of only 0.5% to 886,675 by the year 2020.

It is estimated that 5,346 tons of solid waste is generated daily (1998) within Oakland County and that of this amount, 18.12% is recovered from the waste stream as the result of recycling and yard waste composting efforts. This leaves 4,378 tons per day which must be currently disposed

of. Assuming that no future improvement in the reduction efforts were to be achieved, the waste stream is projected to increase because of population and employment growth to 5,796 tons per day by the year 2010 with 4,746 tons per day for disposal.

Oakland County's 1990 Solid Waste Management Plan Update adopted a volume reduction goal of 50% by the year 2005. It is now recognized that this goal was unrealistic, both in terms of the total volume reduction goal levels and in terms of the length of time within which the goal could have been achieved. New targets have been set which are believed to be realistically achievable at 30% by the year 2010. With achievement of the new goal level by the year 2010, the amount of solid wastes destined for disposal would be reduced to 4,029 tons per day, a value that is less than the current disposal amounts even through dramatic increases in population and employment are anticipated.

The total amount of Act 451 non-hazardous wastes generated by all activities located within the boundaries of Oakland County currently exceeds 9.1 pounds of material per capita per day. This waste stream includes all residential, commercial and industrial wastes as well as industrial special wastes and construction and demolition debris. The overall waste generation rate (prior to volume reduction efforts) is not anticipated to change over the next decades. However, once volume reduction efforts are taken into account, the amount of wastes disposed of in 1998 amounted to 7.47 pounds per capita per day and this amount could be reduced to 6.35 pounds per capita per day by the year 2010 with a volume reduction achievement level of 30%.

The centroid of waste generation in Oakland County is presently located in the extreme southeast corner of Section 17 of Bloomfield Township and with current projections of future population and employment data, the centroid is anticipated to move to the northwest by 0.84 miles by the year 2020. Viewing the County as 25 equal area townships, Royal Oak Township (in the southeast corner of the County) is the location of the most dense waste generation per square mile (all waste stream elements being considered) while Pontiac Township is the location of the most dense industrial special waste generation per square mile. By the year 2020, these areas will maintain their respective rankings with most growth coming in the less densely developed areas of the County.

Solid wastes are generally collected by private sector firms either operating under contracts with the municipalities or through agreements with individual waste generators. With the exception of wastes handled at transfer stations (two being operated by SOCRRA and the third being operated by Allied Waste Industries), all of Oakland's waste stream is delivered by the collection vehicles directly to nearby processing and disposal facilities. Close examination of the County and the location of each solid waste facility used by the many service providers shows that little long distance haul of wastes is currently required. A majority of the County's 61 municipalities actively ensure that yard wastes, recyclables and mixed wastes are collected weekly from each single family residential location and many provide additional services ranging from weekly bulky item pickup services to curbside chipping of brush. Approximately 56% of the County's population is served by municipally arranged household hazardous waste (HHW) collection

programs ranging from SOCRRA's aggressive year round appointment program to occasionally scheduled drop-off programs. The owners of all properties upon which waste is generated and which are not served by the municipal programs must directly make individual arrangements for the collection, handling, processing and disposal of their solid wastes. It is estimated that more than two-thirds of the total waste stream generated within Oakland County is handled in this manner.

Presently provided solid waste service offerings and service levels are deemed to be satisfactory by a majority of the current waste generators. The largest category of complaints registered by the County's residents relates to limited or lack of access to household hazardous waste (HHW) collection programs. The call most frequently received relates to a pending move to a new household that coming weekend and the question relates to where the materials can be taken for quick, free disposal.

34.6% of Oakland County's waste stream (after the previously noted volume reduction efforts) was exported during FY 97 to landfill disposal facilities located in other Michigan counties. Imports into Oakland County landfills from other locations (8 Michigan counties, 4 other States and Canada during FY 97) replaced about 37.9% of the amounts exported from Oakland County and as a result, landfills in Oakland County processed a total amount of wastes equivalent to 78.5% of Oakland County's waste stream. In FY 98, exports increased to 44.5% and the import values from other locations (6 Michigan counties, 1 other State and Canada) replaced 65.5% of the amounts exported. As a result, Oakland County facilities processed a total amount of waste equivalent to 84.7% of the County's waste stream. Oakland County is a net exporter of wastes with more wastes being exported than are imported from other areas. Net exports for FY 97 and FY 98 were 21.5% and 15.3% respectively.

Oakland County is presently the location of nine designated and operating solid waste facilities and four additional facilities have been previously designated but have yet to be constructed. These thirteen facilities are located upon ten different sites around the County. The operating facilities include four (4) Type II landfills (the SOCRRA facility in Rochester Hills is presently operated as a yard waste composting facility), two (2) transfer station operations, one (1) "Disposal Area" facility which is presently operated as a transfer station operation, and two (2) source separated MRF operations (material recovery facilities). The proposed facilities include transfer stations and MRF facilities designated on two sites in the City of Pontiac.

Michigan's act 451 provides that solid waste disposal areas (being defined as transfer facilities, incinerators, sanitary landfills, processing plants, or other solid waste handling or disposal facilities) may not be constructed or operated unless specifically designated within the approved solid waste management plan. Additionally, the law requires that the plan look ahead for a period of at least ten years and assure that locally generated nonhazardous solid wastes are collected and recovered, processed, or disposed of at properly located disposal areas. Should facilities with sufficient capacity not be located within the planning area, the management plan must designate additional new facilities within the planning area or provide for the export of

solid wastes to facilities located elsewhere. If the facilities in question are located within another Michigan county, that county's management plan must permit the wastes to be imported. Failure of a county management plan to assure access by solid waste generators to sufficient disposal capacity over the ten year planning period would result in the imposition of plan elements by the Michigan Department of Environmental Quality.

Disposal capacity remaining at landfills within Oakland County is rapidly dwindling and without expansion of existing landfills or the provision of new landfill sites, it is projected that in-county capacity will be depleted before the end of the year 2006. When that occurs, the existing permissive levels of inter-county flows (as authorized in Oakland County's approved 1994 plan amendments and as contained in the existing approved solid waste management plans of other Michigan counties willing to receive wastes from Oakland County) will be insufficient to provide continued access to a proper amount of disposal capacity. This will occur even with the interim correction of legal interpretations on the permissibility of intercounty flows between Oakland and Wayne counties.

The Oakland County plan must therefore focus upon the designation of additional landfill capacity within the county; or upon the retention of existing and authorization for additional inter-county flows from Oakland County into disposal facilities located in other Michigan counties; or upon the transport of Oakland County wastes to out-of-state disposal facilities; or upon the provision of additional volume reduction proposals within the county; or finally, upon some combination of these several possibilities.

Oakland County has again reexamined the possibility of implementing other volume reduction technologies such as the construction of new waste-to-energy incineration facilities to reduce the continued reliance on landfilling of wastes. Although such systems and others are theoretically possible to implement, it is believed that the political, social, economic and environmental considerations involved are such that these alternatives are not currently feasible. Oakland County has been unable to achieve success with such proposals over the past three decades and is currently unwilling to again to sponsor such proposals.

Oakland County has additionally examined current volume reduction success levels and believes that higher recycling achievement levels can be achieved. At present, organized volume reduction programs (which have achieved notable successes) are offered to the generators of only one-third of the County's waste stream. This must be improved upon.

On a policy basis, municipalities must remain as the lead governmental units setting program basics and expected minimum standards for the community. If the private sector providers serving the municipalities do not willingly deliver basic solid waste services at reasonable cost levels, the municipalities should then cause the delivery of such services. The County's smaller municipalities should consider the creation of authorities to deal with solid waste issues so as to maximize their individual effectiveness. The dramatic successes achieved by the RRRASOC and SOCRRA authorities should not go unnoticed.

Although it may over time be theoretically possible to site a whole series of small landfill proposals throughout the County thus meeting long-term disposal capacity needs, on a broad policy basis, small landfill operations impacting upon a large variety of areas throughout the County are not deemed a suitable future. Such an approach would require that the subject of new landfill proposals be an almost continuous agenda item on the political front. Oakland County believes that future landfills serving the area should be large, long-lived, regionally sized, high standard facilities serving broad areas without intercounty flow limitations. These facilities should be located on high capacity all weather roads with close proximity to the freeway system. This type of facility would provide for the least impact on the overall landscape and allow for maximum economies of construction and operation.

Therefore, if Oakland County's future does not contain the addition of substantial new in-county landfill capacity, it is generally acknowledged that the export of all generated wastes to final disposal facilities located elsewhere will ultimately be necessary. It is understood that this future scene contains potentially large economic impacts as the average haul distances to remaining available disposal areas increases and as major transfer station operations located throughout the County become reality.

The transition from the existing scene to the future 100% export scene will not be a smooth one.

It appears that initially, a theoretically sufficient amount of inter-county flow authorizations will be available through the current plan update process that each Michigan county is undergoing so that Oakland county will not be required or forced to site additional in-county landfill capacity. Sufficient capacity will be available at other Michigan landfills. Additional capacity is available at out-of-state disposal facilities should a shortfall occur within the state. The disposal capacity shortage problem will occur over time as the local facilities individually close and as the waste stream from more and more Oakland County generators must be transported to remote sites. Initially, a majority of the waste stream will be handled at nearby landfill facilities in contiguous counties. Existing collection equipment will be able to accommodate the change but with longer transport and turnaround times to empty the full equipment. However, as these nearby facilities reach their capacity or as this capacity may become limited due to commitments to others, additional amounts of wastes will have to be transferred to remote locations. Thus, the need for full transfer station operations will gradually grow over time. The costs involved in the collection and disposal of wastes will increase as a direct result of the increasing needs for long distance transport. It is recognized that the cost increases will not be uniformly spread to all waste generators.

Oakland County has also examined the need for changing the basic management structure found within the County today. With few exceptions in the County, solid waste services and facilities are provided, operated, and/or staffed by the private sector. The operators serving Oakland County have historically provided access to a proper amount of disposal capacity to serve the County's needs and they remain strong in their commitment to continue to provide such access. Therefore, it is recommended that the existing free market system be allowed to continue to

operate. However, it is emphasized that should service levels falter or should volume reduction achievement levels fall below expectations, municipalities are urged to expand their level of management to meet or exceed those used by the highly successful RRRASOC and SOCRRA municipalities.

One event which directly impacts the willingness of the service providers to step forward with current proposals for transfer operations is the possibility that one of the remaining landfills in Oakland County may be expanded. This event is controlled by an existing consent judgment ruling. The County is barred from participation in the expansion decision. Should the parties involved agree to a major facility expansion, the need for major transfer station capacity would be moved in time by more than 10 years into the future from the currently projected facility close date. This potential decision has all participants carefully watching and waiting.

As a result, the willingness of the private sector to step forward with appropriate long distance haul capital, facilities and operations when such are required must be carefully monitored. Failure for timely implementation of necessary facilities so as to provide continuous and smoothly operated waste collection services may force governmental action as called for by the County's historic planning efforts. It is recommended that the Board of Commissioners' practice of annual examination of disposal capacity availability and facility availability be continued as an early warning system. Should failure be foreseen, steps can be taken for necessary interventions. It is recommended that should a decision on the landfill expansion not be reached by the end of year 2001, that a Plan Amendment process be initiated by the Board of Commissioners to examine disposal capacity issues with specific focus upon the location of available landfill capacity and the resultant need and/or location of transfer station facilities. A careful examination of the physical infrastructure, social issues and economics involved will be required. A competitive private sector market place must be maintained with the resultant solution.

Oakland County chooses to adopt a free-market stance with regard to the inter-county flows of waste. No restrictions are placed upon the export of wastes generated within the County to existing and future disposal areas located in all other Michigan counties which properly provide for the import of Oakland County wastes and to any disposal area located out-of-state. Should the recipient county management plan place a limit upon the imports from Oakland County, Oakland County respects that limitation. Oakland County chooses to place no restrictions upon the import of wastes generated within all other Michigan counties except that such imports may not exceed the limitations imposed by a specific county's solid waste management plan upon exports from Oakland County or upon a lower value if specified by the exporting other county.

Oakland County waste generators and service providers operating within Oakland County must understand that although this export authorization is broadly given, as Michigan law is currently written, the right to export to facilities located in a given Michigan county is subject to any limitations that may be imposed by the facility's host county's solid waste management plan and then finally subject to additional limitations that may be imposed by the facility operator. Caution must be exercised by all to ensure that anticipated exports are in fact permissible.

The County's continuing role on solid waste management plan issues will be to guide the on-going Act 451 solid waste planning efforts; to periodically monitor and report on the volume reduction achievement efforts and successes of each municipality; to urge and encourage the municipalities and the business community to expand program efforts to fulfill noted voids; to continually monitor the availability of handling, processing and disposal facilities to ensure that sufficient capacity continues to exist to handle the County's entire waste stream; to provide periodically updated information on programs, facilities and educational opportunities to the county's waste generators; to continually monitor the availability of waste stream generation and recovery data; to monitor legislation which may effect the provision of solid waste services and required processing, handling or disposal facilities; and to communicate on these issues with each municipality.

Oakland County continues the designation of existing disposal areas as shown in the table following and authorizes the additional facility designations indicated. Specifics on the designations are contained within the appropriate sections of this document.

Designated Act 451 Solid Waste Disposal Area Facilities
Oakland County, Michigan

Basic Designation Type

Facility	Address	Municipality	Comment
Type II Landfills			
Collier Road Landfill	575 Collier Road	Pontiac	Existing
Eagle Valley Recycling and Disposal Facility	600 West Silverbell Road	Orion Township	Existing
Oakland Heights Development	2350 Brown Road	Auburn Hills	Existing
SOCRRA	1741 School Road	Rochester Hills	Existing
Material Recovery Facilities			
Allied Waste Industries	1591 Highwood	Pontiac	Existing
RRRASOC	20000 West 8 Mile Road	Southfield	Existing
SOCRRA	995 Coolidge Highway	Troy	Existing
Waste Management	1525 West Highwood	Pontiac	Existing
Collier Road	575 Collier Road	Pontiac	New designation
Transfer Stations			
Allied Waste Industries	21430 West 8 Mile Road	Southfield	Existing
Allied Waste Industries	1591 Highwood	Pontiac	Existing
SOCRRA	991 Coolidge Highway	Troy	Existing
Waste Management	1525 West Highwood	Pontiac	Existing
Collier Road	575 Collier Road	Pontiac	New designation
SOCRRA	29470 John R Road	Madison Heights	Existing "Disposal Area" designation changed to Transfer Station.

GOALS AND OBJECTIVES

The primary goal of the Oakland County Solid Waste Management Plan is the adoption of a plan of action which, when implemented, will minimize future adverse impacts upon the public health, the environment and the landscape as a result of the generation, handling, processing and disposal of Act 451, Part 115 non-hazardous solid wastes.

To achieve this goal, the plan of action will focus upon the objectives following.

- Minimize the future amounts of solid wastes generated within Oakland County.
- Ensure that solid wastes are source separated so that imbedded resources may be easily collected, processed and recovered.
- Achieve a reduction in the percentage of solid wastes that are destined for either incineration and/or landfilling of at least 30% through source reduction, reuse, recycling and composting by the year 2010 over that achieved in 1990.
- Ensure that solid wastes, source separated recyclable materials, and yard wastes are collected and removed from the site of generation frequently enough to protect the public health.
- Ensure that such materials are handled, processed and disposed of at properly licensed and operated facilities.
- Minimize pollution resulting from solid wastes thereby preventing adverse effects on the public's health and the environment (including the groundwater and surface water quality, air quality and land quality) which may result from improper solid waste collection, transportation, processing or disposal.
- Approve and locate new solid waste handling, processing and disposal facilities only as may be required to meet local needs while carefully respecting and blending with the topography and surrounding land uses.
- Ensure that all Oakland County solid waste generators have access to a full range of solid waste handling, processing and disposal services.

Oakland County and Environs

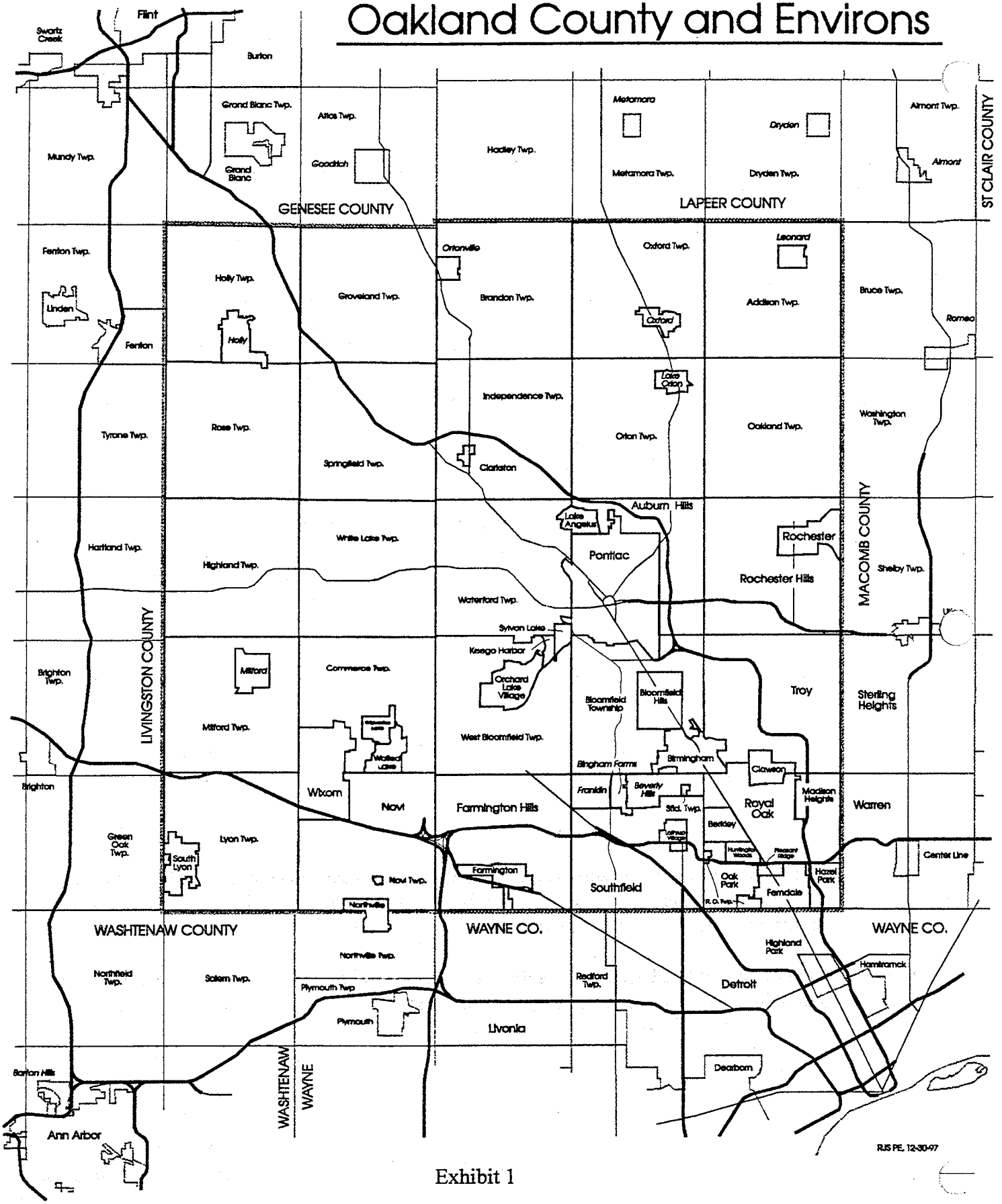


Exhibit 1

DATABASE

HISTORY OF SOLID WASTE PLANNING IN OAKLAND COUNTY:

After World War II, there was a growing realization by government that solid waste disposal issues were becoming too large a problem to be effectively dealt with by individual communities. Consequently, in Oakland County, municipalities joined together to cooperatively attack solid waste problems and on a regional basis, a whole series of studies related to extended cooperative efforts were initiated.

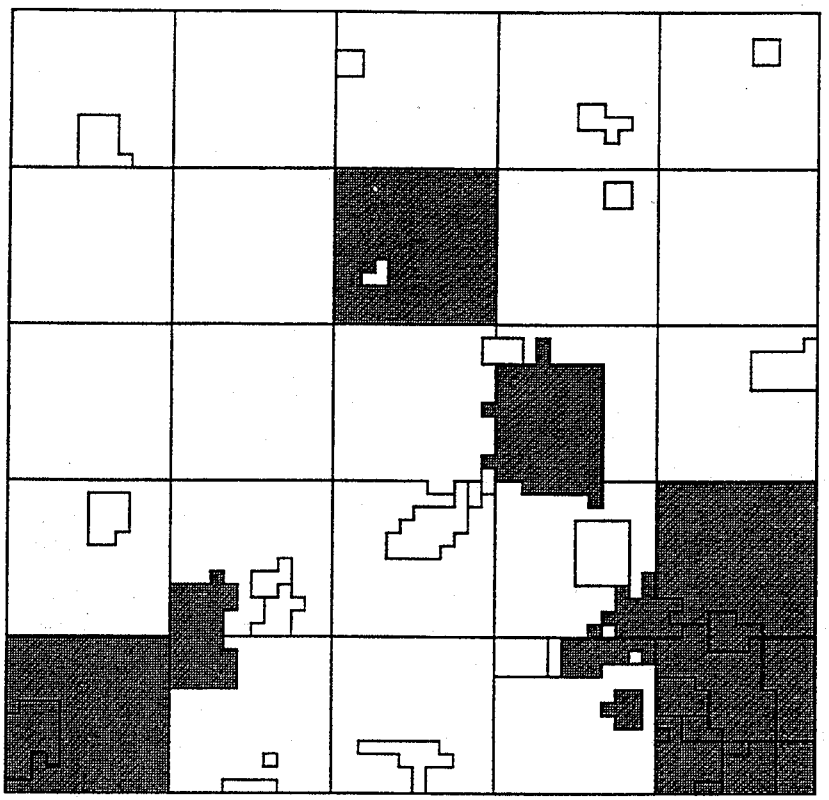
In **1951**, fourteen Oakland County municipalities formed the Southeast Oakland County Incinerator Authority (SOCIA) under Public Act 179 of 1947, so that through their collective efforts, the solid waste management needs of the municipalities could be efficiently and economically dealt with. SOCIA planned, constructed and operated an incinerator, a transfer station operation and a landfill. These facilities commenced operations in **1955**. Each of these facilities was funded by and exclusively served the communities of Berkley, Beverly Hills, Birmingham, Clawson, Ferndale, Hazel Park, Huntington Woods, Lathrup Village, Madison Heights, Oak Park, Pleasant Ridge, Royal Oak, Royal Oak Township, and Troy. This successful approach to solving solid waste problems has continued to evolve and the authority, now renamed the Southeast Oakland County Resource Recovery Authority (SOCRRA), remains in operation today.

In **1961**, the Detroit Metropolitan Area Regional Planning Commission (DMARPC) began a study designed to lead toward cooperative handling of refuse disposal problems for the five counties of Macomb, Monroe, Oakland, Washtenaw and Wayne. A report, entitled "Refuse Disposal Plan for the Detroit Region", was published in **1964** and presented two alternative disposal plans, the first based primarily on landfilling, and the second on incineration.

Following publication of the DMARPC plan, the Oakland County Board of Supervisors named the Oakland County Drain Commissioner as its agent to prepare a plan for implementing the basic findings of the regional study. The report, entitled "Proposals for a Refuse Disposal System in Oakland County, Michigan"[(Reference Document #1)] was dated November, 1968 and was presented in **1969**. This document detailed the regional plan and called for minimization of future landfilling through extensive use of incineration at four locations (5,900 tons per day design capacity) along with a large County-owned landfill in western Addison Township.

The recommendations contained in these reports were not carried out because the proposals were generally unacceptable to the municipalities.

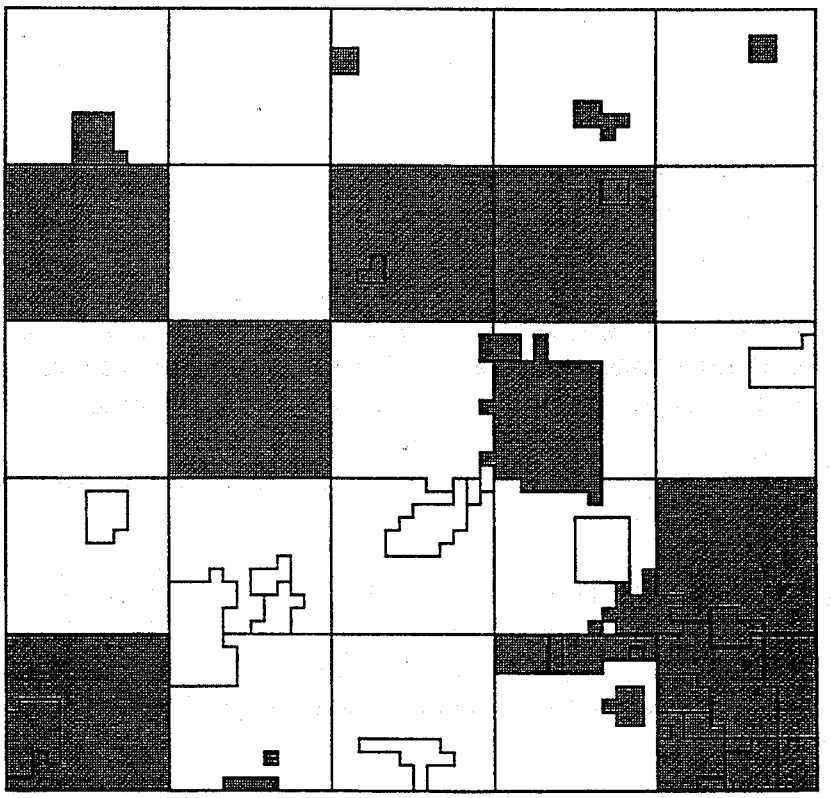
In **1971**, the Southeast Michigan Council of Governments (SEMCOG) began conducting a comprehensive study of existing solid waste processing and disposal systems and started development of a solid waste management plan for six counties: Macomb, Monroe, Oakland, St. Clair, Washtenaw, and Wayne. The plan was to cover the period from 1973 to 1995.



Areas Covered in the 1975 Master Plan

Areas Not Included in the planning effort

Approximately 46% of the County's 1975 waste stream was generated within the 42 municipalities included in the planning effort. This stream was projected to grow to 57.6% by 1995 and to 65.5% by the year 2020.



Municipalities Involved in the 1978 Resolution of Intent

28 Participating Municipalities

Approximately 41% of the County's 1975 waste stream was generated within the 28 municipalities which adopted a Resolution of Intent to participate in the proposed solid waste management system. This stream was projected to grow to 53.1% by 1995 and to 60.5% by the year 2020.

beamap99.wk4
5/25/99

Exhibit 2

The study[#2] was published in **1973**. It recommended a two-stage plan to solid waste management. The first, a near-term plan, covering a period from 1973 to 1976, recommended the use of existing incinerators and landfills and the opening of thirteen new sanitary landfills in the region. The second, long-term plan, encompassing the period of 1976 through 1995, recommended new processing, transfer and disposal facilities to provide an economical solution to the region's solid waste disposal needs. Each county was designated as an independent unit in the solid waste management plan with the exception of Wayne County, which utilized disposal facilities in other counties. Regional control was recommended over the design, construction, and subsequent administration of all facilities proposed in this study.

The SEMCOG study, while perhaps being the most comprehensive and complete plan presented to date, was never implemented, The reasons for the lack of acceptance are believed to be threefold: 1) few perceived a solid waste crisis regarding landfill availability; 2) the cost of plan implementation was 1.1 billion dollars; and 3), no general level of agreement could be reached on the regional administration of the system proposed in the plan.

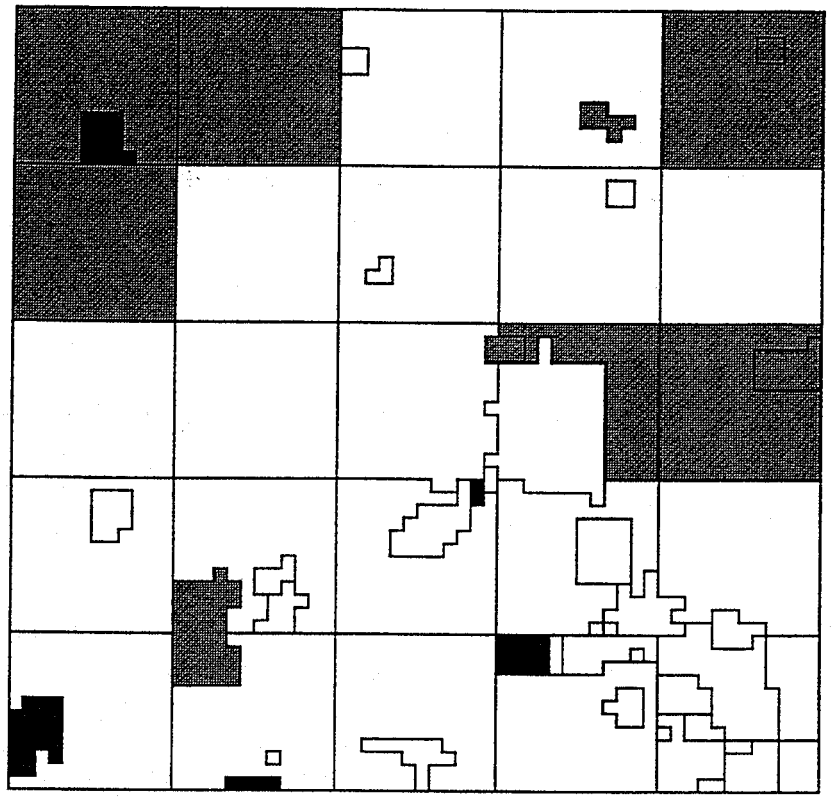
In **1975**, Oakland County, in response to Act 366 of 1974, adopted a second Master Plan (which drew heavily on the SEMCOG work) to minimize the need for landfilling and furthering the conservation of natural resources. As shown in Exhibit 2, some scattered areas within the County chose to prepare their own solid waste plans as was provided for by Act 366. This work was contained in the "Oakland County Solid Waste Disposal System Master Plan"[#3], Volumes I and II dated May, 1974. This work was revised on September 10, 1974 and March 31, 1975.

The Federal government's role in solid waste management was described in the Resource Conservation and Recovery Act of **1976** (RCRA). This Act defined the waste stream and regulatory and assistance responsibilities carried out through the U.S. Department of Commerce, Environmental Protection Agency. Federal responsibility included developing a strategy that lead to the establishment of national goals and standards.

In **1978**, the Oakland County Citizens Solid Waste Advisory Group presented a detailed set of implementation recommendations[#4] covering all aspects of the 1975 Master Plan. A "Resolution of Intent" to join the proposed system was adopted by 28 of the 43 municipalities in the planning district (representing 89% of the district's population). See Exhibit 2.

Michigan adopted Act 641 of 1978, the Solid Waste Management Act. This law created a comprehensive solid waste planning process in which counties were to play a leading and central planning agency role.

In August of **1982**, in response to Act 641, the Oakland County Board of Commissioners adopted the County's third solid waste plan ("Solid Waste Management Plan for Oakland County, Michigan"[#5] as dated November 1981) which continued the prior theme of landfill minimization while updating implementation details. This plan covered the entire County and downsized previous incineration recommendations to 2,515 tons per day design capacity at six locations and

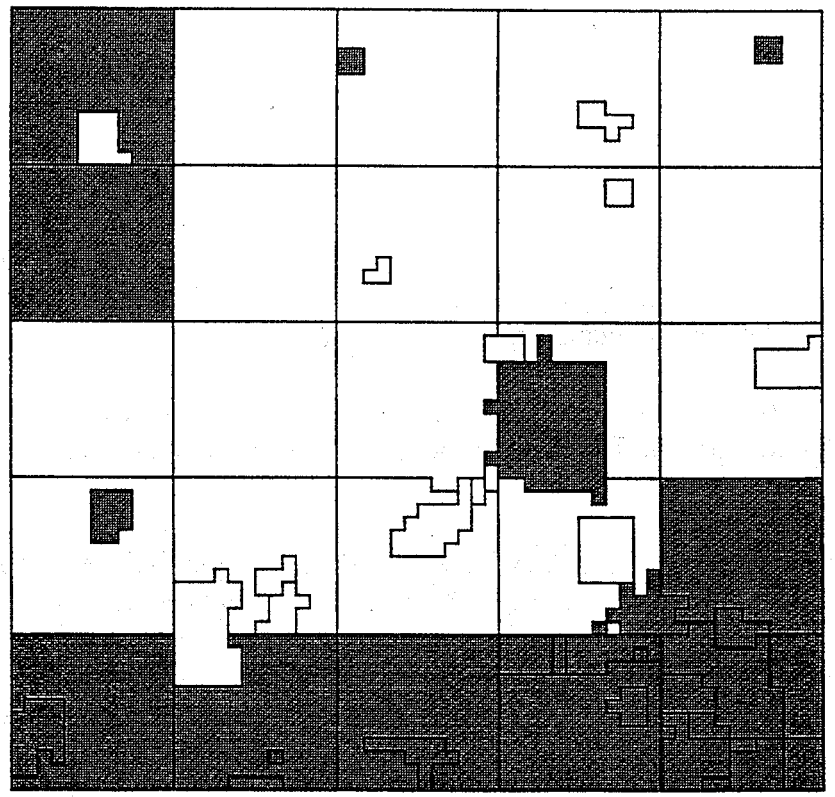


1982 Solid Waste Management Plan

45 YEAS 11 NAYS 5 No Response

175 days for municipal approval

104 days for State approval



Areas Involved with the MSWB Effort in 1986 and 1987

30 Local Units Participating

31 Units Not Involved =

Approximately 34% of the County's 1990 waste stream was generated within the 31 municipalities participating in the MSWB effort. This stream was projected to grow to 36.6% by 1995 and to 46.3% by the year 2020.

basmap99.wk4
5/25/99

Exhibit 3

called for the recovery of energy from the process. The principal County waste-to-energy (WTE) facility was to be located within or adjacent to the boundaries of the County's Service Center in Pontiac. The plan was approved by more than two thirds of the County's 61 municipalities as required by Act 641 (45 yea, 11 nay, and 5 no response as shown on Exhibit 3) and submitted to the Michigan Department of Natural Resources for final approval. The approval process took considerable time - 175 days from the date of Board approval to the 41st municipal yea action and then 104 days from the date of submission for the MDNR Director's approval. Final approval was received in late 1983.

In **1986**, a long discussed county-wide implementation effort was formally launched by Oakland County and the Municipal Solid Waste Board (MSWB) was formed. Thirty of the County's 61 municipalities representing about one-third of the County's entire municipal solid waste stream ultimately joined into this effort. Exhibit 3 displays the areas involved.

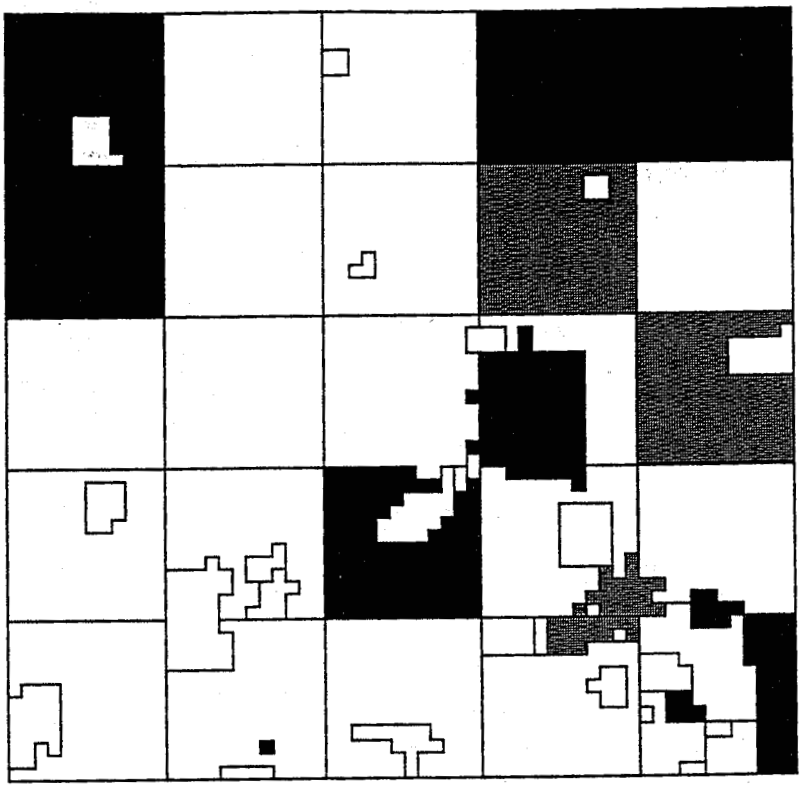
In **1987**, the proposed MSWB WTE facility site was approved on Oakland Avenue, immediately north of the County Service Center. In **1988**, the City of Pontiac brought suit against the County for identifying the County Service Center WTE site, after adopting a large tap-in fee for such facilities.

One of the principal problems encountered throughout the fledgling MSWB effort were questions concerning the precise financing mechanism to be used to fund the proposed program. To correct this problem, legislation was proposed to allow the County to manage such a program on behalf of the member municipalities and to lend its full faith and credit to support any bond issues that may be required to support the program. Such legislation was initiated.

Sensing a stalled implementation effort for a program which would only serve a portion of the County, the Board of Commissioners took steps to reevaluate the program and launched an entirely new implementation program designed to serve the entire county. In early 1988, a team of outside legal, engineering and bond consultants were appointed to guide the process.

A cornerstone of the revitalized program (hereinafter labeled the "System") was that in order to allay previous concerns by the municipalities about unknown future costs, all major System facilities would be secured either through purchase agreements, outright purchase or through long-term contractual arrangements with the private sector, prior to requesting final commitment from the municipalities for System membership. This would allow assurance of future system costs by having all large system elements priced on the basis of actual bids or procurement actions, rather than upon estimates.

This approach was considered to be more than fair to the municipalities but a large risk was then accepted by the County. Flow control could only be transferred from the municipalities to the County by long-term contracts. A majority of the implementation work and costs associated therewith would be incurred prior to knowing whether or not a sufficient number of municipalities would join the System to warrant actual implementation. The risk was accepted.

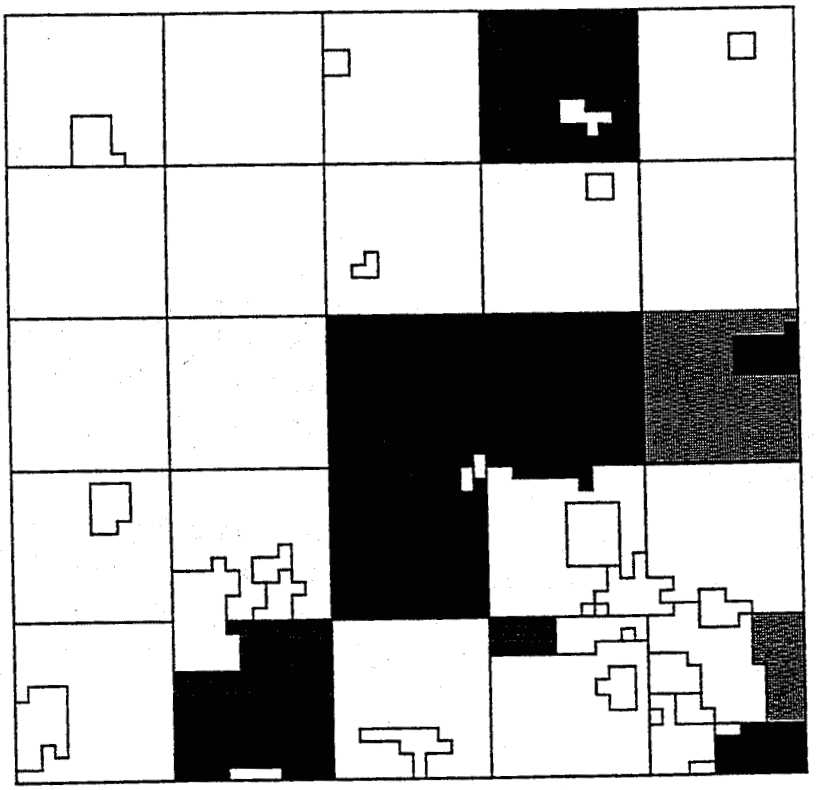


1989 Solid Waste Management Plan Amendment

44 YEAS 4 NAYS 13 No Response

182 days for municipal approval

50 days for State approval



1990 Solid Waste Management Plan Update

45 YEAS 2 NAYS 14 No Response

196 days for municipal approval

246 days for State approval

beamap09.wk4
5/25/99

Exhibit 4

Efforts were immediately launched to locate a site for a landfill and a vendor for the first of three WTE facilities. In **1989**, contracts were awarded to the successful WTE vendor, Westinghouse, for a 1,500 ton per day design capacity plant.

The Board Chairperson's Solid Waste Task Force recommended that the proposed Solid Waste System be based upon dramatic decreases in the amount of wastes ultimately disposed of through source reduction and reuse, composting and recycling. All of this (30% by the year 1995 and 50% by 2005) would occur prior to conversion of the remainder to energy through incineration. Only the non-processable residuals would be directly landfilled. These volume reduction goals were adopted after detailed examination of the Oakland County waste stream and the feasibility of implementing basic volume reduction strategies. This important work, which was initiated in 1988, was published in a major report[#6] titled "Material Recovery Strategies for Oakland County, Michigan" in October, 1989.

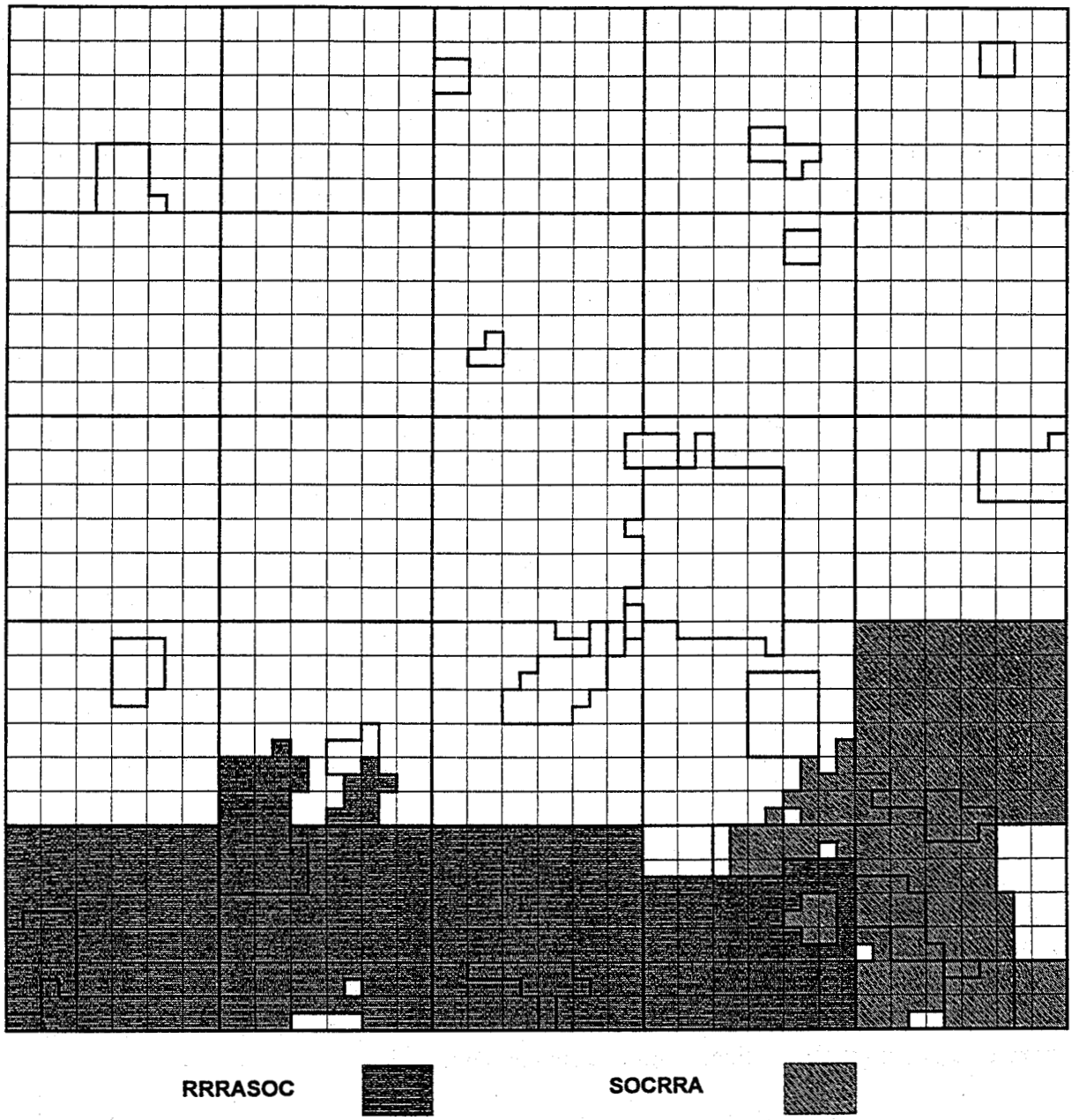
A new site for the System's waste-to-energy plant was obtained in Auburn Hills and a Host Community Agreement was negotiated. This agreement included a site for the System's proposed recyclable materials processing plant (MRF). The original Act 641 Solid Waste Plan was amended to include the WTE site. This plan amendment was approved by 44 of the municipalities with 4 nays and 13 no responses over a 182 day period (see Exhibit 4) and ultimately by the MDNR Director 50 days after submission of the municipal approvals. Final approval was gained in early 1990.

A carefully structured effort to select a county-sponsored landfill site was commissioned. The underlying concept was that all areas of the County would first be investigated to uncover potential candidate sites and the search then narrowed to the final "best" site. This site was to serve the proposed management system for a period of 40 years. A minimum site size of 600 acres was selected to provide 40 years of disposal capacity and to allow for generous buffer areas. CDD and ISW waste streams were to continue to be handled at other sites by the private sector. If this special disposal capacity became unavailable, a second future site would be acquired for these special wastes.

The entire process was based on the premise that no one (except the project consultant) was to be aware of the location of potential candidate sites until after all screening and site ranking mechanisms and criteria were finally approved. This would ensure that those involved in the ranking process were not biased towards sponsoring or eliminating a certain site. This scenario also meant that the sites could not be physically accessed until after they were publicly announced and therefore all selection efforts had to be accomplished "in the blind", working only from existing, publicly available information and data.

A Landfill Siting Advisory Committee (LSAC) was established with one citizen selected from each of the County's original 25 townships. The LSAC (instructed and assisted by project consultants) first adopted a set of initial screens through which all areas of the county would be sifted to uncover every potential landfill site of at least 600 acres in size. Secondary screens were

Oakland County's Solid Waste Management Authorities - 1998



basmap99.wk4

7/7/98

Exhibit 5

adopted to narrow the original list of candidate sites. The project consultant proceeded privately and independently to locate the sites and then to narrow the listing based on the additional screens while the LSAC worked on the next project phase.

Through utilization of a nominal group technique, the LSAC next developed a list of 28 concerns against which all final candidate sites would be measured. The concerns were all reduced to physically measurable results so that the individual sites could be objectively compared, one to the other, in terms of how well each met that concern. Each concern was also weighed in terms of relative importance in comparison to other concerns. Every site would then be scored on each of the 28 concerns with the best site receiving the highest score for that particular concern. The sum of the weighted scores for each of the 28 concerns on each site being the final site score. The object being to have this scoring system rank order the final sites in terms of overall desirability.

Upon completion of the LSAC work and after public announcement in August, 1989 of ten possible landfill options (involving eight individual sites) and their preferential ranking, the most desirable site was then to be field tested to confirm primary site selection parameters. If the site passed this close-in scrutiny, it would be acquired as the system's landfill site. If not, the remaining sites would be tested, in order, until a final acceptable site was found.

Efforts were launched to obtain a vendor for the System's proposed MRF. Act 186 of 1989 was adopted allowing Oakland County to establish a Department of Solid Waste Management and to administratively and financially support the System. An environmental impact statement and health risk analysis were submitted to the Michigan Department of Natural Resources in December, 1989 for a 2,000 tpd WTE plant.

In November, 1989, eight Oakland County municipalities formed the Resource Recovery and Recycling Authority of Southwest Oakland County (RRRASOC) under Public Act 179 of 1947, so that through their collective efforts, the solid waste volume reduction and management needs of the municipalities could be dealt with. These communities include Farmington, Farmington Hills, Lyon Township, Novi, Southfield, South Lyon, Walled Lake and Wixom. RRRASOC planned and caused the construction of a merchant recyclable materials processing plant (MRF) in the City of Southfield. This facility, which went into operation in late 1994, processes not only the recyclable materials from the member municipalities but those from other municipalities throughout the region. The current districts of the two authorities are shown in Exhibit 5.

In **1990**, the WTE Construction and Service Agreements were re-negotiated to reflect the new site in Auburn Hills and to reflect the decision to pursue aggressive volume reduction goals (50% by the year 2005) prior to incineration and ultimate disposal in landfills. Additionally, the documents reflected the decision for a single System WTE plant, re-sized to 2,000 tons per day design capacity.

Plans for the immediate purchase of a site for the proposed System landfill were shelved because

NOVEMBER 5, 1991 BOND PROPOSITION

Shall the County of Oakland, Michigan, borrow a sum of money not to exceed Five Hundred Million Dollars ($500,000,000.00) and issue its full faith and credit general obligation bonds therefor, in one or more series, (the principal and interest on such bonds to be paid primarily from the revenues to be derived from the operation of the Oakland County Solid Waste management System), to defray the cost of acquiring, constructing, and equipping solid waste processing and disposal facilities to serve the Oakland County Solid Waste Management System, including, without limitation, a household hazardous waste program, one or more recycling facilities, one or more composting facilities, a waste-to-energy incinerator and a sanitary landfill?

The bond proposition was adopted by the Electorate. It allowed the County to issue up to five hundred million dollars ($500,000,000) of full faith and credit general obligation bonds. However, the promise that the principle and interest would be paid from System revenues and not from the tax base depended upon the commitment of the future waste stream to the proposed System by the municipalities. Thus, the bonds would have received the benefit of the County's excellent full faith and credit interest rating but would have essentially operated as revenue bonds. Ultimately, the County was unable to obtain a sufficiently large commitment of the future waste stream to insure repayment of the debt in the manner promised.

In late 1993, upon the recommendation of the County Executive, the Board of Commissioners adopted a resolution which formally concluded all efforts to implement a county-wide, fully-integrated Solid Waste Management System.

of the broad level of opposition to the individual sites and the County Executive was directed to make disposal capacity arrangements with the private sector, while for the long-run, continuing to search for a future County-owned landfill site.

Contracts were awarded to the successful MRF vendor, Waste Management of Michigan.

Oakland County adopted its fourth solid waste plan in the form of the Act 641 Plan Update which incorporated all the work begun in 1988 and which outlined the implementation effort which was currently underway. The June 1990 Plan Update[#7] was approved by the municipalities (45 yea, 2 nay and 14 no responses) after 196 days (discounted for delays caused by litigation over plan specifics) and ultimately by the MDNR Director after an additional 246 days (Exhibit 4).

As part of a consent judgment in a lawsuit over the Plan Update, a Host Community Agreement for a landfill was concluded with Orion Township and a License Agreement for disposal capacity sufficient for 20 years of System needs was obtained with Waste Management Inc. for the Eagle Valley landfill. (The actual agreements were approved by the Board on 1/31/91).

In **1991**, when faced with a general unwillingness of the 61 municipalities to commit their future waste stream to the proposed Solid Waste Management System by approving Intergovernmental Agreements (IGAs), the Board of Commissioners placed a General Obligation funding question (see Exhibit 6) on the November ballot. The municipalities had expressed their concern about a variety of issues ranging from the System's lack of key facility permits, to short-term economic considerations, all the way to outright opposition to the use of waste-to-energy technology. This ballot issue received narrow popular support across the whole county but passed within 76% of those municipalities eligible for System membership.

Late in that year and just prior to the ballot date, the Michigan Department of Natural Resources (MDNR) announced that it would recommend approval of the Oakland County Air Quality Permit (AQP) application for the System's waste-to-energy facility. After the November ballot issue, MDNR continued to delay processing of the AQP application (submitted in December of 1989) pending development of a state-wide mercury strategy after a scientific review of this issue. MDNR further gave conditional approval to the County's 1990 Act 641 Plan Update citing problems with the Plan Update's quantification of inter-county flows, interim siting mechanism and its contingency plan.

In **1992**, while the County was in the midst of a new IGA sign-up period, the System's waste-to-energy vendor, on March 2, 1992, withdrew from the project, citing among other reasons, the continued delay in obtaining the AQP for the facility. Private sector landfill owners, faced with a declining waste stream (partially because of general economic conditions and partially because of general volume reduction efforts) and faced with increased landfill capacity on a regional basis, begin to reduce landfill tip fees and offered dramatically low-priced, long-term contracts. Some municipalities started to become additionally reluctant to approve the IGAs citing conceptual and

Basic Reference Documents:

History of Solid Waste Planning in Oakland County:

1. "Proposals for a Refuse Disposal System in Oakland County, Michigan" as prepared for Daniel W. Barry, Drain Commissioner acting as agent for the Oakland County Board of Supervisors, November 1968.

2. "Southeast Michigan Council of Governments Solid Wastes Study", Detailed Report and Summary Report, March, 1973.

3. "Oakland County Solid Waste Disposal System Master Plan", Volumes I and II, May, 1974, Revised September 10, 1974 and March 31, 1975.

4. "Oakland County Citizens Solid Waste Advisory Group Recommendations to Daniel T. Murphy, County Executive, for Implementation of Oakland County Solid Waste Disposal System Master Plan", Volumes I and II, April, 1978.

5. "Solid Waste Management Plan for Oakland County, Michigan", Solid Waste Planning Committee, Daniel T. Murphy, County Executive, November, 1981

6. "Material Recovery Strategies for Oakland County, Michigan", October, 1989

7. "Update to the Solid Waste Management Plan for Oakland County, Michigan" as Adopted on June 28, 1990.

8. "Amendments to the 1990 Solid Waste Management Plan Update", Oakland County, Michigan, 2 Volumes, Adopted June 9, 1994.

9. "Demonstration of Available Disposal Capacity, May, 1995"

10. "Demonstration of Available Disposal Capacity, May 6, 1996"

11. "Demonstration of Available Disposal Capacity, May 5, 1997"

12. "Demonstration of Available Disposal Capacity, Spring, 1998"

13. "Demonstration of Available Disposal Capacity, Spring, 1999"

economic difficulties in accepting responsibility for any portion of the waste stream beyond that which they then currently controlled (generally the single-family residential stream.)

All of this combined to again yield an insufficient number of IGAs to warrant implementation of the System. The County had expended the effort, incurred the costs and accepted the risks involved, yet flow control from the municipalities was not achieved.

In June 1992, while in the midst of considering a recommendation from the County Executive to abandon implementation efforts and for the County to adopt a strong Act 641 planning and local agency assistance role, the US Supreme Court ruled that Michigan could not bar the imports of solid wastes from other states.

By late 1992, efforts to keep primary contracts for facilities and services alive for the proposed System facilities became futile and it was reluctantly accepted that the project would not move forward. Contracts and extensions simply expired. The County had expended in excess of $15,000,000 in its efforts to establish the proposed system. Some of the expenditures were recoverable (return of host community agreement down payments and the sale of lands purchased) but a majority of the dollars were simply lost.

In late **1993**, upon the recommendation of the County Executive, the Board of Commissioners formally adopted a resolution which officially closed down all efforts directed towards the establishment of the proposed System. Miscellaneous Resolution #93249 resolved that the County immediately conclude its prior efforts to implement a county-wide fully-integrated Solid Waste Management System. It terminated all contracts and agreements (host community agreements for landfill and waste-to-energy facilities, power purchase agreements, and contracts for the construction of the waste-to-energy and materials recovery facilities). All affected parties were notified and settlement of obligations outlined in the contracts and agreements were authorized. Finally, all other contracts, agreements and permit actions were closed or terminated.

In **1994**, while adopting amendments to the 1990 Solid Waste Management Plan Update to deal with items and issues involved in MDEQ's 1991 contingent plan approval, the County amended its plan[#8] to provide for extensive inter-county flow authorizations and for contingent disposal plans. Additionally, since the County had abandoned all plans to process wastes through major waste-to-energy facilities and therefore its future landfill needs were substantially larger than had been previously projected, it could not demonstrate that it had access to sufficient disposal capacity over the long term. Michigan required that if a county could not demonstrate access to a sufficient amount disposal capacity for the entire 20 year planning period, as measured from the date of State approval of the plan, that the plan must contain a mechanism based only upon objective criteria which would allow the siting of additional capacity. Oakland County took the approach that such requirements would only result in the siting of capacity which exceeded local needs over the short term and the existence of excess capacity could invite the import of out-of-state wastes as had been allowed by the 1992 U.S. Supreme Court decision. The siting of new capacity must be carefully managed over time to match local needs. Therefore, an interim siting mechanism which would be used only if available disposal capacity ever fell below five years of needs was proposed. The County would annually examine the issue of disposal capacity

This page intentionally left blank.

availability to avoid a future crisis situation.

Simultaneously with the plan amendment process in 1994, the County sought changes to the solid waste legislative package reducing the required planning period from 20 years to 10 years and by providing that forced siting of landfill capacity through the use of interim siting mechanisms would not have to occur unless the County were unable to demonstrate that more than 60 months of disposal capacity was available. The changes to the law, modified to a demonstration period of 66 months, were adopted the same day as the Board of Commissioners adopted the plan amendments (June 9, 1994).

The plan amendments were contained in two separate actions, one relating to facility designations and the second to all other contingent issues. The facility amendment was approved by 57 of the 61 municipalities (Madison Heights and Oxford Township abstaining along with no responses from Northville and Novi township) and the basic amendments were approved by 58 municipalities (1 nay by Oxford Township and 2 no responses by Northville and Novi Township). The 41st yea vote was cast only 39 days after Board approval of the amendments. The MDNR Director's approval was received 36 days after submission of the municipal approvals.

In late 1994, Michigan's original and frequently amended Act 641 solid waste planning legislation was complied as Part 115 of Act 451 of 1994, the Natural Resources and Environmental Protection Act. The newly created Michigan Department of Environmental Quality was established as the agency responsible for administration and management of the Act. The new legislation was effective as of March 30, **1995**.

Beginning in May, 1995 and in the spring of each year since, the County has examined remaining available disposal capacity[#9, 10, 11, 12 & 13] and has found that access to a sufficient amount of disposal capacity remained. The interim siting mechanism adopted in 1994 has not yet been employed.

In late **1997**, the Michigan Department of Environmental Quality (MDEQ) requested that each of Michigan's 83 counties consider taking on the responsibility of preparing an update to the existing solid waste management plans. As the law is structured, if a county determined that it did not desire to perform such a task, the responsibility would be offered to the county's municipalities. If an affirmative response from a majority of these agencies was not received, the offer would be made to the regional planning agency. Finally, totally lacking local support, the MDEQ would simply mandate a management plan upon the county involved.

Oakland County's Board of Commissioners accepted this responsibility on August 14, 1997, and named the Oakland County Executive as the Designated Planning Agent. The fourteen member Solid Waste Planning Committee was appointed by the Board of Commissioners on October 9, 1997. The material following represents the course of study and contains the recommendations of the Solid Waste Planning Committee to the Board of Commissioners.

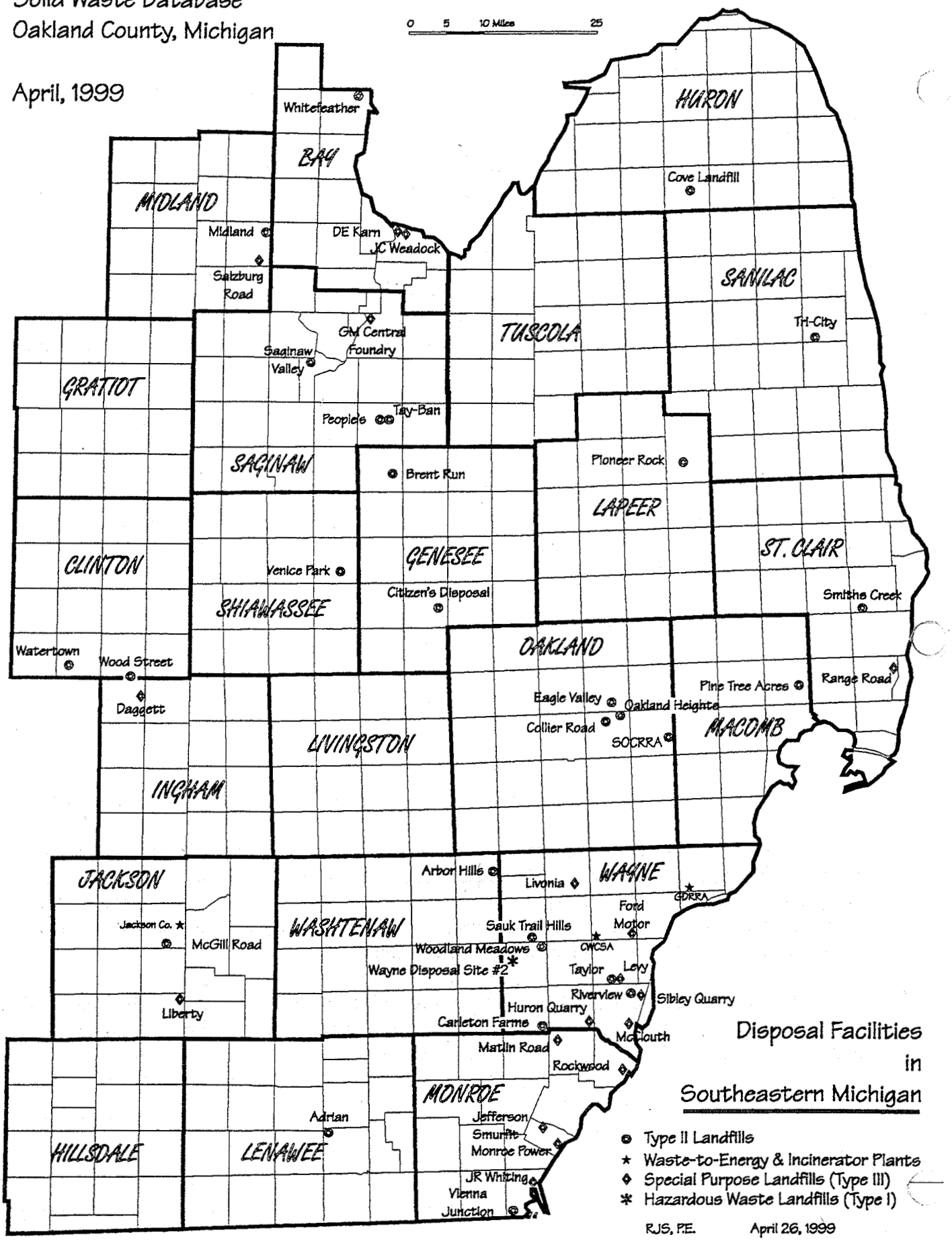

Solid Waste Database
Oakland County, Michigan
April, 1999
0 5 10 Miles 25
HURON
BAY
MIDLAND
SANILAC
TUSCOLA
GRATIOT
SAGINAW
LAPEER
CLINTON
GENESEE
ST. CLAIR
SHIAWASSEE
OAKLAND
MACOMB
LIVINGSTON
INGHAM
JACKSON
WASHTENAW
WAYNE
MONROE
HILLSDALE
LENAWEE
Whitefeather
Cove Landfill
Midland
DE Karn
JC Weadock
Salzburg Road
TH-City
GM Central Foundry
Saginaw Valley
People's
Tay-Ban
Pioneer Rock
Brent Run
Venice Park
Citizen's Disposal
Smiths Creek
Watertown
Wood Street
Daggett
Eagle Valley
Oakland Heights
Pine Tree Acres
Range Road
Collier Road
SOCRRA
Arbor Hills
Livonia
GDRRA
Ford Motor
Jackson Co.
McGill Road
Sauk Trail Hills
Woodland Meadows
OWCSA
Wayne Disposal Site #2
Taylor
Levy
Riverview
Sibley Quarry
Liberty
Huron Quarry
Carleton Farms
McClouth
Matlin Road
Rockwood
Adrian
Jefferson
Smurfit
Monroe Power
JR Whiting
Vienna Junction
Disposal Facilities in Southeastern Michigan
Type II Landfills
Waste-to-Energy & Incinerator Plants
Special Purpose Landfills (Type III)
Hazardous Waste Landfills (Type I)
RJS, P.E. April 26, 1999

Exhibit 8

THE PLANNING AREA

The solid waste management plan update planning area includes all of Oakland County with the exception of that area lying within the city of Northville. As provided for by Act 451, Northville has chosen to be included within the Wayne County solid waste planning effort. This local option has received the approval of the Board of Commissioners of each county. As noted in the material following, the waste stream generated within the planning area remains at 99.80% of that generated within the entire county.

DEMOGRAPHICS AND LAND DEVELOPMENT

Oakland County, in 1998, was home to approximately 1,176,000 residents and its businesses and industries provided more than 782,000 jobs to people who reside throughout southeastern Michigan. Oakland County's population is 12.1% of the State total while the employment values represent 15.5% of the State's total. The County geographically encompasses some 910 square miles and is governed by 61 local units of government - 30 cities, 10 villages and 21 townships. The County has more municipalities (61) than any other Michigan county (with Wayne County to the south being second with 43 municipalities). Michigan's 83 counties average 21.5 municipalities each. Exhibits 1 and 8 display the County, its municipalities and environs.

Oakland County has determined that population data and employment data (by type and place of work) as historically available from the U.S. Census Bureau and as projected into the future by the Southeastern Michigan Council of Governments (SEMCOG) together form an appropriate baseline for estimating the existing and future solid waste stream generated within the planning area. SEMCOG's projections of both population and employment by place of work are based upon existing and projected land use and development patterns. SEMCOG's most recent Regional Development Forecast data (as released in 1996) for the 7 SEMCOG counties and for Oakland County's 61 local governmental units (cities, villages and townships) is displayed in Exhibits 9 through 13. Similar baseline data prepared by SEMCOG for each of the seven counties in the region based upon the same land use models allows direct comparisons to be made.

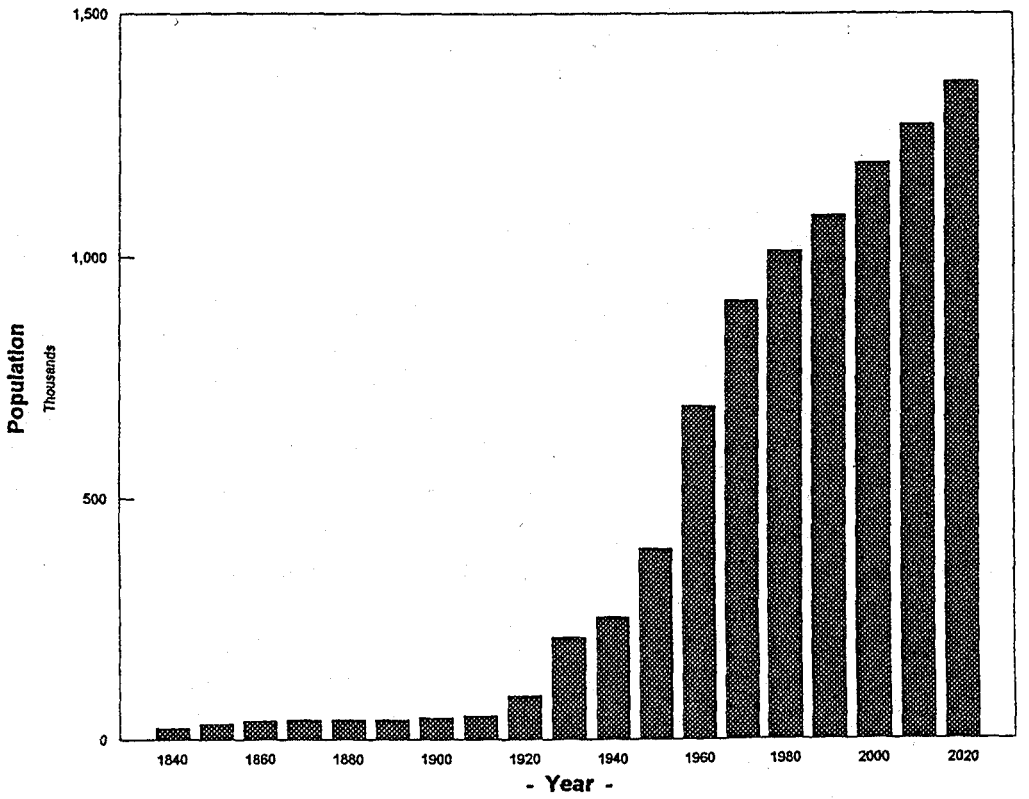
THE SOLID WASTE STREAM

Act 451 non-hazardous wastes are comprised of three principal components - municipal solid wastes (MSW), construction and demolition debris (CDD) and industrial special wastes (ISW). The MSW component is comprised of solid wastes generated by the single family residential, multi-family residential, commercial and industrial land uses. This primary component (approximately 84% of Oakland County's total solid waste stream) must be disposed of in Type II landfill facilities. The industrial component of MSW (generally comprised of industrial housekeeping wastes such as packaging, cafeteria and washroom wastes, and office wastes) is exclusive of industrial special wastes, such as foundry sands which are described as ISW. ISW is comprised of those wastes of such a character that they do not have to be disposed of in Type II landfills but may be disposed of in lessor standard Type III facilities because of their relatively

Solid Waste Database
Oakland County, Michigan

Oakland County, Michigan

1840 to the Present and on to 2020



Population History

Year	Source	Population	Change	% Change
1840	Census	23,646		
1850	"	31,270	7,624	32.24%
1860	"	38,261	6,991	22.36%
1870	"	40,867	2,606	6.81%
1880	"	41,537	670	1.64%
1890	"	41,245	(292)	-0.70%
1900	"	44,792	3,547	8.60%
1910	"	49,576	4,784	10.68%
1920	"	90,050	40,474	81.64%
1930	"	211,251	121,201	134.59%
1940	"	254,068	42,817	20.27%
1950	"	396,001	141,933	55.86%
1960	"	690,603	294,602	74.39%
1970	"	907,871	217,268	31.46%
1980	"	1,011,793	103,922	11.45%
1990	"	1,083,592	71,799	7.10%
2000	Projected	1,192,164	108,572	10.02%
2010	"	1,272,192	80,028	6.71%
2020	"	1,359,846	87,654	6.89%

Future projections are based upon SEMCOG's Recommended 2020 Regional Development Forecast dated 2-8-96.

RJS, PE
10:37
12/26/97
POPULAT.WK4

Exhibit 9

SEMCOG's 2020 Regional Development Forecast

Recommended Forecast - February 8, 1996

Oakland County Solid Waste Planning
rdf_loc wk4
10/13/99
09:44

Population

	1990	1995	2000	2005	2010	2015	2020	Change, 1995 to 2020	% Change 1995 to 2020
SEMCOG	4,590,465	4,735,738	4,804,389	4,877,433	4,962,603	5,067,093	5,162,405	426,667	9.01%
Livingston	115,645	135,558	154,061	170,853	187,725	204,875	219,674	84,116	62.05%
Macomb	717,400	754,494	775,875	802,349	832,477	860,899	884,222	129,728	17.19%
Monroe	133,600	141,449	146,701	150,732	154,867	160,160	164,788	23,339	16.50%
Oakland	1,083,592	1,150,872	1,192,164	1,232,182	1,272,192	1,318,997	1,359,846	208,974	18.16%
St. Clair	145,607	158,921	167,478	175,050	182,766	191,525	199,160	40,239	25.32%
Washtenaw	282,934	300,489	313,130	325,599	340,274	357,443	373,362	72,873	24.25%
Wayne	2,111,687	2,093,955	2,054,980	2,020,668	1,992,302	1,973,194	1,961,353	(132,602)	-6.33%
Wayne (pt)	1,083,708	1,101,664	1,102,957	1,104,716	1,107,957	1,114,546	1,124,059	22,395	2.03%
Detroit	1,027,979	992,291	952,023	915,952	884,345	858,648	837,294	(154,997)	-15.62%

Total Employment by Place of Work

	1990	1995	2000	2005	2010	2015	2020	Change, 1995 to 2020	% Change 1995 to 2020
SEMCOG	2,350,238	2,477,024	2,615,187	2,724,994	2,776,724	2,775,235	2,773,688	296,664	11.98%
Livingston	39,296	46,700	55,139	63,355	69,376	70,887	71,925	25,225	54.01%
Macomb	333,723	361,350	386,158	403,706	410,574	409,647	407,633	46,283	12.81%
Monroe	50,364	55,541	60,702	64,574	66,501	66,807	67,155	11,614	20.91%
Oakland	681,037	745,309	806,126	856,189	883,393	885,258	887,826	142,517	19.12%
St. Clair	55,730	60,556	64,654	69,393	72,462	73,476	74,398	13,842	22.86%
Washtenaw	213,895	228,331	242,770	252,759	258,184	258,962	260,270	31,939	13.99%
Wayne	976,193	979,237	999,638	1,015,018	1,016,234	1,010,198	1,004,481	25,244	2.58%
Wayne (pt)	563,703	595,521	630,759	657,675	668,028	668,453	667,129	71,608	12.02%
Detroit	412,490	383,716	368,879	357,343	348,206	341,745	337,352	(46,364)	-12.08%

Manufacturing Employment by Place of Work

	1990	1995	2000	2005	2010	2015	2020	Change, 1995 to 2020	% Change 1995 to 2020
SEMCOG	486,644	482,591	468,709	467,057	461,633	439,602	415,321	(67,270)	-13.94%
Livingston	8,186	8,670	9,099	9,742	10,183	9,752	9,232	562	6.48%
Macomb	102,751	105,066	102,550	99,809	97,383	92,102	86,266	(18,800)	-17.89%
Monroe	9,430	10,685	10,866	11,016	10,919	10,397	9,799	(886)	-8.29%
Oakland	116,987	119,339	116,201	120,613	122,512	117,948	113,296	(6,043)	-5.06%
St. Clair	10,565	11,044	11,270	11,502	11,449	10,864	10,226	(818)	-7.41%
Washtenaw	37,363	33,737	31,697	32,232	32,177	30,727	28,982	(4,755)	-14.09%
Wayne	201,362	194,050	187,026	182,143	177,010	167,812	157,520	(36,530)	-18.83%
Wayne (pt)	137,991	138,349	136,431	133,910	130,630	123,791	116,119	(22,230)	-16.07%
Detroit	63,371	55,701	50,595	48,233	46,380	44,021	41,401	(14,300)	-25.67%

Notes: Employment measures number of jobs, both full-time and part-time - not the number of employed persons or the number of FTEs (Full Time Equivalents).

Construction jobs and military are not included in RDF employment. Previous RDFs included construction jobs. However, the large majority of construction jobs are mobile, moving from job-site to job-site. Perhaps only 10% hold stationary positions at the offices or shops of construction companies. Having no specific way to differentiate between the two for future transportation planning purposes, a decision was made by SEMCOG at the policy level to not include either in the 2020 RDF projections.

Manufacturing employment measures the number of jobs within the SIC Code manufacturing categories. It is not a measurement of the number of "factory workers" nor does it relate to land use. In many instances, all such employment may be pure office type work in the headquarters of "manufacturing" companies. In others, it may represent employment within research facilities or in a factory environment only.

Exhibit 10

SEMCOG's 2020 Regional Development Forecast

Recommended Forecast - February 8, 1999

Oakland County, Michigan

10/13/99
09:44
RJS, PE
rdf_loc.wk4

Municipality	#	Population 1990	1995	2000	2005	2010	2015	2020	1998	Total Households 1990	1995	2000	2005	2010	2015	2020	1998	Pop. / HH 1998
Addison Township	1	4,785	5,483	5,978	6,443	6,918	7,418	7,858	5,780	1,593	1,831	2,012	2,198	2,391	2,591	2,767	1,940	2.98
Auburn Hills	2	17,076	19,663	21,692	23,933	25,611	27,183	28,564	20,880	6,445	7,678	8,615	9,649	10,592	11,520	12,360	8,240	2.53
Berkley	3	16,960	16,986	16,845	16,659	16,592	16,711	16,822	16,901	6,613	6,667	6,695	6,722	6,790	6,916	7,025	6,684	2.53
Beverly Hills	4	10,643	10,341	10,222	10,051	10,005	10,173	10,321	10,270	4,098	4,091	4,092	4,084	4,095	4,154	4,194	4,092	2.51
Bingham Farms	5	1,001	995	942	910	893	900	923	963	412	422	412	411	411	419	430	416	2.32
Birmingham	6	19,997	20,147	20,204	20,135	20,183	20,296	20,318	20,181	9,121	9,307	9,383	9,514	9,689	9,863	9,870	9,353	2.16
Bloomfield Hills	7	4,288	4,427	4,561	4,674	4,791	4,873	4,966	4,507	1,515	1,570	1,624	1,685	1,749	1,790	1,825	1,602	2.81
Bloomfield Township	8	42,473	43,136	42,678	42,067	41,422	41,179	41,015	42,861	15,727	16,429	16,891	17,067	17,461	17,871	18,220	16,586	2.58
Brandon Township	9	10,798	12,220	13,255	14,218	15,214	16,292	17,259	12,841	3,529	4,001	4,381	4,766	5,165	5,581	5,949	4,229	3.04
Clarkston	10	1,005	977	955	926	905	889	878	964	434	441	443	447	451	455	460	442	2.18
Clawson	11	13,874	13,606	13,167	12,868	12,625	12,588	12,535	13,343	5,542	5,615	5,620	5,635	5,645	5,743	5,828	5,818	2.37
Commerce Township	12	22,228	26,267	29,159	31,842	34,698	38,071	40,993	28,002	7,695	9,160	10,293	11,416	12,574	13,909	15,092	9,840	2.85
Farmington	13	10,132	10,190	10,173	10,136	10,136	10,137	10,135	10,180	4,681	4,724	4,755	4,780	4,817	4,862	4,898	4,743	2.15
Farmington Hills	14	74,652	78,124	79,943	81,697	82,745	83,224	83,429	79,215	29,255	31,439	33,058	34,700	36,169	37,204	37,961	32,410	2.44
Ferndale	15	25,026	25,054	24,825	24,729	24,843	25,109	25,582	24,917	9,845	9,836	9,841	9,825	9,853	9,948	10,140	9,839	2.53
Franklin	16	2,644	2,679	2,519	2,425	2,366	2,372	2,414	2,583	984	1,011	972	963	965	986	1,015	988	2.62
Groveland Township	17	4,705	5,432	5,954	6,461	6,976	7,517	7,994	5,745	1,538	1,796	1,985	2,190	2,398	2,613	2,803	1,909	3.01
Hazel Park	18	20,051	20,108	19,532	19,141	19,007	19,247	19,525	19,762	7,277	7,365	7,230	7,122	7,122	7,268	7,427	7,284	2.71
Highland Township	19	17,941	19,071	20,197	21,348	22,822	24,631	26,312	19,747	5,919	6,411	6,992	7,644	8,403	9,247	10,004	6,760	2.92
Holly	20	5,595	5,809	5,975	6,076	6,232	6,409	6,573	5,909	2,058	2,186	2,302	2,420	2,543	2,689	2,781	2,256	2.62
Holly Township	21	3,257	3,660	3,854	4,035	4,186	4,333	4,452	3,776	1,091	1,197	1,268	1,347	1,427	1,508	1,582	1,240	3.05
Huntington Woods	22	6,336	6,429	6,441	6,463	6,515	6,624	6,711	6,436	2,345	2,358	2,362	2,371	2,395	2,439	2,477	2,360	2.73
Independence Township	23	23,717	28,498	32,319	35,551	38,280	40,401	41,703	30,791	7,969	9,650	11,115	12,488	13,724	14,768	15,539	10,529	2.92
Keego Harbor	24	2,932	2,938	2,892	2,852	2,857	2,866	2,966	2,910	1,232	1,236	1,231	1,236	1,248	1,258	1,303	1,233	2.36
Lake Angelus	25	328	338	341	343	348	362	367	340	123	126	127	130	134	141	145	127	2.68
Lake Orion	26	3,029	3,009	3,044	3,035	3,004	2,954	2,900	3,030	1237	1,256	1,297	1,326	1,342	1,352	1,360	1,281	2.37
Lathrup Village	27	4,329	4,298	4,222	4,127	4,056	4,049	4,056	4,252	1,577	1,589	1,572	1,568	1,569	1,591	1,621	1,579	2.69
Leonard	28	357	380	398	404	424	451	478	390	125	137	149	160	172	184	195	144	2.70
Lyon Township (95 Boundaries)	29	8,695	9,854	10,645	11,791	13,410	15,620	17,804	10,329	2,954	3,318	3,529	3,865	4,380	5,094	5,810	3,445	3.00
Madison Heights	30	32,196	31,436	30,218	29,384	28,706	28,271	27,920	30,705	12,867	13,014	12,904	12,843	12,847	12,952	13,069	12,948	2.37
Milford	31	5,511	6,301	6,716	7,078	7,387	7,497	7,500	6,550	1,996	2,291	2,469	2,639	2,794	2,887	2,943	2,398	2.73
Milford Township	32	6,810	8,142	9,281	10,343	11,438	12,606	13,507	8,825	2,175	2,667	3,067	3,474	3,909	4,379	4,755	2,907	3.04
Northville (part)	33	3,367	3,408	3,347	3,238	3,139	3,044	2,967	3,371	1,231	1,286	1,326	1,350	1,365	1,374	1,382	1,310	2.57
Novi	34	33,148	41,595	48,731	56,161	63,682	71,419	78,053	45,877	12,742	16,102	19,098	22,269	25,479	28,752	31,569	17,900	2.56
Novi Township	35																	
Oak Park	36	30,462	30,905	30,977	31,108	31,529	32,380	33,016	30,848	10,871	10,903	10,911	10,886	10,979	11,287	11,507	10,908	2.84
Oakland Township	37	8,227	10,232	11,665	13,699	16,469	20,436	24,515	11,092	2,722	3,398	3,912	4,626	5,588	6,849	8,108	3,706	2.99
Orchard Lake	38	2,286	2,326	2,387	2,433	2,504	2,577	2,626	2,363	696	722	758	797	841	881	912	744	3.18
Orion Township	39	21,047	25,409	28,695	31,569	34,256	36,441	37,985	27,381	7,331	8,745	9,837	10,857	11,851	12,717	13,382	9,400	2.91
Ortonville	40	1,252	1,524	1,677	1,834	1,980	2,133	2,227	1,616	453	543	588	655	713	773	812	575	2.81
Oxford	41	2,929	3,235	3,422	3,509	3,511	3,469	3,404	3,347	1,155	1,248	1,316	1,370	1,403	1,423	1,435	1,289	2.60
Oxford Township	42	9,004	10,278	11,171	12,028	12,922	13,872	14,720	10,814	3,074	3,502	3,815	4,146	4,493	4,858	5,185	3,690	2.93
Pleasant Ridge	43	2,833	2,805	2,754	2,702	2,677	2,684	2,692	2,774	1,094	1,093	1,097	1,101	1,112	1,133	1,151	1,095	2.53
Pontiac	44	71,166	70,034	67,018	64,823	63,372	62,898	62,658	68,224	24,769	24,665	24,022	23,533	23,419	23,683	23,972	24,279	2.81
Rochester	45	7,178	7,761	8,335	8,958	9,678	10,550	11,393	8,105	3,473	3,665	3,848	4,069	4,321	4,613	4,874	3,775	2.15
Rochester Hills	46	61,718	66,365	69,537	72,033	73,749	75,840	77,801	68,268	22,334	24,206	25,773	27,230	28,612	30,055	31,382	25,146	2.71
Rose Township	47	4,926	5,853	6,472	7,114	7,753	8,422	9,020	6,224	1,588	1,898	2,122	2,368	2,614	2,869	3,095	2,032	3.06
Royal Oak	48	65,493	65,367	64,479	64,087	64,253	64,951	65,544	64,834	28,368	28,658	28,756	28,832	29,094	29,598	30,039	28,717	2.26
Royal Oak Township	49	5,011	5,152	5,173	5,084	5,133	5,391	5,548	5,165	2,468	2,447	2,455	2,451	2,468	2,527	2,576	2,452	2.11
South Lyon (95 Boundaries)	50	6,612	8,166	11,002	12,296	13,173	13,683	13,996	9,868	2,716	3,252	4,390	4,855	5,127	5,276	5,388	3,935	2.51
Southfield	51	75,695	75,331	74,377	73,503	73,323	73,654	73,959	74,759	32,115	32,459	32,397	32,419	32,659	33,142	33,608	32,422	2.31
Southfield Township	52																	
Springfield Township	53	9,927	12,660	14,587	16,598	18,628	20,734	22,579	13,818	3,276	4,193	4,888	5,597	6,338	7,101	7,774	4,598	3.00
Sylvan Lake	54	1,893	1,915	1,905	1,881	1,807	1,757	1,782	1,909	840	847	848	848	849	852	882	848	2.25
Troy	55	72,884	79,002	82,136	85,158	85,838	87,282	89,110	80,882	26,173	28,501	30,049	31,658	32,793	34,076	35,378	29,430	2.75
Walled Lake	56	6,278	6,479	6,932	7,255	7,725	8,236	8,730	6,751	2,798	2,977	3,281	3,532	3,825	4,135	4,398	3,159	2.14
Waterford Township	57	66,692	69,222	69,679	70,561	71,719	73,299	74,577	69,496	25,488	26,997	27,777	28,613	29,503	30,547	31,422	27,465	2.53
West Bloomfield Township	58	54,507	57,162	59,586	61,168	62,899	64,703	65,991	58,604	19,216	20,873	22,268	23,611	24,954	26,199	27,132	21,710	2.70
White Lake Township	59	22,608	26,527	28,911	31,013	32,690	34,206	35,390	27,957	7,767	9,201	10,044	10,822	11,496	12,122	12,643	9,707	2.88
Wixom	60	8,550	11,487	13,506	15,579	17,490	18,936	20,028	12,698	4,119	5,102	5,789	6,511	7,137	7,592	7,908	5,514	2.30
Wolverine Lake	61	4,727	4,676	4,578	4,667	4,700	4,747	4,747	4,617	1,657	1,703	1,739	1,777	1,823	1,880	1,931	1,725	2.68
County Totals		1,083,592	1,150,872	1,192,164	1,232,182	1,272,192	1,318,997	1,359,846	1,175,647	410,520	440,003	461,578	483,455	506,060	530,457	551,773	452,948	2.60
Less Northville		(3,367)	(3,408)	(3,347)	(3,238)	(3,139)	(3,044)	(2,967)	(3,371)	(1,231)	(1,286)	(1,326)	(1,350)	(1,365)	(1,374)	(1,382)	(1,310)	2.57
Planning Values		1,080,225	1,147,464	1,188,817	1,228,944	1,269,053	1,315,953	1,356,879	1,172,276	409,289	438,717	460,252	482,105	504,695	529,083	550,391	451,638	2.60

Exhibit 11

SEMCOG's 2020 Regional Development Forecast

10/13/99
09:44
RJS, PE
rdf_loc.wk4

Recommended Forecast - February 8, 1999

Oakland County, Michigan

Municipality	#	Total Employment by Place of Work								Manufacturing Employment by Place of Work							
		1990	1995	2000	2005	2010	2015	2020	1998	1990	1995	2000	2005	2010	2015	2020	1998
Addison Township	1	587	800	1,222	1,673	2,015	2,245	2,432	1,053	12	21	33	45	58	70	79	28
Auburn Hills	2	22,202	33,731	43,038	49,870	55,609	58,806	62,039	39,315	5,353	13,222	18,683	22,815	26,434	28,142	30,125	16,487
Berkley	3	5,129	5,985	6,403	6,880	6,889	6,715	6,603	6,236	395	228	188	193	177	155	138	203
Beverly Hills	4	2,424	2,712	2,788	2,858	2,838	2,777	2,742	2,758	102	104	101	111	112	110	105	102
Bingham Farms	5	6,958	7,960	8,343	8,761	8,974	8,905	8,814	8,190	404	291	287	319	326	313	296	289
Birmingham	6	20,177	20,841	21,468	21,251	21,455	21,107	20,865	21,217	899	1,162	1,271	1,393	1,452	1,414	1,352	1,227
Bloomfield Hills	7	10,227	12,162	14,017	15,462	16,373	16,741	17,119	13,275	239	302	353	438	478	471	448	333
Bloomfield Township	8	15,013	18,406	22,289	25,249	27,271	28,314	29,035	20,736	630	814	973	1,255	1,350	1,353	1,326	909
Brandon Township	9	1,075	1,476	1,773	2,098	2,388	2,620	2,826	1,654	78	148	173	201	228	246	260	183
Clarkston	10	3,092	3,339	3,347	3,558	3,629	3,613	3,574	3,344	285	253	203	201	200	199	191	223
Clawson	11	5,783	5,983	6,000	6,200	6,282	6,203	6,173	5,985	704	774	728	767	754	700	644	746
Commerce Township	12	6,493	7,307	8,657	9,971	10,910	11,572	12,101	8,117	1,232	970	912	933	938	918	897	935
Farmington	13	8,528	7,921	8,155	8,293	8,195	7,945	7,759	8,061	857	469	448	450	445	416	386	456
Farmington Hills	14	58,432	62,036	65,901	68,456	69,037	67,794	66,745	64,355	7,225	7,979	7,589	7,712	7,583	7,069	6,542	7,745
Ferndale	15	10,577	9,848	9,449	9,369	9,078	8,614	8,289	9,609	2,266	1,916	1,613	1,570	1,479	1,330	1,200	1,734
Franklin	16	859	982	1,057	1,095	1,099	1,086	1,085	1,027	38	24	22	25	25	25	25	23
Groveland Township	17	417	579	939	1,420	1,819	1,740	1,838	795	0	0	6	26	33	40	45	4
Hazel Park	18	5,003	4,631	4,750	4,826	4,767	4,629	4,530	4,702	1,012	745	594	534	472	408	382	654
Highland Township	19	3,711	4,667	5,192	5,933	6,586	7,012	7,409	4,982	405	384	304	331	313	273	269	338
Holly	20	2,271	2,888	3,132	3,463	3,714	3,868	4,005	3,034	670	654	704	782	852	855	833	684
Holly Township	21	326	450	694	978	1,103	1,173	1,227	596	94	149	163	204	222	224	219	157
Huntington Woods	22	1,525	1,841	1,969	2,103	2,108	2,074	2,056	1,918	43	103	90	92	88	80	74	95
Independence Township	23	4,445	5,572	6,937	8,345	9,139	9,561	9,878	6,391	480	401	345	360	374	387	385	367
Keego Harbor	24	1,105	1,331	1,406	1,516	1,579	1,591	1,613	1,376	53	50	41	43	38	29	23	45
Lake Angelus	25	59	58	68	92	97	100	102	64	2	2	2	2	2	2	2	2
Lake Orion	26	1,326	1,645	1,713	1,821	1,914	1,971	1,997	1,686	50	51	42	42	42	42	40	46
Lathrup Village	27	2,555	2,807	2,963	3,076	3,105	3,060	3,030	2,901	113	157	153	167	169	161	152	155
Leonard	28	25	100	108	117	127	128	129	105	6	79	78	81	83	78	72	78
Lyon Township (95 Boundaries)	29	2,342	2,941	3,416	3,972	4,276	4,452	4,594	3,225	1,238	1,558	1,447	1,464	1,448	1,373	1,299	1,491
Madison Heights	30	27,408	28,088	27,939	28,134	27,616	26,489	25,594	27,999	8,718	7,362	5,874	5,277	4,658	3,994	3,471	6,469
Milford	31	3,996	4,942	5,239	5,597	5,950	6,029	6,120	5,120	607	654	626	631	615	560	503	637
Milford Township	32	3,378	3,501	4,102	4,838	5,253	5,503	5,606	3,862	1,953	1,826	1,725	1,732	1,690	1,581	1,424	1,765
Northville (part)	33	856	915	963	1,039	1,091	1,124	1,151	944	105	124	117	117	112	100	88	120
Novi	34	22,221	25,479	28,822	32,402	34,748	35,851	36,708	27,485	3,782	3,665	3,743	3,969	4,054	3,903	3,698	3,792
Novi Township	35																
Oak Park	36	12,685	11,801	11,430	11,375	11,075	10,606	10,245	11,578	1,842	1,586	1,342	1,314	1,248	1,140	1,039	1,440
Oakland Township	37	1,055	1,099	1,432	1,812	2,125	2,418	2,680	1,298	217	172	146	154	165	180	191	156
Orchard Lake	38	1,051	1,051	1,128	1,219	1,267	1,266	1,273	1,097	89	91	77	81	74	60	46	83
Orion Township	39	7,379	6,324	6,880	7,942	8,533	8,881	9,071	6,658	4,726	3,499	3,118	3,109	3,103	3,107	3,003	3,270
Orionville	40	354	476	528	586	641	697	744	507	26	39	42	47	51	52	52	41
Oxford	41	1,269	1,469	1,587	1,689	1,806	1,896	1,975	1,528	265	324	322	332	338	315	288	323
Oxford Township	42	2,138	2,324	2,902	3,548	4,031	4,296	4,485	2,671	1,091	1,112	1,116	1,160	1,190	1,143	1,076	1,114
Pleasant Ridge	43	585	606	632	706	708	688	673	622	170	128	101	106	93	77	64	112
Pontiac	44	56,308	55,246	55,150	56,846	57,942	56,958	55,803	55,188	18,471	15,916	14,448	15,572	16,776	16,346	15,352	15,035
Rochester	45	12,757	15,106	17,650	19,552	21,107	21,921	22,636	16,632	2,181	2,470	2,551	2,662	2,733	2,635	2,499	2,519
Rochester Hills	46	18,667	23,716	28,343	31,420	34,007	35,521	36,669	26,492	3,984	5,583	6,515	6,814	7,150	7,181	7,045	6,142
Rose Township	47	200	227	458	653	766	842	906	366	25	27	35	47	58	64	69	32
Royal Oak	48	34,871	35,350	36,058	37,609	38,149	37,964	38,084	35,774	2,922	2,889	2,732	2,872	2,834	2,652	2,465	2,795
Royal Oak Township	49	2,617	2,675	2,683	2,685	2,635	2,536	2,456	2,680	181	202	170	166	157	143	131	183
South Lyon (95 Boundaries)	50	1,799	2,228	2,520	2,838	3,086	3,199	3,267	2,403	307	314	312	348	359	347	329	313
Southfield	51	108,593	111,422	114,248	114,279	112,142	107,867	104,740	113,118	8,980	7,501	6,451	6,363	5,930	5,283	4,733	6,871
Southfield Township	52																
Springfield Township	53	1,244	1,703	2,427	3,199	3,579	3,815	4,008	2,137	189	342	388	496	555	574	577	370
Sylvan Lake	54	1,081	1,087	1,134	1,236	1,302	1,306	1,308	1,115	122	43	35	36	31	23	17	38
Troy	55	104,498	116,358	125,075	128,710	129,113	126,606	125,073	121,588	22,210	21,555	18,785	18,589	14,548	12,415	10,779	19,893
Walled Lake	56	6,441	7,059	7,328	8,024	8,458	8,601	8,669	7,220	2,347	2,250	1,708	1,646	1,543	1,378	1,227	1,925
Waterford Township	57	23,106	27,152	31,269	34,978	37,373	38,491	39,343	29,622	1,572	1,599	1,597	1,789	1,805	1,721	1,621	1,598
West Bloomfield Township	58	13,710	15,718	17,881	19,738	20,858	21,298	21,840	17,016	504	545	528	620	657	656	641	535
White Lake Township	59	3,189	3,360	4,284	5,187	5,774	6,130	6,400	3,914	207	108	152	212	250	274	254	134
Wixom	60	6,562	7,430	8,386	9,115	9,504	9,424	9,238	8,004	4,309	4,203	3,920	3,793	3,560	3,173	2,814	4,033
Wolverine Lake	61	355	418	477	529	578	619	655	453	0	0	1	3	5	8	11	1
County Totals	62	681,037	745,309	806,126	856,189	883,393	885,258	887,828	781,799	116,987	119,339	116,201	120,613	122,512	117,948	113,296	117,456
Less Northville		(856)	(915)	(963)	(1,039)	(1,091)	(1,124)	(1,151)	(844)	(105)	(124)	(117)	(117)	(112)	(100)	(88)	(120)
Planning Values		680,181	744,394	805,163	855,150	882,302	884,134	886,675	780,855	116,882	119,215	116,084	120,496	122,400	117,848	113,208	117,336

Exhibit 12

SEMCOG's 2020 Regional Development Forecast

Recommended Forecast - February 8, 1999

Oakland County, Michigan

10/13/99
09:44
RJS, PE
rdf_loc.wk4

Exhibit 13

Municipality	#	Commercial Employment by Place of Work								Employment per Capita							
		1990	1995	2000	2005	2010	2015	2020	1998	1990	1995	2000	2005	2010	2015	2020	1998
Addison Township	1	575	779	1,189	1,628	1,957	2,175	2,353	1,025	0.123	0.148	0.204	0.260	0.291	0.303	0.309	0.182
Auburn Hills	2	16,849	20,509	24,375	27,055	29,175	30,664	31,914	22,829	1.300	1.715	1.984	2.084	2.171	2.163	2.172	1.883
Berkley	3	4,734	5,757	6,217	6,687	6,712	6,560	6,465	6,033	0.302	0.352	0.380	0.413	0.415	0.402	0.393	0.369
Beverly Hills	4	2,322	2,608	2,687	2,745	2,726	2,667	2,637	2,855	0.228	0.262	0.273	0.284	0.284	0.273	0.266	0.269
Bingham Farms	5	6,554	7,669	8,056	8,442	8,648	8,592	8,518	7,901	6.951	8.000	8.857	9.627	10.049	9.894	9.549	8.503
Birmingham	6	19,278	19,679	20,197	19,858	20,003	19,693	19,513	19,990	1.009	1.034	1.063	1.055	1.063	1.040	1.027	1.051
Bloomfield Hills	7	9,988	11,860	13,664	15,024	15,895	16,270	16,671	12,942	2.385	2.747	3.073	3.308	3.417	3.435	3.447	2.945
Bloomfield Township	8	14,383	17,592	21,316	23,994	25,921	26,961	27,709	19,826	0.353	0.427	0.522	0.600	0.658	0.688	0.708	0.484
Brandon Township	9	997	1,328	1,600	1,897	2,160	2,374	2,565	1,491	0.100	0.121	0.134	0.148	0.157	0.161	0.164	0.129
Clarkston	10	2,807	3,088	3,144	3,357	3,429	3,414	3,383	3,121	3.077	3.418	3.505	3.842	4.010	4.064	4.071	3.469
Clawson	11	5,079	5,189	5,272	5,433	5,528	5,503	5,529	5,239	0.417	0.438	0.458	0.482	0.498	0.493	0.492	0.449
Commerce Township	12	5,261	6,337	7,745	9,038	9,972	10,654	11,204	7,182	0.292	0.278	0.297	0.313	0.314	0.304	0.295	0.290
Farmington	13	7,671	7,452	7,707	7,843	7,750	7,529	7,373	7,605	0.842	0.777	0.802	0.818	0.809	0.784	0.766	0.792
Farmington Hills	14	49,207	54,057	58,312	60,744	61,454	60,725	60,203	56,610	0.758	0.794	0.824	0.838	0.834	0.815	0.800	0.812
Ferndale	15	8,311	7,932	7,836	7,799	7,599	7,284	7,089	7,874	0.423	0.393	0.381	0.379	0.365	0.343	0.324	0.386
Franklin	16	821	958	1,035	1,070	1,074	1,061	1,060	1,004	0.325	0.367	0.420	0.452	0.464	0.458	0.449	0.398
Groveland Township	17	417	579	933	1,394	1,586	1,700	1,781	791	0.089	0.107	0.158	0.220	0.232	0.231	0.230	0.138
Hazel Park	18	3,991	3,886	4,156	4,292	4,295	4,221	4,168	4,048	0.250	0.230	0.243	0.252	0.251	0.241	0.232	0.238
Highland Township	19	3,306	4,283	4,888	5,602	6,273	6,739	7,140	4,646	0.207	0.245	0.257	0.278	0.289	0.285	0.282	0.252
Holly	20	1,601	2,234	2,428	2,681	2,862	3,013	3,172	2,350	0.406	0.497	0.524	0.570	0.596	0.604	0.609	0.514
Holly Township	21	232	301	531	774	881	949	1,008	439	0.100	0.123	0.180	0.242	0.263	0.271	0.276	0.158
Huntington Woods	22	1,482	1,738	1,879	2,011	2,022	1,994	1,982	1,823	0.241	0.288	0.306	0.325	0.324	0.313	0.306	0.298
Independence Township	23	3,965	5,171	6,592	7,985	8,765	9,174	9,493	6,024	0.187	0.196	0.215	0.235	0.239	0.237	0.237	0.208
Keego Harbor	24	1,052	1,281	1,365	1,473	1,541	1,562	1,590	1,331	0.377	0.453	0.488	0.532	0.553	0.555	0.544	0.473
Lake Angelus	25	57	56	68	90	95	98	100	62	0.180	0.172	0.199	0.268	0.279	0.276	0.278	0.188
Lake Orion	26	1,276	1,594	1,671	1,779	1,872	1,929	1,957	1,640	0.438	0.547	0.583	0.600	0.637	0.667	0.669	0.556
Lathrup Village	27	2,442	2,650	2,810	2,909	2,936	2,899	2,878	2,746	0.590	0.653	0.702	0.745	0.766	0.756	0.745	0.682
Leonard	28	19	21	30	36	44	50	57	26	0.070	0.263	0.273	0.290	0.300	0.284	0.270	0.269
Lyon Township (95 Boundaries)	29	1,104	1,383	1,988	2,508	2,827	3,079	3,295	1,734	0.269	0.298	0.321	0.337	0.319	0.285	0.258	0.312
Madison Heights	30	18,690	20,726	22,065	22,857	22,958	22,495	22,123	21,529	0.851	0.893	0.925	0.957	0.962	0.937	0.917	0.912
Milford	31	3,389	4,288	4,613	4,966	5,335	5,469	5,617	4,483	0.725	0.784	0.780	0.791	0.805	0.804	0.816	0.782
Milford Township	32	1,425	1,675	2,377	3,108	3,583	3,942	4,182	2,096	0.511	0.430	0.442	0.468	0.459	0.437	0.415	0.438
Northville (part)	33	751	791	846	922	979	1,024	1,063	824	0.254	0.268	0.288	0.321	0.348	0.369	0.388	0.280
Novi	34	18,439	21,614	25,079	28,433	30,694	31,948	33,010	23,693	0.670	0.613	0.591	0.577	0.546	0.502	0.470	0.599
Novi Township	35																
Oak Park	36	10,843	10,215	10,088	10,061	9,827	9,466	9,206	10,139	0.416	0.382	0.369	0.366	0.351	0.328	0.310	0.374
Oakland Township	37	838	927	1,286	1,658	1,960	2,238	2,489	1,142	0.128	0.107	0.123	0.132	0.129	0.118	0.109	0.117
Orchard Lake	38	962	960	1,051	1,138	1,193	1,206	1,227	1,015	0.460	0.452	0.473	0.501	0.506	0.491	0.485	0.464
Orion Township	39	2,653	2,825	3,762	4,833	5,430	5,774	6,068	3,387	0.351	0.249	0.240	0.252	0.249	0.244	0.239	0.243
Ortonville	40	328	437	488	539	590	645	692	466	0.283	0.312	0.315	0.320	0.324	0.327	0.334	0.314
Oxford	41	1,004	1,145	1,245	1,357	1,470	1,581	1,687	1,205	0.433	0.454	0.458	0.481	0.514	0.547	0.580	0.456
Oxford Township	42	1,045	1,212	1,786	2,388	2,841	3,153	3,409	1,556	0.237	0.226	0.260	0.295	0.312	0.310	0.305	0.247
Pleasant Ridge	43	415	478	531	600	615	611	609	510	0.206	0.216	0.229	0.261	0.264	0.256	0.250	0.224
Pontiac	44	37,837	39,330	40,702	41,274	41,166	40,612	40,451	40,153	0.791	0.789	0.823	0.877	0.914	0.908	0.891	0.809
Rochester	45	10,576	12,636	15,099	16,890	18,374	19,286	20,137	14,114	1.777	1.946	2.118	2.183	2.181	2.078	1.987	2.052
Rochester Hills	46	14,683	18,133	21,828	24,806	26,857	28,340	29,624	20,350	0.302	0.357	0.408	0.436	0.461	0.468	0.471	0.388
Rose Township	47	175	200	423	606	710	778	837	334	0.041	0.039	0.071	0.092	0.099	0.100	0.100	0.059
Royal Oak	48	31,949	32,461	33,324	34,737	35,315	35,312	35,619	32,979	0.532	0.541	0.559	0.587	0.594	0.585	0.581	0.552
Royal Oak Township	49	2,436	2,473	2,513	2,519	2,478	2,393	2,325	2,497	0.522	0.519	0.519	0.528	0.513	0.470	0.443	0.519
South Lyon (95 Boundaries)	50	1,492	1,914	2,208	2,490	2,727	2,852	2,938	2,090	0.272	0.273	0.229	0.231	0.234	0.234	0.233	0.244
Southfield	51	99,613	103,921	107,797	107,916	106,212	102,584	100,007	108,247	1.435	1.479	1.538	1.555	1.529	1.465	1.416	1.513
Southfield Township	52																
Springfield Township	53	1,055	1,361	2,039	2,703	3,024	3,241	3,431	1,788	0.125	0.135	0.166	0.193	0.192	0.184	0.178	0.155
Sylvan Lake	54	959	1,044	1,099	1,200	1,271	1,283	1,291	1,077	0.571	0.568	0.595	0.664	0.721	0.743	0.734	0.584
Troy	55	82,288	94,803	106,290	112,121	114,565	114,191	114,294	101,695	1.434	1.473	1.523	1.511	1.504	1.451	1.404	1.503
Walled Lake	56	4,094	4,809	5,620	6,378	6,915	7,223	7,442	5,296	1.028	1.090	1.057	1.106	1.095	1.044	0.993	1.070
Waterford Township	57	21,534	25,553	29,672	33,189	35,568	36,770	37,722	28,024	0.348	0.392	0.449	0.496	0.521	0.525	0.528	0.426
West Bloomfield Township	58	13,206	15,173	17,353	19,118	20,201	20,642	20,999	16,481	0.252	0.275	0.300	0.323	0.332	0.329	0.328	0.290
White Lake Township	59	2,982	3,252	4,132	4,975	5,524	5,856	6,148	3,780	0.141	0.127	0.148	0.167	0.177	0.179	0.181	0.140
Wixom	60	2,253	3,227	4,466	5,322	5,944	6,251	6,424	3,970	0.767	0.647	0.621	0.585	0.543	0.498	0.461	0.630
Wolverine Lake	61	355	418	476	526	573	611	644	453	0.075	0.089	0.104	0.113	0.123	0.130	0.138	0.098
County Totals		584,050	625,970	689,925	735,576	760,881	767,310	774,530	664,343	0.628	0.648	0.678	0.695	0.694	0.671	0.653	0.665
Less Northville		(751)	(791)	(846)	(922)	(979)	(1,024)	(1,063)	(824)	0.254	0.268	0.288	0.321	0.348	0.369	0.388	0.280
Planning Values		583,299	625,179	689,079	734,654	759,902	766,286	773,467	663,519	0.630	0.649	0.677	0.696	0.695	0.672	0.653	0.666

Waste Generation and Disposal Assumptions

1990 Waste Generation and Disposal Assumptions

Waste Stream Component	# per Day	Bankyards per Ton		Gateyards per Ton	Pounds per Gtyd.
Municipal Solid Waste		1.5	(@ 2 gtyds/bnkyd and 3 gtyds/ton)	3	666.7
Residential	3.77		per capita		
Commercial	5.75		per employees of all other classes		
Industrial	6.89		per manufacturing employee		
Total	Composite				
Construction & Demolition Debris		1	(@ 2 gtyds/bnkyd and 2gtyds/ton)	2	
Total	0.7		per capita - See Modifier discussion below.		
Industrial Special Waste		1.1429	(@ 1 gtyd/bnkyd, both at 1750#)	1.1429	
Total	9.83		rounded value per manufacturing employee based on 1990 analysis shown to the right. Also see Manufacturing" employment modifier at right.		

Process Residues	Percent			
Compost	1.70%		(same as Municipal Solid Waste above)	
		2.50%	32% YW Grass Clipping Factor	
Recycle	5.00%		(same as Municipal Solid Waste above)	
CDD	7.50%		(same as CDD wastes above)	
ISW	7.50%		(same as ISW wastes above)	
Incinerator Ash	26.50%	1	(weight based on wet ash)	1

Construction and Demolition Debris Modifier

This has previously been presented as a flat # per capita value.

However, when viewed from the standpoint of growth, wouldn't employment (or the contribution of the places where people work and the infrastructure needed to support them) also play a major role? Especially since the rate of growth in employment can be substantially different than that of the population?

	1970	1990	2020
Population	909,500	1,080,225	1,358,879
Change		1.19	1.49
Employment	332,190	680,181	886,675
Change		2.05	2.67

Assumptions to spread CDD generation to both population and employment.

Using Michigan in 1990 as the base for average employment per capita, and assuming that each employee has the following % of CDD ..... generation as compared to each resident, the following generation rate per unit (population + adjusted employment) occurs .....

100% Relative impact

0.46289 # per unit per day

0.483 (rounded)

Construction & Demolition Debris Modifier

Year	Modifier	#/cap	
1970	0.903	0.6321	
1975	0.939	0.6573	
1980	0.992	0.6946	
1985	1.053	0.7368	
1990	1.078	0.7545	< This column for reference only!
1995	1.091	0.7634	
2000	1.109	0.7766	
2005	1.122	0.7852	
2010	1.121	0.7849	
2015	1.106	0.7741	
2020	1.094	0.7656	

This modifier is used as a multiplier against flat #/capita/day values.

Calculating Industrial Special Wastes Generation Rates

Michigan - 1990 - Using U of Ms REMI Projections dated 9/94

Population	9,314,200	
Total Employment	4,771,162	0.512 per capita
Manufacturing Employment	955,437	0.103 per capita

Generation Factors from "Assumptions" - # per unit per day

MSW - Residential	3.77
MSW - Commercial	5.75
MSW - Industrial	6.89
CDD	0.7

New Assumptions in re: ISW - Industrial Special Waste

CDD + ISW as a % of statewide MSW - 1990

25.00%

1990 Calculations - in tons per day

MSW - Residential	17,557.27
MSW - Commercial	10,970.21
MSW - Industrial	3,291.48
Total MSW	31,818.96
CDD	3,259.97
CDD + ISW =	7,954.74
ISW	4,694.77
Total Act 451 Part 115	39,773.70

Calculated ISW Generation Factor - # per Man. Emp per Day

9.8275

9.83 Rounded

"Manufacturing" Employment Modifier

Although Oakland County has a considerable number of employees in the "Manufacturing" SIC Code categories, an unusual percentage of these employees are in headquarters or regional office facilities as compared to factories. An example is the recent relocation of the Chrysler headquarters operations to the Auburn Hills site.

	1970	1990	2000	2010	2020
Say.....	100.00%	80.00%	65.00%	55.00%	50.00%

Note: These values vary depending upon which County or combination thereof is being analyzed.

Manufacturing Employment Modifier

Year	Modifier	Rounded
1970	1.000	1.00
1975	0.950	0.95
1980	0.894	0.89
1985	0.833	0.83
1990	0.800	0.80
1995	0.725	0.73
2000	0.650	0.65
2005	0.600	0.60
2010	0.550	0.55
2015	0.525	0.53
2020	0.500	0.50

This modifier is used to adjust Manufacturing employment values used in Commercial MSW, Industrial MSW and ISW generation values formulas.

Oakland County (wo Northville)

Oakland County Solid Waste Planning rdf_loc.wk4 10/13/99 09:44

Exhibit 14

Solid Waste Database
Oakland County, Michigan

rdf_loc.wk4
10/13/99

Projected 1998 Act 451 Solid Waste Stream (in tons per day)

#	Municipality	Municipal Solid Waste Component			Total MSW	CDD	ISW	Total 451
		Residential	Commercial	Industrial				
1	Addison Township	10.90	2.97	0.07	13.93	2.23	0.09	16.26
2	Auburn Hills	39.36	81.01	38.38	158.74	8.06	54.75	221.55
3	Berkley	31.86	17.53	0.48	49.87	6.52	0.68	57.07
4	Beverly Hills	19.36	7.73	0.24	27.33	3.96	0.34	31.63
5	Bingham Farms	1.82	22.98	0.68	25.47	0.37	0.97	26.81
6	Birmingham	38.04	58.60	2.88	99.52	7.78	4.10	111.40
7	Bloomfield Hills	8.50	37.52	0.78	46.79	1.74	1.11	49.64
8	Bloomfield Township	80.79	57.84	2.13	140.76	16.53	3.03	160.32
9	Brandon Township	24.21	4.44	0.38	29.02	4.95	0.54	34.52
10	Clarkston	1.82	9.17	0.53	11.52	0.37	0.75	12.64
11	Clawson	25.15	15.74	1.76	42.65	5.14	2.51	50.30
12	Commerce Township	52.78	21.50	2.20	76.48	10.80	3.14	90.43
13	Farmington	19.19	22.28	1.07	42.54	3.93	1.53	48.00
14	Farmington Hills	149.32	169.81	18.22	337.36	30.55	26.00	393.91
15	Ferndale	46.97	24.21	4.09	75.27	9.61	5.84	90.72
16	Franklin	4.87	2.91	0.05	7.83	1.00	0.08	8.90
17	Groveland Township	10.83	2.28	0.01	13.12	2.22	0.01	15.34
18	Hazel Park	37.25	12.23	1.55	51.03	7.62	2.21	60.86
19	Highland Township	37.22	13.66	0.79	51.68	7.62	1.13	60.43
20	Holly	11.14	7.39	1.60	20.13	2.28	2.29	24.69
21	Holly Township	7.12	1.41	0.37	8.89	1.46	0.53	10.88
22	Huntington Woods	12.13	5.33	0.22	17.68	2.48	0.32	20.49
23	Independence Township	58.04	17.65	0.87	76.56	11.88	1.24	89.68
24	Keego Harbor	5.49	3.87	0.11	9.46	1.12	0.15	10.73
25	Lake Angelus	0.64	0.18	0.00	0.83	0.13	0.01	0.96
26	Lake Orion	5.71	4.76	0.11	10.58	1.17	0.15	11.90
27	Lathrup Village	8.01	8.04	0.36	16.41	1.64	0.52	18.57
28	Leonard	0.73	0.15	0.18	1.07	0.15	0.26	1.48
29	Lyon Township	19.47	6.34	3.51	29.32	3.98	5.01	38.32
30	Madison Heights	57.88	67.73	15.30	140.91	11.84	21.83	174.57
31	Milford	12.35	13.47	1.50	27.32	2.53	2.14	31.98
32	Milford Township	16.64	7.64	4.15	28.43	3.41	5.93	37.76
33	Northville (part)	6.36	2.48	0.28	9.12	1.30	0.40	10.82
34	Novi	86.48	71.58	8.92	166.97	17.70	12.72	197.40
35	Novi Township	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36	Oak Park	58.34	30.45	3.40	92.19	11.94	4.85	108.97
37	Oakland Township	20.91	3.43	0.37	24.70	4.28	0.53	29.51
38	Orchard Lake	4.45	2.99	0.19	7.64	0.91	0.28	8.83
39	Orion Township	51.61	12.71	7.71	72.03	10.56	11.00	93.59
40	Ortonville	3.05	1.38	0.10	4.52	0.62	0.14	5.28
41	Oxford	6.31	3.76	0.76	10.83	1.29	1.08	13.20
42	Oxford Township	20.38	5.49	2.62	28.50	4.17	3.74	36.40
43	Pleasant Ridge	5.23	1.57	0.26	7.06	1.07	0.38	8.51
44	Pontiac	128.60	129.11	35.42	293.13	26.31	50.54	369.97
45	Rochester	15.28	42.88	5.91	64.08	3.13	8.43	75.64
46	Rochester Hills	128.69	64.17	14.37	207.23	26.33	20.50	254.06
47	Rose Township	11.73	0.99	0.07	12.80	2.40	0.11	15.30
48	Royal Oak	122.21	97.36	6.58	226.15	25.00	9.38	260.53
49	Royal Oak Township	9.74	7.34	0.43	17.51	1.99	0.62	20.12
50	South Lyon	18.60	6.30	0.74	25.63	3.81	1.05	30.49
51	Southfield	140.92	311.68	16.21	468.82	28.83	23.13	520.78
52	Southfield Township	0.00	0.00	0.00	0.00	0.00	0.00	0.00
53	Springfield Township	26.04	5.42	0.87	32.33	5.33	1.23	38.90
54	Sylvan Lake	3.60	3.13	0.09	6.82	0.74	0.13	7.68
55	Troy	152.46	310.41	46.92	509.79	31.20	66.94	607.93
56	Walled Lake	12.73	16.95	4.56	34.24	2.60	6.50	43.35
57	Waterford Township	131.00	82.03	3.75	216.79	26.80	5.36	248.94
58	West Bloomfield Township	110.47	47.87	1.26	159.60	22.60	1.79	184.00
59	White Lake Township	52.70	10.99	0.31	64.01	10.79	0.45	75.24
60	Wixom	23.94	15.09	9.49	48.52	4.90	13.55	66.96
61	Wolverine Lake	8.70	1.30	0.00	10.01	1.78	0.00	11.79
62	County Totals	2,216.09	2,017.20	276.17	4,509.46	453.45	394.01	5,356.92
	Less Northville	(6.36)	(2.48)	(0.28)	(9.12)	(1.30)	(0.40)	(10.82)
	Planning Values	2,209.74	2,014.72	275.89	4,500.35	452.15	393.61	5,346.11

Exhibit 15

benign nature. Construction and demolition debris (CDD) may also be disposed of in Type III landfill facilities.

Historical waste generation studies on a per capita and/or per employee basis have been made locally and similar information available from other areas also has been analyzed. These are utilized, along with knowledge of the current waste stream, as the basis for the current waste generation rates. The waste generation rates used as well as assumptions and adjustments required to fine tune the regional population and employment base are shown on Exhibit 14.

While use of the generation rates just described allows the county-wide waste stream (see Exhibit 15) to be projected with a reasonable degree of accuracy, further adjustments are necessary to gain the best possible fit to the waste streams generated within each municipality and all must recognize that for some waste stream components, it is nearly impossible to gain reasonable projections on a municipal basis.

First, CDD wastes are distributed to the municipal projections on a per capita basis. This does not, or is not intended to accurately reflect the source of CDD wastes. These wastes will be produced where construction and demolition activities are now occurring and the source will change dramatically from time-to-time. Additionally, a similar approach is taken in the distribution of ISW wastes. Here, the distributions are based upon the projected number of employees within the manufacturing categories by place of work. Actually, such wastes are generated at the manufacturing or industrial sites and no sufficiently detailed county-wide land use inventories are available to accurately pin point these sources. Although these two waste stream categories are spread to the municipalities in a very broad brush manner, it is possible to gain a closer estimation of MSW wastes. Areas of additional investigation relate to the residential waste stream. This stream varies dramatically based upon the type of residential development (single family or multiple family) and whether or not the residential development environment is basically urban or rural in nature.

Exhibit 16 shows the land area within each of the 61 municipalities less those lands dedicated to specific purposes such as recreation; transportation, utilities and communications; roads; and water and wetlands. Further analysis of each municipality in terms of land area used by existing businesses and industries allows residential densities to be roughly determined. This becomes helpful when examining the issue of yard wastes. Secondly, housing types are examined. SEMCOG produced a report for July 1, 1995 showing the type of dwelling units, and the occupancy thereof. This is shown in Exhibit 17. Analysis of this information, based upon assumptions as to the average number of persons per type of dwelling unit and the assumption that the percentage of multiple housing units has remained constant within each municipality then allows specific estimates to be made as to the number of residents living in single family and multiple family developments.

Exhibit 18 shows the assumptions and methods used in estimating the waste streams generated by single family and multi-family developments and by where these developments are located, either within rural or urban areas. Finally, on Exhibit 19, the revised residential waste stream estimates are shown. As shown in the far right column in this display, some of the residential

Solid Waste Database
Oakland County, Michigan

Land Area

rdf_loc.wk4
3/27/93
10:51

Community	Total Land Area OCPD Rev. 9-90 Sq. Miles	Less Land Dedicated to Specific Purposes (OCPD and OCDSWM) Recreation Acres	Tran/Util/Comm Acres	Roads Acres	Water/Wetlands Acres	Net Usable Land Area Sq. Miles
Addison Township	35.70	1,090	155	824	700	31.37
Auburn Hills	16.63	211	143	1,022	41	14.42
Berkley	2.59	3	0	507	0	1.79
Beverly Hills	4.02	87	4	499	5	3.09
Bingham Farms	1.22	0	0	93	1	1.07
Birmingham	4.88	200	45	779	17	3.25
Bloomfield Hills	5.00	260	33	394	52	3.85
Bloomfield Township	25.99	816	48	2,731	900	18.97
Brandon Township	34.91	1,186	103	1,053	622	30.28
Clarkston	0.50	39	0	63	42	0.28
Clawson	2.22	37	0	358	0	1.60
Commerce Township	28.10	3,637	125	1,291	1,341	18.11
Farmington	2.62	68	3	415	4	1.86
Farmington Hills	33.34	1,500	37	3,248	84	25.73
Ferndale	3.87	72	51	720	0	2.55
Franklin	2.63	10	0	249	6	2.22
Groveland Township	36.10	6,686	221	990	520	22.95
Hazel Park	2.81	45	0	586	2	1.82
Highland Township	36.28	4,858	10	1,213	1,454	24.51
Holly	3.03	60	8	208	154	2.36
Holly Township	33.49	3,260	153	874	1,297	24.77
Huntington Woods	1.46	206	0	267	2	0.72
Independence Townshi	36.10	2,095	201	1,726	843	28.50
Keego Harbor	0.57	13	0	100	45	0.32
Lake Angelus	1.64	179	0	18	440	0.64
Lake Orion	1.31	3	0	119	354	0.57
Lathrup Village	1.49	2	0	297	0	1.02
Leonard	0.91	3	0	39	2	0.84
Lyon Township	31.51	770	251	1,108	538	27.34
Madison Heights	7.05	207	40	967	0	5.15
Milford	2.52	118	1	189	73	1.93
Milford Township	35.17	4,418	40	781	1,442	24.73
Northville (part)	1.02	22	1	124	1	0.79
Novi	31.25	337	138	1,526	667	27.08
Novi Township	0.11			10		0.09
Oak Park	5.02	67	1	805	0	3.66
Oakland Township	36.67	2,942	244	1,099	356	29.42
Orchard Lake	4.06	213	0	194	1,096	1.71
Orion Township	34.64	4,526	504	1,444	1,681	21.90
Ortonville	1.00	7	0	79	0	0.87
Oxford	1.47	43	1	151	138	0.95
Oxford Township	33.87	740	110	953	1,075	29.37
Pleasant Ridge	0.57	7	4	135	0	0.34
Pontiac	20.09	470	425	2,302	200	14.78
Rochester	3.82	65	11	314	41	3.15
Rochester Hills	32.97	1,475	101	2,720	86	26.12
Rose Township	36.24	803	133	936	1,036	31.70
Royal Oak	11.78	591	94	2,114	6	7.40
Royal Oak Township	0.69	9	0	103	0	0.52
South Lyon	3.04	15	39	175	5	2.67
Southfield	27.83	650	210	2,920	26	21.88
Southfield Township	0.19			7		0.18
Springfield Township	36.78	2,732	129	1,160	982	28.96
Sylvan Lake	0.83	9	9	80	207	0.35
Troy	33.53	1,021	219	3,268	92	26.34
Walled Lake	2.39	20	12	205	155	1.78
Waterford Township	35.19	1,516	630	2,679	2,890	23.14
West Bloomfield Towns	31.24	1,311	161	2,164	2,961	20.93
White Lake Township	37.17	5,302	164	1,409	2,263	22.89
Wixom	9.44	223	425	408	81	7.66
Wolverine Lake	1.69	48	0	167	270	0.93
County Totals	910.25	57,303	5,437	53,378	27,296	686.17
Less Northville	(1.02)	(22)	(1)	(124)	(1)	(0.79)
Planning Values	909.23	57,281	5,436	53,254	27,295	685.38

Exhibit 16

Solid Waste Database
Oakland County, Michigan

rdf_loc.wk4
10/13/99

SEMCOG's Dwelling Unit Study as of July 1, 1995

#	Community	Total Units by Type: Single Family	Two Family	Multi-Family (3 or more)	Mobile Home Units	MSL Units	Total DUs	Occupied Units by Type: Single Family	Two Family	Multi-Family (3 or more)	Mobile Home Units	MSL Units	Total DUs
1	Addison Twp	1,626	20	18	277	13	1,954	1,516	19	17	264	11	1,827
2	Auburn Hills	3,100	75	4,070	886	51	8,182	3,000	70	3,502	833	48	7,453
3	Berkley	6,147	126	466	3	27	6,769	6,082	106	449	3	27	6,668
4	Beverly Hills	3,858	0	301	1	11	4,171	3,796	0	283	1	11	4,090
5	Bingham Farms	270	2	184	0	2	458	243	2	175	0	2	423
6	Birmingham	7,063	250	2,605	3	40	9,961	6,818	228	2,231	3	36	9,315
7	Bloomfiled Hills	1,208	20	436	1	28	1,693	1,149	19	374	1	24	1,567
8	Bloomfiled Twp	13,800	19	3,358	4	75	17,256	13,391	14	2,967	4	68	16,444
9	Brandon Twp	3,189	19	34	917	15	4,174	3,038	19	27	903	14	4,001
10	Clarkston	312	22	116	0	6	456	300	21	112	0	6	440
11	Clawson	4,387	81	1,217	0	24	5,709	4,346	75	1,175	0	23	5,618
12	Commerce Twp	8,139	206	174	1,001	34	9,554	7,848	197	153	856	30	9,084
13	Farmington	2,748	11	2,172	1	27	4,959	2,717	10	1,988	1	27	4,743
14	Farmington Hills	19,227	102	13,198	549	183	33,259	18,830	97	11,642	521	178	31,267
15	Ferndale	8,253	756	1,132	4	62	10,207	8,027	705	1,088	4	60	9,883
16	Franklin	1,015	0	10	0	2	1,027	983	0	9	0	2	994
17	Groveland Twp	1,470	11	49	266	6	1,802	1,448	11	46	251	5	1,762
18	Hazel Park	6,412	361	1,017	8	75	7,871	6,192	321	776	6	71	7,366
19	Highland Twp	5,103	51	297	1,377	20	6,848	4,867	47	217	1,321	17	6,469
20	Holly	1,311	98	433	413	28	2,283	1,284	85	390	398	20	2,178
21	Holly Twp	1,203	18	25	30	12	1,288	1,129	17	23	25	10	1,204
22	Huntington Woods	2,406	0	6	0	2	2,414	2,379	0	4	0	2	2,385
23	Independence Twp	8,092	81	1,398	612	27	10,210	7,933	77	1,188	578	24	9,799
24	Keego Harbor	833	30	383	94	10	1,330	789	29	320	89	7	1,234
25	Lake Angelus	142	0	0	0	0	142	126	0	0	0	0	126
26	Lake Orion	895	96	343	2	40	1,376	826	88	321	2	25	1,263
27	Lathrup Village	1,528	3	90	0	8	1,629	1,501	3	79	0	8	1,591
28	Leonard	131	6	0	4	0	141	130	6	0	4	0	140
29	Lyon Twp	2,401	38	221	816	14	3,490	2,338	26	181	792	14	3,351
30	Madison Heights	9,412	59	3,324	486	89	13,370	9,276	57	3,129	476	87	13,026
31	Milford	1,632	93	703	2	27	2,457	1,580	79	650	2	23	2,335
32	Milford Twp	2,159	5	15	622	6	2,807	2,079	4	9	577	5	2,674
33	Northville (pt)	970	1	338	0	10	1,319	951	1	322	0	10	1,284
34	Novi	8,196	43	7,286	1,860	107	17,492	8,034	35	6,424	1,803	106	16,402
35	Novi Twp												
36	Oak Park	9,282	102	1,882	6	88	11,360	9,027	102	1,701	6	88	10,925
37	Oakland Twp	3,116	5	7	372	14	3,514	3,034	4	6	358	4	3,406
38	Orchard Lake Village	773	1	5	0	4	783	713	1	4	0	1	719
39	Orion Twp	7 305	55	1,228	424	45	9,057	7,069	51	1,141	410	35	8,706
40	Ortonville	399	42	123	0	8	572	385	37	112	0	8	543
41	Oxford	820	93	360	1	22	1,296	805	87	346	1	17	1,256
42	Oxford Twp	2,634	30	290	641	11	3,606	2,570	25	274	625	8	3,502
43	Pleasant Ridge	1,042	25	10	2	6	1,085	1,027	24	9	2	5	1,067
44	Pontiac	15,781	1,524	8,408	352	408	26,473	15,132	1,379	7,465	347	392	24,715
45	Rochester	1,851	160	1,833	1	39	3,884	1,787	148	1,694	0	27	3,657
46	Rochester Hills	16,562	60	7,317	1,359	125	25,423	16,205	59	6,562	1,298	121	24,246
47	Rose Twp	1,905	34	17	132	10	2,098	1,713	28	13	126	7	1,888
48	Royal Oak	20,054	792	8,354	8	164	29,372	19,835	735	7,882	8	157	28,616
49	Royal Oak Twp	585	20	1,975	1	31	2,612	536	20	1,852	1	31	2,439
50	South Lyon	1,333	122	1,755	144	33	3,387	1,306	117	1,633	143	23	3,222
51	Southfield	16,493	70	17,937	709	247	35,456	16,125	66	15,463	670	228	32,552
52	Southfield Twp.												
53	Springfield Twp	3,272	30	348	730	14	4,394	3,124	28	309	703	11	4,175
54	Sylvan Lake	806	10	56	2	2	876	789	8	53	2	2	854
55	Troy	21,429	70	7,597	283	118	29,497	21,020	67	7,001	275	115	28,477
56	Walled Lake	1,287	74	1,518	144	40	3,063	1,262	72	1,463	141	38	2,978
57	Waterford	20,713	224	6,863	180	159	28,139	20 270	205	6,321	161	153	27,110
58	West Bloomfield	16,121	219	5,716	3	131	22,190	15,584	209	5,091	2	126	21,012
59	White Lake Twp	7,622	64	430	1,669	34	9,819	7,222	60	386	1,576	21	9,266
60	Wixom	1,808	18	3,626	7	17	5,476	1,776	14	3,253	7	12	5,063
61	Wolverine Lake	1,585	12	158	0	2	1,757	1,553	12	138	0	2	1,705
	Oakland County	313,218	6,559	123,212	17,407	2,853	463,247	304,815	6,027	110,445	16,581	2,633	440,501
	Less Northville	(970)	(1)	(338)	0	(10)	(1,319)	(951)	(1)	(322)	0	(10)	(1,284)
	Planning Values	312,248	6,558	122,874	17,407	2,843	461,928	303,864	6,026	110,123	16,581	2,623	439,217
	RRRASOC	53,493	478	47,713	4,230	668	106,582	52,388	437	42,047	4,078	626	99,576
	SOCRRA	101,858	2,645	29,976	803	745	136,027	99,862	2,443	27,659	785	721	131,466
	Pontiac	15,781	1,524	8,408	352	408	26,473	15,132	1,379	7,465	347	392	24,715
	Remainder	141,114	1,911	36,777	12,022	1,022	192,846	136,482	1,767	32,952	11,371	884	183,460
	Planning Values	312,246	6,558	122,874	17,407	2,843	461,928	303,864	6,026	110,123	16,581	2,623	439,217
	Livingston County	40,262	923	4,739	3,299	349	49,572	37,500	854	4,271	3,119	278	46,023
	Macomb County	201,739	3,424	75,549	13,892	2,301	296,705	198,505	3,174	68,753	13,013	2,184	285,630
	Monroe County	39,265	1,893	6,298	4,604	458	52,518	38,126	1,747	5,871	4,304	402	50,450
	Oakland County	313,216	6,559	123,212	17,407	2,853	463,247	304,815	6,027	110,445	16,581	2,633	440,501
	St. Clair County	45,958	2,712	7,759	5,436	598	62,463	42,765	2,448	6,806	5,035	453	57,507
	Washtenaw County	83,275	4,045	47,177	4,970	987	120,454	81,039	3,786	42,796	4,694	908	113,223
	Wayne County	548,961	59,206	198,645	14,231	10,597	831,640	530,745	53,172	173,115	13,551	9,804	780,387
	SEMCOG Totals	1,252,676	78,762	463,379	63,839	18,143	1,876,599	1,213,497	71,208	412,056	60,299	16,662	1,773,722

Exhibit 17

04/30/98

Examining Residential Generation Rates Prior to Recovery (Source Reduction & Reuse, Composting, and Recycling).

Item	Factors		% Y. W. of Total	Adjust Factor *	Pop	Pop Adjusted	Generation #/day	Waste #/day	Yard Waste #/day	Gen/Capita #/Capita/day	Gen/Capita #/Capita/day wo Y. W.	Check
1998 Population	1,172,276											
Percent Multiple Population **	21.15%											
MF Urban		90.15%	2.00%	0.9	223,537	201,183	658,606	645,434	13,172	2.9463	2.8874	0.9
MF Rural		9.85%	0.00%	0.9	24,423	21,981	70,518	70,518	0	2.8874	2.8874	0.9
Percent Single Family Pop.	78.85%											
SF Urban		80.43%	22.55%	1.0	743,439	743,439	3,079,527	2,385,093	694,433	4.1423	3.2082	
SF Rural		19.57%	5.00%	1.0	180,877	180,877	610,829	580,288	30,541	3.3770	3.2082	
	100.00%	100.00%			1,172,276	1,147,480	4,419,481	3,681,334	738,147	3.7700	3.1403	
						# per Capita	3.770		0.630			
						% Yard Wastes			16.70%			
						Base Single Family Generation Rate wo Yard Wastes =			3.2082			
								Overall Generation Rate =	3.770000			4,419,481

* Operating on the assumption that because of limited storage, difficulty in getting wastes to disposal point, etc., the multi-family person is more frugal than the single family person in generating wastes - ie: a more careful purchaser, etc.

** Population in housing units with 3 or more dwelling units and including DUs in the "Other" category.

04/30/98
13:35
details.wk4
Rjs, P.E.

Summary

If Rural is defined as a municipality having a total population density of less than the following amount per net usable square mile.....

1,500 persons / sq. mile

All in # / capita / day		wo YW
and if overall residential generation rate is	3.77000	
Single Family Urban gen rate is	4.14227	3.20819
Single Family Rural gen rate is	3.37704	3.20819
Multiple Family Urban gen rate is	2.94630	2.88737
Multiple Family Rural gen rate is	2.88737	2.88737

Note: This sheet displays why the use of a single per capita generation value is inappropriate for use on a statewide basis. Great care has to be taken to customize the generation per capita values to individual counties and the characteristics thereof. Major characteristics involve percent multiple housing, percent urban and rural single family housing and the percent of yard wastes generated by each category of housing.

Exhibit 18

Solid Waste Database
Oakland County, Michigan

rdf_loc wk4
11/02/99

Projected 1998 Act 451 Solid Waste Stream (in tons per day) - Adjusted for Dwelling Unit Types and Density

#	Municipality	Municipal Solid Waste Component: Single Family Residential	Multi-family Residential	sub-total Residential	Commercial	Industrial	Total MSW	CDD	ISW	Total 451	Total Residential % Change
1	Addison Township	8.74	0.87	9.61	2.97	0.07	12.65	2.23	0.09	14.97	-11.78%
2	Auburn Hills	26.54	11.88	38.42	81.01	38.38	157.80	8.06	54.75	220.61	-2.39%
3	Berkley	32.80	1.56	34.37	17.53	0.48	52.37	6.52	0.68	59.58	7.87%
4	Beverly Hills	20.01	0.89	20.90	7.73	0.24	28.87	3.96	0.34	33.18	7.99%
5	Bingham Farms	1.32	0.48	1.80	22.98	0.68	25.46	0.37	0.97	26.80	-0.88%
6	Birmingham	32.95	6.29	39.24	58.60	2.88	100.72	7.78	4.10	112.60	3.15%
7	Bloomfield Hills	6.10	1.29	7.39	37.52	0.78	45.68	1.74	1.11	48.53	-13.01%
8	Bloomfield Township	76.59	8.66	85.25	57.84	2.13	145.21	16.53	3.03	164.78	5.51%
9	Brandon Township	18.70	2.55	21.25	4.44	0.38	26.07	4.95	0.54	31.56	-12.22%
10	Clarkston	1.47	0.38	1.84	9.17	0.53	11.54	0.37	0.75	12.67	1.44%
11	Clawson	22.90	3.37	26.26	15.74	1.76	43.76	5.14	2.51	51.41	4.43%
12	Commerce Township	53.71	3.04	56.76	21.50	2.20	80.46	10.80	3.14	94.40	7.52%
13	Farmington	13.31	5.52	18.84	22.28	1.07	42.19	3.93	1.53	47.65	-1.82%
14	Farmington Hills	116.29	33.97	150.26	169.81	18.22	338.29	30.55	26.00	394.84	0.63%
15	Ferndale	46.40	3.70	50.10	24.21	4.09	78.40	9.61	5.84	93.85	6.67%
16	Franklin	4.30	0.05	4.35	2.91	0.05	7.31	1.00	0.08	8.39	-10.61%
17	Groveland Township	8.74	0.82	9.56	2.28	0.01	11.85	2.22	0.01	14.08	-11.72%
18	Hazel Park	36.62	3.06	39.68	12.23	1.55	53.46	7.62	2.21	63.29	6.53%
19	Highland Township	28.51	4.13	32.64	13.66	0.79	47.09	7.62	1.13	55.84	-12.31%
20	Holly	8.97	2.33	11.29	7.39	1.60	20.28	2.28	2.29	24.85	1.39%
21	Holly Township	6.07	0.27	6.33	1.41	0.37	8.11	1.46	0.53	10.09	-11.07%
22	Huntington Woods	13.27	0.04	13.31	5.33	0.22	18.86	2.48	0.32	21.67	9.73%
23	Independence Township	46.36	4.81	51.17	17.65	0.87	69.69	11.88	1.24	82.80	-11.84%
24	Keego Harbor	4.40	1.16	5.56	3.87	0.11	9.53	1.12	0.15	10.80	1.30%
25	Lake Angelus	0.57	0.00	0.57	0.18	0.00	0.76	0.13	0.01	0.90	-10.43%
26	Lake Orion	4.59	1.20	5.79	4.76	0.11	10.65	1.17	0.15	11.97	1.33%
27	Lathrup Village	8.35	0.32	8.67	8.04	0.36	17.07	1.64	0.52	19.23	8.23%
28	Leonard	0.65	0.01	0.66	0.15	0.18	0.99	0.15	0.26	1.40	-10.67%
29	Lyon Township	14.33	2.66	16.99	6.34	3.51	26.84	3.98	5.01	35.84	-12.75%
30	Madison Heights	48.72	10.58	59.29	67.73	15.30	142.32	11.84	21.83	175.99	2.45%
31	Milford	10.73	2.02	12.74	13.47	1.50	27.71	2.53	2.14	32.38	3.22%
32	Milford Township	13.08	1.55	14.64	7.64	4.15	26.43	3.41	5.93	35.76	-12.02%
33	Northville (part)	5.61	0.98	6.59	2.48	0.28	9.35	1.30	0.40	11.05	3.62%
34	Novi	63.00	22.77	85.76	71.58	8.92	166.26	17.70	12.72	196.68	-0.82%
35	Novi Township										
36	Oak Park	56.08	5.70	61.78	30.45	3.40	95.63	11.94	4.85	112.41	5.90%
37	Oakland Township	17.58	0.98	18.56	3.43	0.37	22.36	4.28	0.53	27.16	-11.23%
38	Orchard Lake	3.96	0.02	3.98	2.99	0.19	7.17	0.91	0.28	8.36	-10.53%
39	Orion Township	41.05	4.42	45.48	12.71	7.71	65.89	10.56	11.00	87.46	-11.89%
40	Ortonville	2.77	0.41	3.18	1.38	0.10	4.66	0.62	0.14	5.42	4.44%
41	Oxford	5.32	1.14	6.47	3.76	0.76	10.98	1.29	1.08	13.36	2.50%
42	Oxford Township	15.47	2.38	17.85	5.49	2.62	25.96	4.17	3.74	33.87	-12.42%
43	Pleasant Ridge	5.60	0.10	5.70	1.57	0.26	7.54	1.07	0.38	8.98	9.07%
44	Pontiac	104.86	25.91	130.77	129.11	35.42	295.30	26.31	50.54	372.14	1.68%
45	Rochester	10.09	4.76	14.85	42.88	5.91	63.65	3.13	8.43	75.21	-2.79%
46	Rochester Hills	110.38	22.05	132.43	64.17	14.37	210.97	26.33	20.50	257.80	2.91%
47	Rose Township	9.98	0.45	10.43	0.99	0.07	11.50	2.40	0.11	14.00	-11.09%
48	Royal Oak	102.42	22.65	125.07	97.36	6.58	229.01	25.00	9.38	263.39	2.34%
49	Royal Oak Township	3.34	5.23	8.57	7.34	0.43	16.35	1.99	0.62	18.95	-11.96%
50	South Lyon	13.52	4.92	18.44	6.30	0.74	25.47	3.81	1.05	30.33	-0.87%
51	Southfield	91.63	44.95	136.57	311.68	16.21	464.47	28.83	23.13	516.43	-3.08%
52	Southfield Township										
53	Springfield Township	20.15	2.72	22.87	5.42	0.87	29.15	5.33	1.23	35.72	-12.20%
54	Sylvan Lake	3.71	0.17	3.88	3.13	0.09	7.11	0.74	0.13	7.97	7.93%
55	Troy	138.75	20.45	159.20	310.41	46.92	516.53	31.20	66.94	614.67	4.42%
56	Walled Lake	7.38	4.69	12.07	16.95	4.56	33.59	2.60	6.50	42.69	-5.11%
57	Waterford Township	117.26	18.96	136.22	82.03	3.75	222.01	26.80	5.36	254.17	3.99%
58	West Bloomfield Township	100.30	14.98	115.28	47.87	1.26	164.41	22.60	1.79	188.81	4.36%
59	White Lake Township	41.05	5.26	46.31	10.99	0.31	57.62	10.79	0.45	68.85	-12.13%
60	Wixom	14.23	8.58	22.81	15.09	9.49	47.40	4.90	13.55	65.84	-4.69%
61	Wolverine Lake	9.02	0.39	9.41	1.30	0.00	10.71	1.78	0.00	12.49	8.07%
62	County Totals	1,850.59	365.50	2,216.09	2,017.20	276.17	4,509.46	453.45	394.01	5,356.92	0.00%
	Less Northville	(5.41)	(0.94)	(6.36)	(2.48)	(0.28)	(9.12)	(1.30)	(0.40)	(10.82)	0.00%
	Planning Values	1,845.18	364.56	2,209.74	2,014.72	275.89	4,500.35	452.15	393.61	5,346.11	0.00%

The Total Residential % Change column shows the differences obtained by examining residential generators in terms of single family or multi-family dwelling units and the density of the developments.

It must be noted that the waste stream shown is prior to any volume reduction effort and programs.

Exhibit 19

Solid Waste Database
Oakland County, Michigan

rdf_loc.wk4
10/13/99

Exhibit 20

Projected 1998 Act 451 Solid Waste Stream (in tons per day) - Adjusted for Dwelling Unit Types and Density

#	Approximate Townships	Municipal Solid Waste Component: Single Family Residential	Multi-family Residential	sub-total Residential	Commercial	Industrial	Total MSW	CDD	ISW	Total 451	Total Net Usable Square Miles	Density Factors per Net Usable Sq. Mile: MSW	ISW	Tot. Act 451
1	Addison	9.39	0.88	10.27	3.12	0.25	13.64	2.38	0.36	16.37	32.21	0.42	0.01	0.51
2	Avon	120.47	26.81	147.28	107.06	20.28	274.62	29.46	28.94	333.01	29.27	9.38	0.99	11.38
3	Bloomfield	115.64	16.24	131.88	153.96	5.78	291.62	26.05	8.25	325.91	26.07	11.19	0.32	12.50
4	Brandon	21.47	2.96	24.43	5.82	0.48	30.72	5.58	0.68	36.98	31.14	0.99	0.02	1.19
5	Commerce	70.11	8.12	78.24	39.76	6.76	124.75	15.19	9.65	149.59	20.82	5.99	0.46	7.19
6	Farmington	129.60	39.50	169.10	192.09	19.30	380.49	34.48	27.53	442.50	27.59	13.79	1.00	16.04
7	Groveland	8.74	0.82	9.56	2.28	0.01	11.85	2.22	0.01	14.08	22.95	0.52	0.00	0.61
8	Highland	28.51	4.13	32.64	13.66	0.79	47.09	7.62	1.13	55.84	24.51	1.92	0.05	2.28
9	Holly	15.03	2.59	17.62	8.79	1.97	28.39	3.74	2.81	34.94	27.12	1.05	0.10	1.29
10	Independence	47.83	5.18	53.01	26.82	1.39	81.23	12.25	1.99	95.47	28.77	2.82	0.07	3.32
11	Lyon	27.85	7.58	35.43	12.64	4.25	52.31	7.79	6.08	66.16	30.02	1.74	0.20	2.20
12	Milford	23.81	3.57	27.38	21.10	5.65	54.14	5.93	8.07	68.14	26.66	2.03	0.30	2.56
13	Novi	82.84	32.33	115.16	89.14	18.69	223.00	23.90	26.67	273.57	35.63	6.26	0.75	7.68
14	Oakland	17.58	0.98	18.56	3.43	0.37	22.36	4.28	0.53	27.16	29.42	0.76	0.02	0.92
15	Orion	45.64	5.62	51.27	17.46	7.82	76.55	11.73	11.15	99.43	22.46	3.41	0.50	4.43
16	Oxford	20.79	3.53	24.32	9.25	3.38	36.95	5.46	4.82	47.23	30.32	1.22	0.16	1.56
17	Pontiac	131.97	37.79	169.76	210.29	73.80	453.85	34.49	105.29	593.64	29.84	15.21	3.53	19.89
18	Rose	9.98	0.45	10.43	0.99	0.07	11.50	2.40	0.11	14.00	31.70	0.36	0.00	0.44
19	Royal Oak	345.26	52.62	397.88	263.74	32.31	693.94	78.07	46.10	818.11	23.95	28.98	1.93	34.16
20	Southfield	125.61	46.69	172.31	353.33	17.55	543.19	35.80	25.04	604.02	29.46	18.44	0.85	20.50
21	Springfield	20.15	2.72	22.87	5.42	0.87	29.15	5.33	1.23	35.72	28.96	1.01	0.04	1.23
22	Troy	161.65	23.82	185.46	326.15	48.68	560.29	36.34	69.45	666.08	27.94	20.05	2.49	23.84
23	Waterford	117.26	18.96	136.22	82.03	3.75	222.01	26.80	5.36	254.17	23.14	9.60	0.23	10.99
24	West Bloomfield	112.37	16.34	128.71	57.86	1.65	188.22	25.37	2.35	215.94	23.32	8.07	0.10	9.26
25	White Lake	41.05	5.26	46.31	10.99	0.31	57.62	10.79	0.45	68.85	22.89	2.52	0.02	3.01
	County Totals	1,850.59	365.50	2,216.09	2,017.20	276.17	4,509.46	453.45	394.01	5,356.92	686.17	6.57	0.57	7.81

Municipalities which set astride two townships were distributed as below...

Birmingham to Bloomfield Twp.
Clawson to Troy Twp.
Holly to Holly Twp.
Lake Angelus to Pontiac Twp.
Pontiac to Pontiac Twp.
Royal Oak to Royal Oak Twp.
Sylvan Lake to West Bloomfield Twp.
Wixom to Novi Twp.

Oakland's Solid Waste Authorities	Municipal Solid Waste Component: Single Family Residential	Multi-family Residential	sub-total Residential	Commercial	Industrial	Total MSW	CDD	ISW	Total 451	Total Net Usable Square Miles	Density Factors per Net Usable Sq. Mile: MSW	ISW	Tot. Act 451
RRRASOC	333.69	128.06	461.75	620.03	62.73	1,144.51	98.31	89.49	1,330.31	93.23	12.28	0.96	14.27
SOCRRA	516.17	68.13	584.30	589.18	68.74	1,242.23	113.96	98.08	1,454.26	51.89	23.94	1.89	28.02
Total Authorities	849.86	196.20	1,046.05	1,209.21	131.47	2,386.74	210.27	187.57	2,784.57	145.13	16.45	1.29	19.19
% of County Totals	45.92%	53.68%	47.20%	59.95%	47.60%	52.93%	46.37%	47.60%	51.98%				

RRRASOC Municipalities

Farmington
Farmington Hills
Lyon Township
Novi
Southfield
South Lyon
Wixom
Walled Lake

SOCRRA Municipalities

Berkley
Beverly Hills
Birmingham
Clawson
Ferndale
Hazel Park
Huntington Woods
Lathrup Village
Madison Heights *
Oak Park
Pleasant Ridge
Royal Oak
Royal Oak Township *
Troy

* Prior to late 1997

waste stream adjustments are dramatically different from the original values. The detailed waste stream estimates are summarized in the table which follows. **These values represent the Oakland County waste stream prior to any volume reduction efforts and programs.**

Although these projections are accepted as being as accurate as can be reasonably achieved, all should use a bit of caution when focusing upon specific small land areas within the larger county-wide framework. Following are details of the 1998 planning area waste stream.

Principal Waste Category	1998 Planning Area Waste Stream (tons per day)			
Municipal Solid Wastes (MSW)				
Residential				
Single Family	1,845.18			34.51%
Multi-family	364.56			6.82
Residential sub-total		2,209.74		41.33
Commercial		2,014.72		37.69
Industrial		275.89		5.16
MSW total			4,500.35	84.18
Construction and Demolition Debris (CDD)			452.15	8.46
Industrial Special Wastes (ISW)			393.61	7.36
Act 451, Part 115 Solid Wastes			5,346.11	100%

Examining the County from a geographic perspective allows centers of waste generation to be easily determined. The 61 municipalities were combined together in groups approximating the original 25 townships in size. Exhibit 20 shows the waste stream within each approximate township. Additionally, the net usable land area available within these units was calculated and a waste density factor was developed. This factor was developed by dividing the tons per day of MSW waste generated within the approximate township by the usable land area. It may be seen that the Royal Oak township area generates the most wastes per usable square mile of land. The top ten units are listed below.

Approximate Township	Overall Waste Density Factor - 1998	Industrial Special Wastes Density Factor - 1998
1. Royal Oak	34.2	1.9 - 3
2. Troy	23.8	2.5 - 2
3. Southfield	20.5	0.9- 6
4. Pontiac	19.9	3.5 - 1
5. Farmington	16.0	1.0 - 4
6. Bloomfield	12.5	0.3 - 10
7. Avon	11.4	1.0 - 5
8. Waterford	11.0	0.2 - 12
9. West Bloomfield	9.3	0.1 - 16
10. Novi	7.7	0.8 - 7

The table quickly shows that the overall amount of wastes generated per usable square mile does not mirror the amount or ranking that would be achieved if only industrial special wastes (ISW)

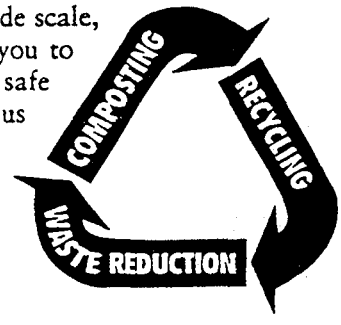
SPECIAL HOUSEHOLD WASTE MANAGEMENT AND DISPOSAL PROGRAM FOR MEMBER MUNICIPALITIES OF SOUTHEASTERN OAKLAND COUNTY RESOURCE RECOVERY AUTHORITY

Member communities of Southeastern Oakland County Resource Recovery Authority ("SOCRRA") have developed a Special Household Waste Management and Disposal Program. Many household products, if used improperly, can be hazardous to your health. If disposed of improperly, they can also pose a significant threat to groundwater and the environment. This special waste handling program offers residents a convenient and effective means of disposing of those household waste products which require special handling, processing and disposal.

Items such as paint, automotive products, car batteries, pesticides, medicines, etc. are used at our homes on a daily basis. Placing these items in our trash cans is not the most environmentally sound way to dispose of them. Using them up completely is the preferred alternative. To help our environment, more and more communities are asking citizens - on a voluntary basis - to take a few extra steps in the handling and disposal of these special waste items.There is no direct charge to you for this service, as the community in which you live will be assessed for disposal costs.

Please call 288-5153 any time of day for an appointment (we will not accept walk-ins) to deliver those potentially harmful substances to the SOCRRA facility. Inside this brochure you will find a list of special household waste products we are accepting.

This is the first such program to be offered on a wide scale, ongoing basis in Oakland County. I want to urge you to participate in this program, which offers a safe alternative for disposal of these materials and helps us create a cleaner and healthier environment in our communities.



Thank you,

Thomas G. Waffen, P.E.
General Manager

SOCRRA's widely acclaimed Household Hazardous Waste (HHW) program. This service is reserved for SOCRRA municipality residents only.

Exhibit 21

were considered. These centers of waste generation are examined at a later point in this document once the future waste stream and future volume reduction achievement levels are projected.

Existing Solid Waste Services

Solid waste collection and disposal services in Oakland County are provided primarily by private sector entrepreneurs through individual agreement with individual waste generators. Nearly two thirds of the County's entire Act 451 solid waste stream is handled in such a manner.

Some of the County's municipalities choose to manage the provision of solid waste services for at least a portion of the solid waste generators within their jurisdiction. This is generally accomplished by the award of very specific contracts for the collection, processing and disposal of wastes to final selected vendors after periodic receipt of bids. In some instances, designated haulers have been identified by municipalities and a majority of the community's single family residents take advantage of such arrangements.

Beyond the single family residential waste generator, few other solid waste generators are offered services under the guise of the municipal programs. Those not being serviced must make such arrangements on their own. Throughout the State of Michigan, this latter arrangement is the prevalent practice.

Local government involvement beyond adoption of basic health, safety and welfare ordinances or beyond the oversight management of municipal solid waste service contracts is very limited. The following delineates key exceptions.

The City of Pontiac owns and operates a Type II landfill and operates a yard waste composting program.

Eight municipalities in the southwest sector of the County joined together as the Resource Recycling and Recovery Authority of Southwest Oakland County (RRRASOC) in 1989. The Authority owns and manages the operation of a material recovery facility for source separated recyclables which is located in the City of Southfield. The facility, which opened for operations in late 1994, receives the source separated recyclables not only from member communities, but from any municipality in the region. The Authority additionally operates recyclable material drop-off centers located throughout its jurisdiction for all Authority residents. The eight municipalities are Lyon Township and the cities of South Lyon, Wixom, Walled Lake, Novi, Farmington, Farmington Hills and Southfield.

Fourteen municipalities in the southeast sector of the County joined together in 1951 to form the Southeast Oakland County Incinerator Authority which would manage the receipt and disposal of wastes handled by the municipalities, generally being the single family residential waste stream. The original fourteen member municipalities were Berkley, Beverly Hills, Birmingham, Clawson, Ferndale, Hazel Park, Huntington Woods,

Solid Waste Database
Oakland County, Michigan

Municipal Program Levels - January 1, 1996

12/26/97
11:18

Municipality	Curbside Single Family Services: Mixed	Recycle	Yard Wastes	Annual Clean Up	Single Family: F. Serv. + HHW	Full Service	Drop-off Services for all Residents: HHW	Recycle	Yard Wastes	Clean Up	Curbside Multi-Family Services (generally to a limited number of DUs): Mixed	Recycle	Yard Wastes	Annual Clean Up
Addison Township								X		X				
Auburn Hills				X			X			X				
Berkley	X	X	X		X		X	X	X				X	
Beverly Hills	X	X	X		X		X	X	X		X	X		
Bingham Farms	X	X	X		X		X				X	X		
Birmingham	X	X	X		X		X	X	X	X	X	X	X	
Bloomfield Hills	*	*	*		X		X			X	*	*	*	
Bloomfield Township	X	X	X	X	X		X				X	X	X	X
Brandon Township								X		X				
Clarkston								X		X				
Clawson	X	X	X		X		X	X	X		X	X	X	
Commerce Township	X	X	X			X					X	X		
Farmington	X	X	X		X		X	X			X	X	X	
Farmington Hills	X	X	X	X	X		X	X			X	X	X	X
Ferndale	X	X	X		X		X	X	X		X	X	X	
Franklin	X	X												
Groveland Township										X				
Hazel Park	X	X	X		X		X	X	X		X	X	X	
Highland Township	X	X	X			X			X		X	X		
Holly	X	X	X			X				X				
Holly Township								X		X				
Huntington Woods	X	X	X		X		X	X	X					
Independence Township								X		X				
Keego Harbor	X	X	X			X								
Lake Angelus														
Lake Orion	X	X	X			X		X			X			
Lathrup Village	X	X	X		X		X	X	X		X	X	X	
Leonard	X	X	X			X								
Lyon Township								X						
Madison Heights	X	X	X		X		X	X	X			X		
Milford	X	X	X		X		X				X	X		
Milford Township	X	X	X		X		X				X	X		
Northville (part)	(Not included in survey since municipality participates in the Wayne County Program)													
Novi								X						
Novi Township	(Not included in survey because of limited statistical significance)													
Oak Park	X	X	X	X	X		X	X	X		X	X	X	X
Oakland Township														
Orchard Lake	X	X	X			X								
Orion Township										X				
Ortonville								X		X				
Oxford	X	X	X			X				X	X			
Oxford Township								X		X				
Pleasant Ridge	X	X	X		X		X	X	X		X	X	X	
Pontiac	X		X					X	X		X			
Rochester	X	X	X		X		X				X	X		
Rochester Hills	*	*	*					X	X					
Rose Township								X		X				
Royal Oak	X	X	X		X		X	X	X		X	X	X	
Royal Oak Township	X			X			X	X	X		X			X
South Lyon	X	X	X	X		X		X			X	X		X
Southfield	X	X	X	X	X		X	X						
Southfield Township	(Not included in survey because of limited statistical significance)													
Springfield Township								X		X				
Sylvan Lake	X						X		X					
Troy	X	X	X		X		X	X	X		X			
Walled Lake	X	X	X			X		X						
Waterford Township								X	X					
West Bloomfield Township							X							
White Lake Township	X	X	X			X					X	X		
Wixom	X	X	X		X		X	X						
Wolverine Lake	X	X	X			X					X	X	X	
County Totals	40	37	37	7	23	12	27	35	19	16	27	23	14	5
Less Northville														
Planning Values	40	37	37	7	23	12	27	35	19	16	27	23	14	5
Designated Hauler Programs														
Waterford Township	DH	DH	DH			X								
West Bloomfield Township	DH	DH	DH		X									
Program Totals	42	39	39		24	13								

* Ordinance required services

sum_1.wk4

Exhibit 22

Lathrup Village, Madison Heights, Oak Park, Pleasant Ridge, Royal Oak, Royal Oak Township, and Troy. Beginning in 1955, the authority operated a transfer station, a Type II landfill, and a 600 ton per day design capacity incinerator. The incinerator was closed in mid 1988 and the site is currently operated as a transfer station. In May, 1989, the Authority changed its name to the Southeastern Oakland County Resource Recovery Authority (SOCRRA). Since the spring of 1991, the Authority has operated a phone for appointment household hazardous waste (HHW) program for its residents. This program is widely envied throughout southeast Michigan. In 1992, the Authority opened a source separated material recovery facility adjacent to its transfer station in the City of Troy. The Authority's landfill presently is operated as a yard waste composting facility and the landfill is currently receiving only the compost operation residues and noncompostable yard wastes. In 1997, as original authority debt has been paid off, two municipalities (Madison Heights and Royal Oak Township) are no longer with the Authority.

Highland Township currently operates a yard waste compost site.

Oakland County's municipalities were questioned as to the specific service levels provided as of January 1, 1996. This survey resulted in the preparation of a report titled "Report on Municipally Sponsored Solid Waste Programs as of January 1, 1996" as dated December 30, 1997 (see Appendix.) The information contained in this report and that information from previous municipal surveys has allowed estimates to be made of current volume reduction achievement levels. Although some time has passed since the survey date, few changes have been made in or to the basic solid waste service programs offered. Exhibit 22 displays key statistics from the report.

As can be seen, curbside municipal solid waste services are offered in 42 communities for mixed-wastes, in 39 communities for recyclables, and within the same 39 for yard wastes. Twenty-four municipalities offer all three curbside services in addition to offering access (at least on a periodic basis) for residents to a household hazardous waste (HHW) collection program. Thirteen additional communities offer the full curbside services including mixed, recyclables and yard wastes. Approximately 32% of the entire Act 451 waste stream is managed through the municipal programs. The remainder is managed directly by the waste generators, generally through arrangements with private sector service providers.

Current Volume Reduction Achievement Levels

Based upon the 1996 survey results and upon current operational data from RRRASOC and SOCRRA records, the residential volume reduction achievement levels for the entire County may be estimated. Relevant data from the two authorities in shown in Exhibits 23 and 24. As shown in Exhibit 25, if it is assumed that all of the County's residents were achieving the same high VR (volume reduction) achievement levels as the residents located within the full-service authority municipalities (12% of the waste stream remaining after yard wastes removal being recovered for recycling) and if it is assumed that commercial and industrial MSW generators as well as CDD and ISW generators uniformly achieve a 15% reduction, a countywide VR rate of 18.98% across the entire Act 451 waste stream results.

SOCRRA's Volume Reduction Programs

soc_sfld.wk4
05/04/98
RJS PE

Look What Local Effort Can Do! - (Tons of Grass)

Month	90-91	91-92	92-93	93-94	94-95	95-96	96-97
July	1,757	2,195	3,033	2,245	1,694	1,381	1,327
August	3,547	2,120	2,545	1,873	1,304	1,864	862
Sept	2,997	1,988	2,698	2,287	1,109	858	862
October	3,429	1,397	1,273	1,098	537	589	526
April	1,540	941	442	162	183	4	58
May	7,057	4,385	3,917	2,129	2,468	2,297	1,680
June	4,240	3,164	3,498	2,029	2,334	2,328	1,893
Totals	24,567	16,190	17,406	11,823	9,629	9,321	7,208
Difference from 90-91		8,377	7,161	12,744	14,938	15,246	17,359

Exhibit 23

SOCRRA's Waste Stream Data As Adjusted for Grass Clipping Reductions (Tons)

Period	Mixed & Bulky	%	Yard Wastes	%	Recyclables	%	Total Tonnage	Total VR	% Recycling wo YW
90 - 91	163,392	73.50%	45,774	20.59%	13,121	5.90%	222,288	26.5%	7.43%
91 - 92	158,897	72.13%	46,702	21.20%	14,700	6.67%	220,299	27.9%	8.47%
92 - 93	160,506	68.59%	54,521	23.30%	18,990	8.11%	234,017	31.4%	10.58%
93 - 94	160,133	70.65%	46,356	20.45%	20,152	8.89%	226,641	29.3%	11.18%
94 - 95	159,220	69.93%	47,043	20.66%	21,406	9.40%	227,669	30.1%	11.85%
95 - 96	155,180	70.41%	47,266	21.45%	17,941	8.14%	220,386	29.6%	10.36%
96 - 97	155,088	69.50%	48,654	21.80%	19,409	8.70%	223,151	30.5%	11.12%

Note: The original yard waste data was expanded to include the grass clipping reductions shown above to reflect proper VR percentages.

Volume Reduction Programs - RRRASOC Municipalities

(All values expressed in tons)

1995	Drop-off	Curbside	YW	Refuse	Total	Ignore drop-off % recycle	Ignore drop-off & YW % recycle	Ignore drop-off % YW
Farmington	157.99	543.55	941.05	3,924.18	5,566.77	10.05%	12.17%	17.40%
Farmington Hills	131.79	3,691.12	6,188.15	25,761.09	35,772.15	10.36%	12.53%	17.36%
Lyon Township								
Novi								
South Lyon	122.30	262.00	245.31	2,285.01	2,914.62	9.38%	10.29%	8.79%
Southfield	56.03	1,948.49	5,509.20	22,541.13	30,054.85	6.50%	7.96%	18.36%
Walled Lake								
Wixom	0.00	271.67	300.00	2,282.52	2,854.19	9.52%	10.64%	10.51%
Total	468.11	6,716.83	13,183.71	56,793.93	77,162.58	8.76%	10.58%	17.19%
	0.61%	8.70%	17.09%	73.60%	100.00%			
wo Drop-off		6,716.83	13,183.71	56,793.93	76,694.47			
		8.76%	17.19%	74.05%	100.00%			
wo Yard Wastes		6,716.83		56,793.93	63,510.76			
		10.58%		89.42%	100.00%			

1996	Drop-off	Curbside	YW	Refuse	Total	Ignore drop-off % recycle	Ignore drop-off & YW % recycle	Ignore drop-off % YW
Farmington	90.88	574.34	929.50	3,709.83	5,304.55	11.02%	13.41%	17.83%
Farmington Hills	126.92	3,784.22	6,112.20	24,394.89	34,418.23	11.04%	13.43%	17.82%
Lyon Township								
Novi								
South Lyon	151.50	305.65	233.05	2,486.98	3,177.18	10.10%	10.94%	7.70%
Southfield	218.23	2,017.68	5,787.30	24,226.57	32,249.78	6.30%	7.69%	18.07%
Walled Lake								
Wixom	0.00	302.78	342.35	2,390.56	3,035.69	9.97%	11.24%	11.28%
Total	587.53	6,984.67	13,404.40	57,208.83	78,185.43	9.00%	10.88%	17.27%
	0.75%	8.93%	17.14%	73.17%	100.00%			
wo Drop-off		6,984.67	13,404.40	57,208.83	77,597.90			
		9.00%	17.27%	73.72%	100.00%			
wo Yard Wastes		6,984.67		57,208.83	64,193.50			
		10.88%		89.12%	100.00%			

1997	Drop-off	Curbside	YW	Refuse	Total	Ignore drop-off % recycle	Also wo Walled Lake: Ignore drop-off & YW % recycle	Ignore drop-off % YW
Farmington	7.17	673.90	829.12	4,124.20	5,634.39	11.98%	14.05%	14.73%
Farmington Hills	0.00	4,667.00	5,801.69	28,441.46	38,910.15	11.99%	14.10%	14.91%
Lyon Township	130.01				130.01			
Novi	554.42				554.42			
South Lyon	130.01	291.83	210.27	2,576.62	3,208.73	9.48%	10.17%	6.83%
Southfield	312.82	2,297.75	4,079.87	23,085.50	29,775.94	7.80%	9.05%	13.85%
Walled Lake				2,473.56	2,473.56			
Wixom	0.00	433.30	377.16	2,873.86	3,684.32	11.76%	13.10%	10.24%
Total	1,134.43	8,363.78	11,298.11	63,575.20	84,371.52	10.36%	12.04%	13.99%
	1.34%	9.91%	13.39%	75.35%	100.00%			
wo Walled Lake & wo Drop-off		8,363.78	11,298.11	61,101.64	80,763.53			
		10.36%	13.99%	75.65%	100.00%			
also wo Yard Wastes		8,363.78		61,101.64	69,465.42			
		12.04%		87.96%	100.00%			

soc_sfld.wk4
04/30/98
RJS PE

Exhibit 24

Solid Waste Database
Oakland County, Michigan

Volume Reduction Percentages - 1998

10/13/99
09:44
rdf_loc.wk4

1998 Waste Stream - Maximum Probable Volume Reduction Achievable - (SOCRRA & RRRASOC 1997 VR Rates used as Residential Base)

		SF Resid.		MF Resid.		Tot. Resid.	Comm.	Ind.	MSW	CDD	ISW	Act 451
		Urban	Rural	Urban	Rural							
County's Waste Stream		1,539.77	305.42	329.30	35.26	2,209.74	2,014.72	275.89	4,500.35	452.15	393.61	5,346.11
		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
		4.1423	3.3770	2.9463	2.8873	3.7700						
Yard Wastes		(347.22)	(15.27)	(6.59)	0.00	(369.07)	(40.29)	0.00	(409.37)	0.00	0.00	(409.37)
		-22.55%	-5.00%	-2.00%	0.00%	-16.70%	-2.00%	0.00%	-9.10%	0.00%	0.00%	-7.66%
Net after YW		1,192.55	290.14	322.71	35.26	1,840.67	1,974.42	275.89	4,090.98	452.15	393.61	4,936.74
		77.45%	95.00%	98.00%	100.00%	83.30%	98.00%	100.00%	90.90%	100.00%	100.00%	92.34%
		3.2082	3.2082	2.8873	2.8873	3.1403						
Recycling (after YW) @	12.00%	(143.11)	(34.82)	(38.73)	(4.23)	(220.88)			(220.88)			(220.88)
YW and Recycling @ *	15.00%						(261.91)	(41.38)	(303.30)			(303.30)
YW and Recycling @	15.00%									(67.82)		(67.82)
YW and Recycling @	15.00%										(59.04)	(59.04)
YW Grass Clip Factor	32.00%	-9.29%	-11.40%	-11.78%	-12.00%	-10.00%	-13.00%	-15.00%	-11.65%	-15.00%	-15.00%	-12.18%
Net for Disposal		1,049.44	255.33	283.99	31.03	1,619.79	1,712.51	234.50	3,566.80	384.33	334.57	4,285.70
		68.16%	83.60%	86.24%	88.00%	73.30%	85.00%	85.00%	79.26%	85.00%	85.00%	80.16%
		2.823	2.823	2.541	2.541	2.7635						
Other & Process Residues												
WTE & Incineration								0.00	0.00			0.00
Ash	26.50%							0.00	0.00			0.00
Yard Wastes	2.50%	5.90	0.26	0.11	0.00	6.27	1.01	0.00	7.28			10.23
Recycling	5.00%	7.16	1.74	1.94	0.21	11.04	13.10	2.07	26.21			26.21
CDD Recycling	7.50%									5.09		5.09
ISW Recycling	7.50%										4.43	4.43
Gross for Disposal		1,062.50	257.33	286.04	31.24	1,637.10	1,726.61	236.57	3,600.29	389.41	339.00	4,331.66
		69.00%	84.26%	86.86%	88.60%	74.09%	85.70%	85.75%	80.00%	86.13%	86.13%	81.02%
		2.858	2.845	2.559	2.558	2.7930						
											18.98%	VR Gross

1. What if remainder of County Residential performed only half as well as Full Service Programs on recycling?

Full Service (+/-) Programs		1,333.98	93.35	69.47	1.39	1,498.18						
		86.64%	30.56%	21.10%	3.94%	67.80%						
Less Recycling (after YW) @	12.00%	(123.98)	(10.64)	(8.17)	(0.17)	(142.96)						
		-8.05%	-3.48%	-2.48%	-0.47%	-6.47%						
Other Residential Wastes		205.79	212.07	259.83	33.87	711.55						
0.5		13.36%	69.44%	78.90%	96.06%	32.20%						
Less Recycling (after YW) @	6.00%	(9.56)	(12.09)	(15.28)	(2.03)	(38.96)						
		-0.62%	-3.96%	-4.64%	-5.76%	-1.76%						
Total Recycling		(133.54)	(22.73)	(23.45)	(2.20)	(181.92)						
		-8.67%	-7.44%	-7.12%	-6.24%	-8.23%						
Net for Disposal after YW		1,059.01	267.42	299.27	33.06	1,658.75	1,712.51	234.50	3,605.76	384.33	334.57	4,324.66
		68.78%	87.56%	90.88%	93.76%	75.07%	85.00%	85.00%	79.26%	85.00%	85.00%	80.89%
Other & Process Residues												
GM WTE								0.00	0.00			0.00
Ash	26.50%							0.00	0.00			0.00
Yard Wastes	2.50%	6.27	0.34	0.15	0.00	6.77	1.01	0.00	7.28			7.28
Recycling	5.00%	6.68	1.14	1.17	0.11	9.10	13.10	2.07	24.26			24.26
CDD Recycling	7.50%									5.09		5.09
ISW Recycling	7.50%										4.43	4.43
Gross for Disposal		1,071.96	268.90	300.59	33.17	1,674.61	1,726.61	236.57	3,637.31	389.41	339.00	4,365.72
		69.62%	88.04%	91.28%	94.06%	75.78%	85.70%	85.75%	80.82%	86.13%	86.13%	81.66%
											18.34%	VR Gross

2. What if multiples performed only half as well as in What If 1? 0.5

Full Service (+/-) Programs		1,333.98	93.35	69.47	1.39	1,498.18						
		86.64%	30.56%	21.10%	3.94%	67.80%						
Less Recycling (after YW) @	12.00%	(123.98)	(10.64)	(4.08)	(0.08)	(138.79)						
		-8.05%	-3.48%	-1.24%	-0.24%	-6.28%						
Other Residential Wastes		205.79	212.07	259.83	33.87	711.55						
0.5		13.36%	69.44%	78.90%	96.06%	32.20%						
Less Recycling (after YW) @	6.00%	(9.56)	(12.09)	(7.64)	(1.02)	(30.31)						
		-0.62%	-3.96%	-2.32%	-2.88%	-1.37%						
Total Recycling		(133.54)	(22.73)	(11.72)	(1.10)	(169.10)						
		-8.67%	-7.44%	-3.56%	-3.12%	-7.65%						
Net for Disposal after YW		1,059.01	267.42	310.99	34.16	1,671.57	1,712.51	234.50	3,618.59	384.33	334.57	4,337.48
		68.78%	87.56%	94.44%	96.88%	75.65%	85.00%	85.00%	80.41%	85.00%	85.00%	81.13%
Other & Process Residues												
GM WTE												
Ash												
Yard Wastes	2.50%	6.27	0.34	0.15	0.00	6.77						
Recycling	5.00%	6.68	1.14	0.59	0.05	8.45						
CDD Recycling	7.50%											
ISW Recycling	7.50%											
Gross for Disposal		1,071.96	268.90	311.73	34.21	1,686.80	1,726.61	236.57	3,649.99	389.41	339.00	4,378.40
		69.62%	88.04%	94.66%	97.04%	76.33%	85.70%	85.75%	81.10%	86.13%	86.13%	81.90%
											18.10%	VR Gross

Exhibit 25

However, it is not realistic to assume that all residents would achieve the same VR results as those residing in the full-service municipalities. The authority municipal programs are mature and well supported. Therefore, all residents not served by municipally sponsored full service programs (mixed wastes, recyclables, and yard wastes), were assumed to be performing at a 50% level. This reduces the countywide VR rate to 18.34%. Again, adjustments seem warranted for multi-family achievement levels. Therefore, it was finally assumed that all multi-family residents not served by municipal programs would be performing at a 25% rate. This produces a countywide VR rate of 18.10%. The small overall reductions caused by these assumption sets result from the fairly small percentage that residential wastes are of the total stream, about 41%.

With no ready access to data on the non-residential waste stream generators, it is extremely difficult to estimate with confidence the VR rates currently being achieved. Many have questioned the flat 15% assumption previously used as being too low. Therefore, the Keep America Beautiful / Franklin Associates, Ltd. Recycling Report of September, 1994 was examined in detail. From a national perspective, it is projected that VR rates of 29.5% are achieved by the commercial and industrial MSW generators. Adjusting the analysis matrix accordingly increases the VR rates to approximately 24% as displayed in the following Table.

Projected Volume Reduction Achievement Levels - 1998

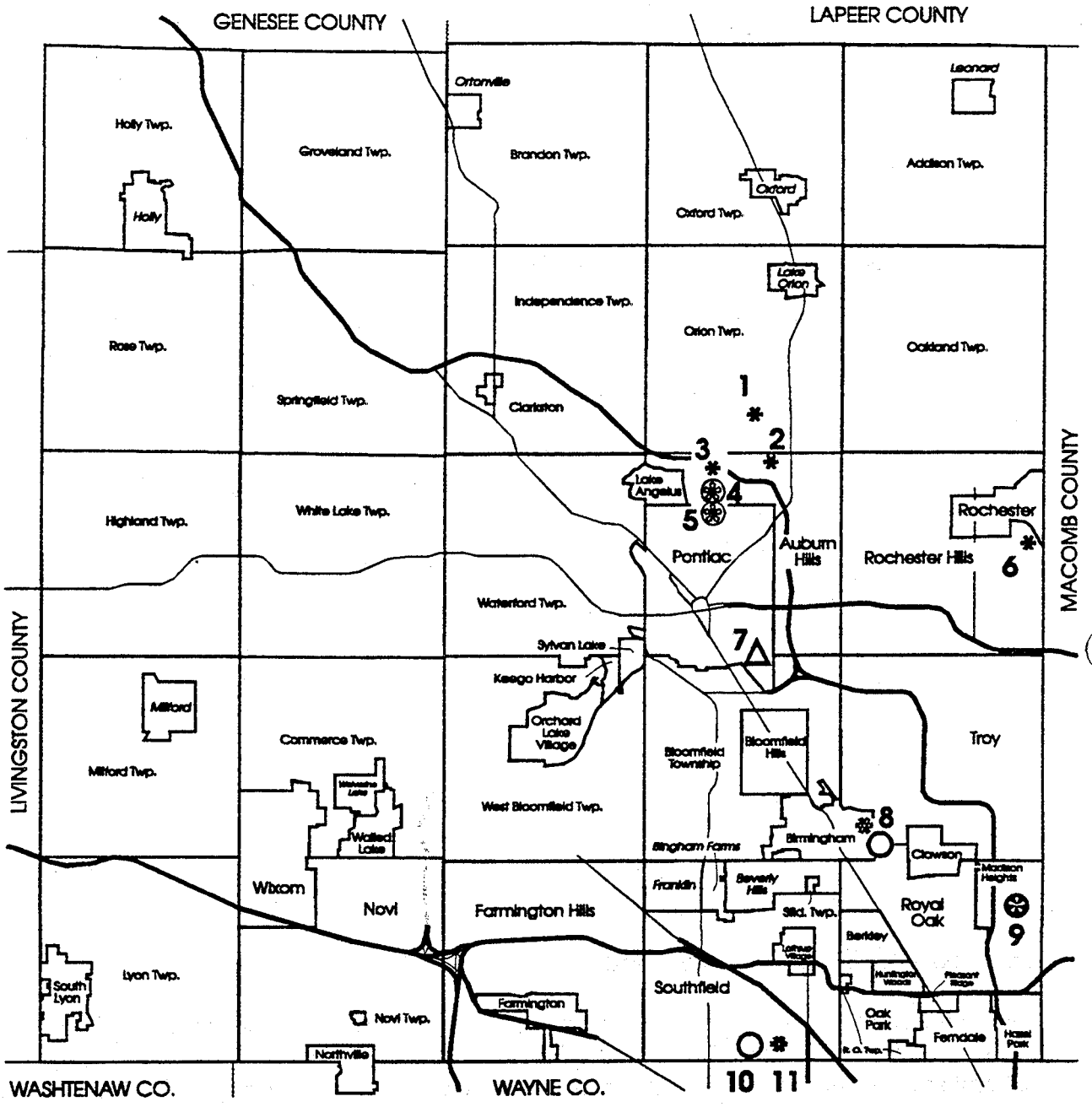
Waste Stream Category	Low	High
Single Family Residential MSW	27.33%	27.33%
Multi-family Residential MSW	5.11%	5.11%
Commercial MSW	14.30%	28.07%
Industrial MSW	14.25%	28.02%
All MSW	18.90%	25.91%
Construction & Demolition Debris	13.87%	13.87%
Industrial Special Wastes	13.87%	13.87%
All Act 451 Solid Wastes	18.10%	24.00%

From this type of analysis, it may be projected that Oakland County as a whole, during 1998 will be achieving volume reduction on the order of 18 to 24% on a weight basis.

Solid Waste "Disposal Area" Facilities

Oakland County's solid waste stream is currently handled, processed and disposed of at a number of Act 451 designated facilities in several different counties as described below. No current flow control arrangements wherein wastes or source separated materials are required to be delivered to specific facilities exist other than those contained within voluntary contractual arrangements by the municipalities. Disposal area facilities that are designated in Oakland County's existing approved solid waste management plan are shown on Exhibit 26, not all of which are currently operational.

Oakland County's Designated Act 451 Solid Waste Facilities - December, 1997



Legend

- * Type II Landfill
- △ Waste-to-Energy Plant
- ⊛ Act 641 Disposal Area
- ❁ Material Recovery Facility
- ⊛ MRF and Transfer Station
- O Transfer Station

RJS PE, 12-30-9.

Exhibit 26

Transfer Stations:

Allied Waste Industries, Eight Mile Road, City of Southfield (#10)
SOCRRA transfer station, Coolidge Highway, City of Troy (#8)
SOCRRA transfer station, John R Road, City of Madison Heights (#9) *

* The SOCRRA transfer station site on John R in Madison Heights is actually designated as an all-purpose "Disposal Area" site except that it may not be used for a sanitary landfill, an incinerator or a waste-to-energy plant.

Processing Facilities or Material Recovery Facilities (MRF):

RRRASOC MRF, Eight Mile Road, City of Southfield (#11)
SOCRRA MRF, Coolidge Highway, City of Troy (#8)

Type II Landfills:

Collier Road, Collier Road, City of Pontiac (#3)
Eagle Valley, Silverbell Road, Orion Township (#1)
Oakland Heights, Brown Road, City of Auburn Hills (#2)
SOCRRA, School Road, City of Rochester Hills (#6)
Citizens Disposal, Mundy Township, Genesee County
Brent Run, Montrose Township, Genesee County
Pioneer Rock, Burnside Township, Lapeer County
Arbor Hills, Salem Township, Washtenaw County
Sauk Trail Hills, Canton Township, Wayne County
Woodland Meadows, Van Buren Township, Wayne County
Carleton Farms, Salem Township, Wayne County
Riverview, City of Riverview, Wayne County
Ford Motor Allen Park, City of Allen Park, Wayne County
Pine Tree Acres, Lenox Township, Macomb County
Hastings Sanitary, Hastings Township, Barry County
McGill Road, Blackman Township, Jackson County
Venice Park, Venice Township, Shiawassee County
Adrian Landfill, Palmyra township, Lenawee County

Type III Landfills:

Wayne Disposal - Rockwood landfill, Berlin Township, Monroe County
Sibley Quarry, Monguagon Township, Wayne County
Salzburg Road, Midland Township, Midland County

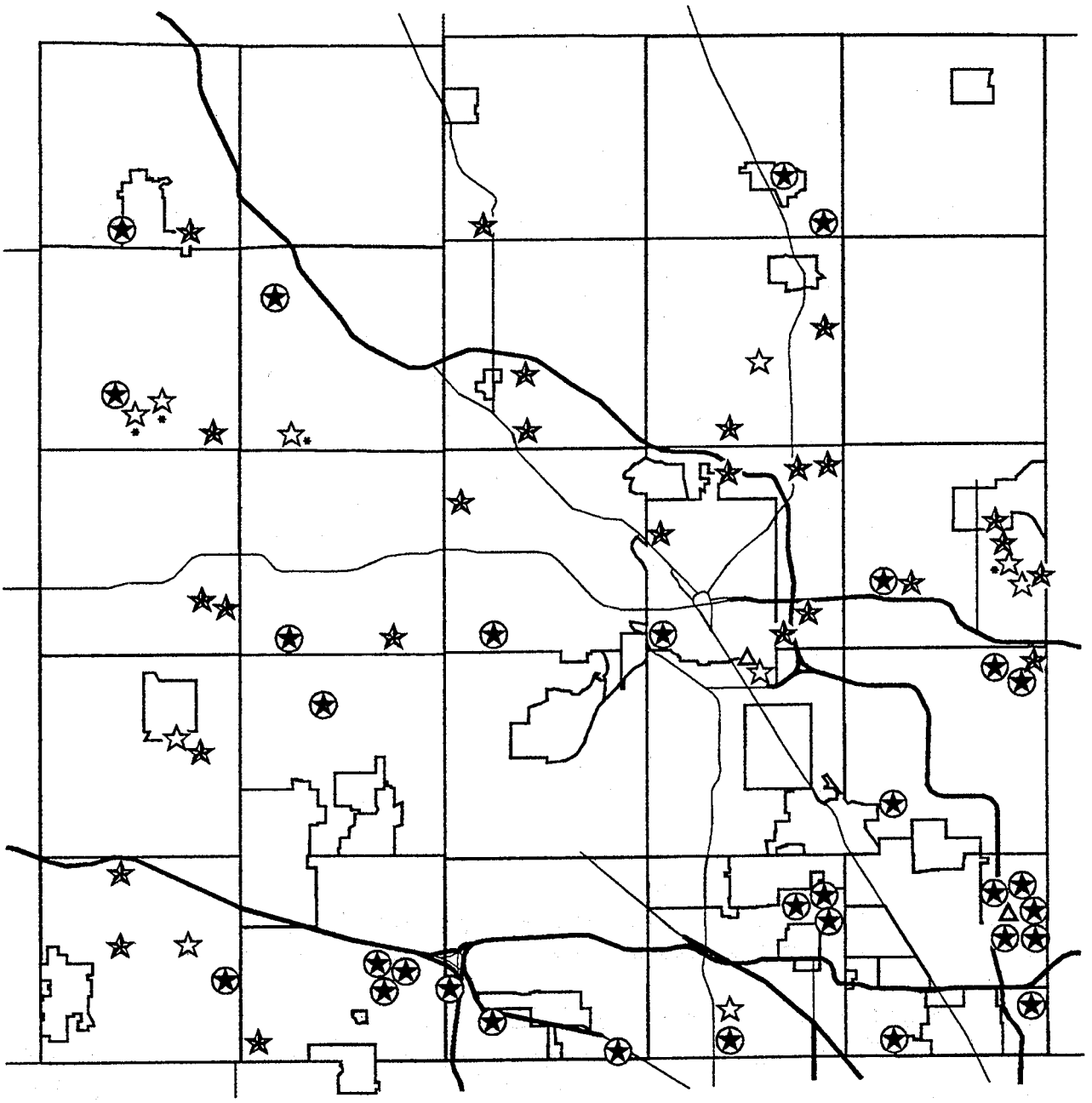
Incinerators and Waste-to-Energy (WTE) Plants:

Greater Detroit Resource Recovery Authority, City of Detroit, Wayne County

Other sites are currently designated in the existing Oakland County solid waste management plan but are not listed above since these facilities are not currently operating. These include combination MRF and transfer station designations of two sites on Highwood in the City of Pontiac owned by Allied Waste Industries (#4) and Waste Management (#5), both of which have yet to be constructed and the WTE designation of the GM Truck and Coach site on South Boulevard (#7) in the City of Pontiac which ceased operations in the spring of 1997.

Closed Waste Disposal Facilities
Oakland County, Michigan

May, 1998



Formerly Licensed Landfills - 26
Pre-Act 87 Landfills and Dumps - 31
Other Fill Sites - 10
Incinerators - 2

* Superfund Locations

RJS PE, 4-30-98

Exhibit 27

The County's waste stream is also handled at a variety of other non-licensed facilities such as recycling drop-off centers, small transfer operations and pure source separated MRFs, none of which require Act 451 designation. Although no inventory is kept of such facilities, the Report of Municipally Sponsored Solid Waste Programs - January 1, 1996 contained in the Appendix includes a listing of some drop-off facilities.

Numerous closed landfills, dump sites, and incineration plant sites exist in Oakland County. Some remain as reminders of past poor practices. More than 65 landfill and dump sites (used since World War II) exist as shown in the exhibits and anecdotes frequently are brought up by the old timers that reveal the potential for adding other sites to the list. These are shown in Exhibits 27 and 28. The monitoring of the closed facilities is handled by the Michigan Department of Environmental Quality. Funding for proper closure of sites where environmental problems have occurred is difficult and litigation has resulted in numerous instances. Generally, current program levels and efforts at the state level are accepted by the public as adequate.

Inter-County Flows of Act 451 Wastes:

Michigan's Act 451 provides that wastes may be disposed of at Act 451 facilities in other counties if the export and import of the wastes are explicitly authorized in the approved solid waste management plans of the counties involved. Oakland County currently authorizes the export of wastes to all Michigan counties and to other states and countries. Imports into Oakland County are also authorized from a select list of generally contiguous counties. Additionally, the Oakland County Board of Commissioners has, since adoption of the 1994 plan amendments which established the inter-county flow authorizations, adopted a broader free market, no inter-county flow restriction stance which points the way for a release of current import restrictions.

The Future Waste Stream:

The future waste stream can be projected based upon the population and employment data provided through SEMCOG's most recent Regional Development Forecast and upon the basic waste generation assumptions previously shown in Exhibit 14. Additionally, the projections must be based upon various volume reduction scenarios. First, it is assumed that currently observed volume reduction efforts will not be improved upon as a worst case scenario. Details of this projection are shown on Exhibit 29.

First, broad brush impressions can quickly be gained from these future projections using the waste stream data prior to calculating the impact of volume reduction efforts. Once again examining the county from a geographic perspective, the 61 municipalities were combined together into groups approximating the original 25 townships. The top ten townships from the 1998 sample remain the same in 2020 with minor realignments in their order. As shown, Pontiac township moves to the third position in terms of overall waste generation per net usable square mile from fourth position in 1998 while it remained number one in terms of ISW generation. Additionally, Avon township moves to the sixth position from number seven and Novi township moves to ninth from tenth. The Year 2020 rankings are shown in the table following.

Solid Waste Database
Oakland County, Michigan

lf_old.wk4
04/30/98

Closed Landfill and Dump Sites

No.	Landfill Name or Operator	Township	Section	Category	Comment
1	Adelphian Academy	Holly	33	Pre-87	
2	Holly Village & Township L.F.	Holly	35	87-641	
3	Brandon-Groveland-Independence L.F.	Brandon	32	87-641	
4	Village of Oxford L.F.	Oxford	26	Pre-87	
5	Unknown	Oxford	36	Pre-87	
6	Cemetery Dumpsite	Rose	27	Illegal	Superfund Site
7	Elias Williams	Rose	28	Pre-87	
8	Ford-Dorsey	Rose	28	Illegal	Superfund Site
9	Marlowe & Sons	Rose	36	87-641	
10	Springfield Township L.F.	Springfield	8	Pre-87	
11	Nickson Property	Springfield	32	Illegal	Superfund Site
12	Powell & Sons	Independence	21	87-641	
13	Dervage L.F.	Independence	33	87-641	
14	Pontiac-Orion Authority	Orion	13	87-641	
15	Bald Mountain Recreation Area L.F.	Orion	22	Other	
16	Garvaglia L.F.	Orion	33	87-641	
17	GCW L.F.	Highland	25	87-641	
18	Willard Brothers L.F.	Highland	25	87-641	
19	Chapel's	White Lake	32	Pre-87	
20	Chapel's L.F.	White Lake	35	87-641	
21	Oakland Disposal	Waterford	7	87-641	
22	Waterford Township L.F.	Waterford	32	Pre-87	
23	Oakland County Road Commission L.F.	Pontiac	1	87-641	
24	SANICEM	Pontiac	2	87-641	
25	Industrial Serv. of Am.	Pontiac	4	87-641	
26	Pontiac City L.F.	Pontiac	18	87-641	
27	Northeast L.F.	Pontiac	26	87-641	
28	Pontiac City L.F.	Pontiac	31	Pre-87	
29	Saltarelli L.F.	Pontiac	35	87-641	
30	City of Rochester L.F.	Avon	14	87-641	
31	Six Star Ltd.	Avon	24	87-641	
32	Sandfill 1 & 2	Avon	24	87-641	
33	Kingston Development	Avon	24	Other	
34	Jones & Laughton L.F.	Avon	24	Other	Superfund Site
35	Christiansen Disposal	Avon	29	Pre-87	
36	Veterans' Disposal	Avon	29	87-641	
37	Milford Village L.F.	Milford	14	Other	
38	Milford Township L.F.	Milford	14	87-641	
39	Oakland County Road Commission	Commerce	9	Pre-87	
40	Pontiac GMC Truck & Bus	Bloomfield	3	Other	
41	Northeast L.F.	Troy	1	87-641	
42	Fons L.F.	Troy	1	Pre-87	
43	Walker Sand & Gravel L.F.	Troy	2	Pre-87	
44	City of Birmingham L.F.	Troy	29	Pre-87	
45	Lyon Development - BFI	Lyon	4	87-641	
46	Holloway Sand & Gravel	Lyon	14	Illegal	
47	Lyon Township L.F.	Lyon	16	87-641	
48	Lyon Township Dump Site	Lyon	24	Pre-87	
49	Munn Contractors	Novi	23	Pre-87	
50	Munn Contractors	Novi	23	Pre-87	
51	Munn Contractors	Novi	23	Pre-87	
52	Anderson L.F.	Novi	31	87-641	
53	Unknown	Farmington	19	Pre-87	
54	Munn Contractors	Farmington	29	Pre-87	
55	Farentino L.F.	Farmington	36	Pre-87	
56	Aggatis L.F.	Southfield	11	Pre-87	
57	Fons Trailer Park L.F.	Southfield	12	Pre-87	
58	Fons Trailer Park L.F.	Southfield	12	Pre-87	
59	Anderson Barrel L.F.	Southfield	28	Other	
60	Plum Hollow Golf Course L.F.	Southfield	33	Pre-87	
61	Unknown	Royal Oak	11	Pre-87	
62	Unknown	Royal Oak	12	Pre-87	
63	SOCRRA	Royal Oak	12	Pre-87	
64	Unknown	Royal Oak	13	Pre-87	
65	City of Detroit L.F.	Royal Oak	13	Pre-87	
66	City of Detroit L.F.	Royal Oak	25	Pre-87	
67	City of Detroit L.F.	Royal Oak	32	Pre-87	

Categories
Pre-87 = License not required
87-641 = Act 87 or 641 licensed
Other = Special or single purpose disposal sites

Data Sources
Oakland County Planning Division
Health Division - Environmental Health Services
Michigan Department of Environmental Quality

Exhibit 28

Oakland County (wo Northville)

Baseline Volume Reduction Achievement Levels - 1998 Volume Reduction Efforts Held Constant
Projected Disposal Needs

rdf_loc.wk4
10/25/99
10:34

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Population & Employment Stats															
Population	1,172,276	1,180,546	1,188,817	1,196,842	1,204,868	1,212,893	1,220,919	1,228,944	1,236,968	1,244,988	1,253,009	1,261,031	1,269,053	1,276,433	1,287,813
Total Employment	780,855	793,009	805,163	815,160	825,158	835,155	845,153	855,150	860,580	866,011	871,441	876,872	882,302	882,668	883,035
Manufacturing Employment	117,336	116,710	116,084	116,986	117,849	118,731	119,614	120,496	120,877	121,258	121,638	122,019	122,400	121,490	120,579
Waste Stream wo VR (tpd)															
Municipal Solid Waste (MSW)															
Residential	2,209.74	2,225.33	2,240.92	2,256.05	2,271.18	2,286.30	2,301.43	2,316.56	2,331.68	2,346.80	2,361.92	2,377.04	2,392.16	2,409.85	2,427.53
Commercial	2,014.72	2,056.32	2,097.91	2,128.47	2,159.03	2,189.59	2,220.14	2,250.70	2,269.18	2,287.65	2,306.12	2,324.60	2,343.07	2,346.92	2,350.77
Industrial	275.89	267.91	259.94	257.77	255.59	253.42	251.24	249.07	245.64	242.21	238.78	235.35	231.92	228.57	225.22
Total MSW	4,500.35	4,549.56	4,598.77	4,642.28	4,685.79	4,729.30	4,772.81	4,816.33	4,846.49	4,876.66	4,906.82	4,936.99	4,967.16	4,985.34	5,003.52
# / capita / day (MSW only)	7.678	7.708	7.737	7.758	7.778	7.798	7.818	7.838	7.836	7.834	7.832	7.830	7.828	7.800	7.772
Const. & Demo. Debris (CDD)	452.15	458.88	461.61	465.78	469.95	474.12	478.30	482.47	485.58	488.70	491.81	494.92	498.04	500.29	502.55
Ind. Special Wastes (ISW)	393.61	382.23	370.86	367.76	364.65	361.55	358.45	355.34	350.45	345.56	340.66	335.77	330.88	326.10	321.32
Total Waste Stream wo VR	5,348.11	5,388.67	5,431.24	5,475.82	5,520.40	5,564.98	5,609.56	5,654.14	5,682.52	5,710.91	5,739.30	5,767.68	5,796.07	5,811.73	5,827.39
# / capita / day (total Act 451)	9.121	9.129	9.137	9.150	9.163	9.176	9.189	9.202	9.188	9.174	9.161	9.148	9.134	9.092	9.050
Total MSW with VR (tpd)															
MSW % reductions	19.59%	19.57%	19.56%	19.55%	19.53%	19.52%	19.51%	19.50%	19.50%	19.50%	19.50%	19.50%	19.50%	19.52%	19.54%
MSW w VR	3,618.64	3,659.01	3,699.38	3,734.93	3,770.49	3,806.06	3,841.64	3,877.23	3,901.46	3,925.68	3,949.91	3,974.14	3,998.36	4,012.18	4,025.98
Less Incineration	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Net MSW	3,618.64	3,659.01	3,699.38	3,734.93	3,770.49	3,806.06	3,841.64	3,877.23	3,901.46	3,925.68	3,949.91	3,974.14	3,998.36	4,012.18	4,025.98
CDD % reductions	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%
CDD w VR	384.33	388.35	392.37	395.91	399.46	403.00	406.55	410.10	412.74	415.39	418.04	420.69	423.33	425.25	427.17
ISW % reductions	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%
ISW w VR	334.57	324.90	315.23	312.59	309.95	307.32	304.68	302.04	297.88	293.72	289.56	285.41	281.25	277.18	273.12
Total Waste Stream w VR	4,337.53	4,372.26	4,406.98	4,443.44	4,479.90	4,516.38	4,552.87	4,589.37	4,612.08	4,634.80	4,657.51	4,680.23	4,702.94	4,714.61	4,726.27
Apparent VR Achievement Level	18.87%	18.86%	18.86%	18.85%	18.85%	18.84%	18.84%	18.83%	18.84%	18.84%	18.85%	18.85%	18.86%	18.88%	18.90%
Process Residues															
Composting	6.96	7.02	7.08	7.13	7.18	7.24	7.29	7.34	7.39	7.44	7.49	7.54	7.59	7.64	7.69
Recycling	23.62	23.89	24.16	24.40	24.64	24.88	25.12	25.36	25.51	25.66	25.81	25.97	26.12	26.19	26.25
CDD	5.09	5.14	5.19	5.24	5.29	5.33	5.38	5.43	5.48	5.50	5.53	5.57	5.60	5.63	5.65
ISW	4.43	4.30	4.17	4.14	4.10	4.07	4.03	4.00	3.94	3.89	3.83	3.78	3.72	3.67	3.61
Incinerator Ash	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sub-total, Process Residues	40.09	40.34	40.60	40.90	41.21	41.52	41.82	42.13	42.31	42.49	42.67	42.85	43.03	43.12	43.21
Total Disposal Needs	4,377.62	4,412.60	4,447.58	4,484.34	4,521.11	4,557.90	4,594.69	4,631.49	4,654.39	4,677.29	4,700.19	4,723.08	4,745.98	4,757.74	4,769.49
Actual VR Achievement Level	18.12%	18.11%	18.11%	18.11%	18.10%	18.10%	18.09%	18.09%	18.09%	18.10%	18.11%	18.11%	18.12%	18.14%	18.15%
(not including incineration)	18.12%	18.11%	18.11%	18.11%	18.10%	18.10%	18.09%	18.09%	18.09%	18.10%	18.11%	18.11%	18.12%	18.14%	18.15%
Annual Bankyards															
MSW	1,997,944	2,020,228	2,042,512	2,062,136	2,081,760	2,101,400	2,121,041	2,140,687	2,154,062	2,167,437	2,180,811	2,194,186	2,207,559	2,215,187	2,222,810
Ash	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total, Type II	1,997,944	2,020,228	2,042,512	2,062,136	2,081,760	2,101,400	2,121,041	2,140,687	2,154,062	2,167,437	2,180,811	2,194,186	2,207,559	2,215,187	2,222,810
CDD	142,136	143,622	145,109	146,420	147,732	149,044	150,355	151,667	152,646	153,625	154,604	155,583	156,562	157,271	157,980
ISW	141,410	137,323	133,237	132,122	131,007	129,892	128,777	127,662	125,904	124,146	122,388	120,630	118,873	117,156	115,439
Sub-total, Type III	283,546	280,946	278,345	278,542	278,739	278,935	279,132	279,329	278,550	277,771	276,992	276,213	275,434	274,427	273,420
Grand Total	2,281,491	2,301,174	2,320,858	2,340,678	2,360,504	2,380,336	2,400,173	2,420,015	2,432,612	2,445,208	2,457,803	2,470,399	2,482,993	2,489,613	2,496,230
Annual Gateyards															
MSW	3,995,888	4,040,457	4,085,025	4,124,273	4,163,531	4,202,801	4,242,082	4,281,373	4,308,124	4,334,874	4,361,623	4,388,371	4,415,119	4,430,373	4,445,621
Ash	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total, Type II	3,995,888	4,040,457	4,085,025	4,124,273	4,163,531	4,202,801	4,242,082	4,281,373	4,308,124	4,334,874	4,361,623	4,388,371	4,415,119	4,430,373	4,445,621
CDD	284,272	287,245	290,218	292,841	295,464	298,087	300,710	303,334	305,291	307,249	309,207	311,165	313,123	314,542	315,960
ISW	141,410	137,323	133,237	132,122	131,007	129,892	128,777	127,662	125,904	124,146	122,388	120,630	118,873	117,156	115,439
Sub-total, Type III	425,683	424,568	423,454	424,962	426,471	427,979	429,487	430,995	431,196	431,396	431,596	431,796	431,996	431,698	431,400
Grand Total	4,421,571	4,465,025	4,508,479	4,549,235	4,590,002	4,630,780	4,671,569	4,712,369	4,739,319	4,766,269	4,793,218	4,820,167	4,847,114	4,862,071	4,877,021
Gateyards / Bankyard	1.938	1.940	1.943	1.944	1.945	1.945	1.946	1.947	1.948	1.949	1.950	1.951	1.952	1.953	1.954
Pounds / Bankyard	1,401	1,400	1,399	1,399	1,398	1,398	1,397	1,397	1,397	1,396	1,396	1,396	1,395	1,395	1,395
Pounds / Gateyard	723	721	720	720	719	719	718	717	717	716	716	715	715	714	714

Exhibit 29

Oakland County (wo Northville)

Aggressive Volume Reduction Achievement Levels to Meet Oakland County's Year 2010 Goal Level
Projected Disposal Needs

rdf_loc.wk4
10/25/99
10:36

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Population & Employment Stats															
Population	1,172,276	1,180,548	1,188,817	1,196,842	1,204,868	1,212,893	1,220,919	1,228,944	1,236,966	1,244,988	1,253,009	1,261,031	1,269,053	1,276,433	1,287,813
Total Employment	780,855	793,009	805,163	815,160	825,158	835,155	845,153	855,150	860,580	866,011	871,441	876,872	882,302	882,668	883,035
Manufacturing Employment	117,336	116,710	116,084	116,966	117,849	118,731	119,614	120,496	120,877	121,258	121,638	122,019	122,400	121,490	120,579
Waste Stream wo VR (tpd)															
Municipal Solid Waste (MSW)															
Residential	2,209.74	2,225.33	2,240.92	2,256.05	2,271.18	2,286.30	2,301.43	2,316.56	2,331.68	2,346.80	2,361.92	2,377.04	2,392.16	2,409.85	2,427.53
Commercial	2,014.72	2,058.32	2,087.91	2,128.47	2,159.03	2,189.59	2,220.14	2,250.70	2,269.18	2,287.65	2,306.12	2,324.60	2,343.07	2,346.92	2,350.77
Industrial	275.89	287.91	259.94	257.77	255.59	253.42	251.24	249.07	245.64	242.21	238.78	235.35	231.92	228.57	225.22
Total MSW	4,500.35	4,549.56	4,588.77	4,642.28	4,685.79	4,729.30	4,772.81	4,816.33	4,846.49	4,876.66	4,906.82	4,936.99	4,967.16	4,985.34	5,003.52
# / capita / day (MSW only)	7.678	7.708	7.737	7.758	7.778	7.798	7.818	7.838	7.836	7.834	7.832	7.830	7.828	7.800	7.772
Const. & Demo. Debris (CDD)	452.15	456.88	461.61	465.78	469.95	474.12	478.30	482.47	485.58	488.70	491.81	494.92	498.04	500.29	502.55
Ind. Special Wastes (ISW)	393.61	382.23	370.86	367.76	364.65	361.55	358.45	355.34	350.45	345.56	340.66	335.77	330.88	328.10	321.32
Total Waste Stream wo VR	5,346.11	5,388.67	5,431.24	5,475.82	5,520.40	5,564.98	5,609.56	5,654.14	5,682.52	5,710.91	5,739.30	5,767.68	5,796.07	5,811.73	5,827.39
# / capita / day (total Act 451)	9.121	9.129	9.137	9.150	9.163	9.176	9.189	9.202	9.188	9.174	9.161	9.148	9.134	9.092	9.050
Total MSW with VR (tpd)															
MSW % reductions	19.59%	19.57%	19.56%	20.99%	22.43%	23.86%	25.28%	26.73%	27.75%	28.78%	29.81%	30.83%	31.86%	31.86%	31.86%
MSW w VR	3,618.64	3,659.01	3,699.38	3,667.80	3,634.96	3,600.88	3,565.55	3,528.97	3,501.37	3,473.16	3,444.32	3,414.86	3,384.79	3,397.21	3,409.62
Less Incineration	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Net MSW	3,618.64	3,659.01	3,699.38	3,667.80	3,634.96	3,600.88	3,565.55	3,528.97	3,501.37	3,473.16	3,444.32	3,414.86	3,384.79	3,397.21	3,409.62
CDD % reductions	15.00%	15.00%	15.00%	17.00%	19.00%	21.00%	23.00%	25.00%	26.50%	28.00%	29.50%	31.00%	32.50%	32.50%	32.50%
CDD w VR	384.33	388.35	392.37	386.26	380.16	374.06	367.95	361.85	356.72	351.58	346.45	341.31	338.18	337.70	339.22
ISW % reductions	15.00%	15.00%	15.00%	17.00%	19.00%	21.00%	23.00%	25.00%	26.50%	28.00%	29.50%	31.00%	32.50%	32.50%	32.50%
ISW w VR	334.57	324.90	315.23	305.49	295.74	286.00	276.25	266.51	257.87	249.24	240.61	231.98	223.34	220.12	216.89
Total Waste Stream w VR	4,337.53	4,372.26	4,406.98	4,359.55	4,310.86	4,260.93	4,209.76	4,157.33	4,115.96	4,073.98	4,031.37	3,988.15	3,944.31	3,955.02	3,965.74
Apparent VR Achievement Level	18.87%	18.86%	18.86%	20.39%	21.91%	23.43%	24.95%	26.47%	27.57%	28.66%	29.76%	30.85%	31.95%	31.95%	31.95%
Process Residues															
Composting	6.96	7.02	7.08	7.13	7.18	7.24	7.29	7.34	7.39	7.44	7.49	7.54	7.59	7.64	7.69
Recycling	23.62	23.89	24.16	27.88	31.60	35.33	39.05	42.77	45.58	48.38	51.19	53.99	56.80	56.93	57.07
CDD	5.09	5.14	5.19	5.96	6.73	7.50	8.28	9.05	9.66	10.28	10.90	11.52	12.14	12.19	12.25
ISW	4.43	4.30	4.17	4.67	5.17	5.67	6.16	6.66	6.94	7.22	7.50	7.78	8.07	7.95	7.83
Incinerator Ash	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sub-total, Process Residues	40.09	40.34	40.60	45.64	50.69	55.73	60.78	65.82	69.58	73.33	77.08	80.84	84.59	84.72	84.85
Total Disposal Needs	4,377.62	4,412.60	4,447.58	4,405.19	4,361.55	4,316.67	4,270.53	4,223.15	4,185.54	4,147.31	4,108.46	4,068.99	4,028.90	4,039.74	4,050.58
Actual VR Achievement Level	18.12%	18.11%	18.11%	19.55%	20.99%	22.43%	23.87%	25.31%	26.34%	27.38%	28.42%	29.45%	30.49%	30.49%	30.49%
(not including incineration)	18.12%	18.11%	18.11%	19.55%	20.99%	22.43%	23.87%	25.31%	26.34%	27.38%	28.42%	29.45%	30.49%	30.49%	30.49%
Annual Bankyards															
MSW	1,997,944	2,020,228	2,042,512	2,027,287	2,011,378	1,994,785	1,977,509	1,959,550	1,946,002	1,932,116	1,917,891	1,903,327	1,888,425	1,895,325	1,902,226
Ash	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total, Type II	1,997,944	2,020,228	2,042,512	2,027,287	2,011,378	1,994,785	1,977,509	1,959,550	1,946,002	1,932,116	1,917,891	1,903,327	1,888,425	1,895,325	1,902,226
CDD	142,136	143,622	145,109	143,163	141,216	139,270	137,324	135,377	133,729	132,081	130,432	128,784	127,135	127,711	128,287
ISW	141,410	137,323	133,237	129,379	125,522	121,665	117,808	113,951	110,467	106,982	103,498	100,014	96,530	95,136	93,742
Sub-total, Type III	283,546	280,946	278,345	272,542	266,739	260,935	255,132	249,328	244,196	239,063	233,930	228,798	223,665	222,847	222,029
Grand Total	2,281,491	2,301,174	2,320,856	2,299,829	2,278,116	2,255,720	2,232,641	2,208,878	2,190,198	2,171,178	2,151,822	2,132,125	2,112,090	2,118,173	2,124,255
Annual Gateyards															
MSW	3,995,888	4,040,457	4,085,025	4,054,574	4,022,756	3,989,571	3,955,019	3,919,100	3,892,005	3,864,232	3,835,782	3,806,655	3,776,850	3,790,650	3,804,451
Ash	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total, Type II	3,995,888	4,040,457	4,085,025	4,054,574	4,022,756	3,989,571	3,955,019	3,919,100	3,892,005	3,864,232	3,835,782	3,806,655	3,776,850	3,790,650	3,804,451
CDD	284,272	287,245	290,218	286,325	282,433	278,540	274,647	270,755	267,458	264,161	260,864	257,567	254,271	255,422	256,574
ISW	141,410	137,323	133,237	129,379	125,522	121,665	117,808	113,951	110,467	106,982	103,498	100,014	96,530	95,136	93,742
Sub-total, Type III	425,683	424,568	423,454	415,705	407,955	400,205	392,455	384,706	377,925	371,144	364,363	357,582	350,801	350,559	350,317
Grand Total	4,421,571	4,465,025	4,508,479	4,470,278	4,430,711	4,389,776	4,347,474	4,303,805	4,269,929	4,235,376	4,200,145	4,164,238	4,127,650	4,141,209	4,154,768
Gateyards / Bankyard	1.936	1.940	1.943	1.944	1.945	1.946	1.947	1.948	1.950	1.951	1.952	1.953	1.954	1.955	1.956
Pounds / Bankyard	1,401	1,400	1,399	1,398	1,398	1,397	1,396	1,396	1,395	1,394	1,394	1,393	1,393	1,392	1,392
Pounds / Gateyard	723	721	720	719	719	718	717	716	716	715	714	713	713	712	712

Exhibit 30

Approximate Township	Overall Waste Density Factor - 2020	Industrial Special Wastes Density Factor - 2020
1. Royal Oak (1)	33.1	1.1 - 3 (3)
2. Troy (2)	23.4	1.2 - 2 (2)
3. Pontiac (4)	22.7	3.9 - 1 (1)
4. Southfield (3)	19.3	0.5 - 7 (6)
5. Farmington (5)	16.3	0.7 - 5 (4)
6. Avon (7)	13.9	0.9 - 4 (5)
7. Bloomfield (6)	13.7	0.3 - 9 (10)
8. Waterford (8)	12.7	0.2 - 12 (12)
9. Novi (10)	10.8	0.5 - 6 (7)
10. West Bloomfield (9)	10.7	0.1 - 16 (16)

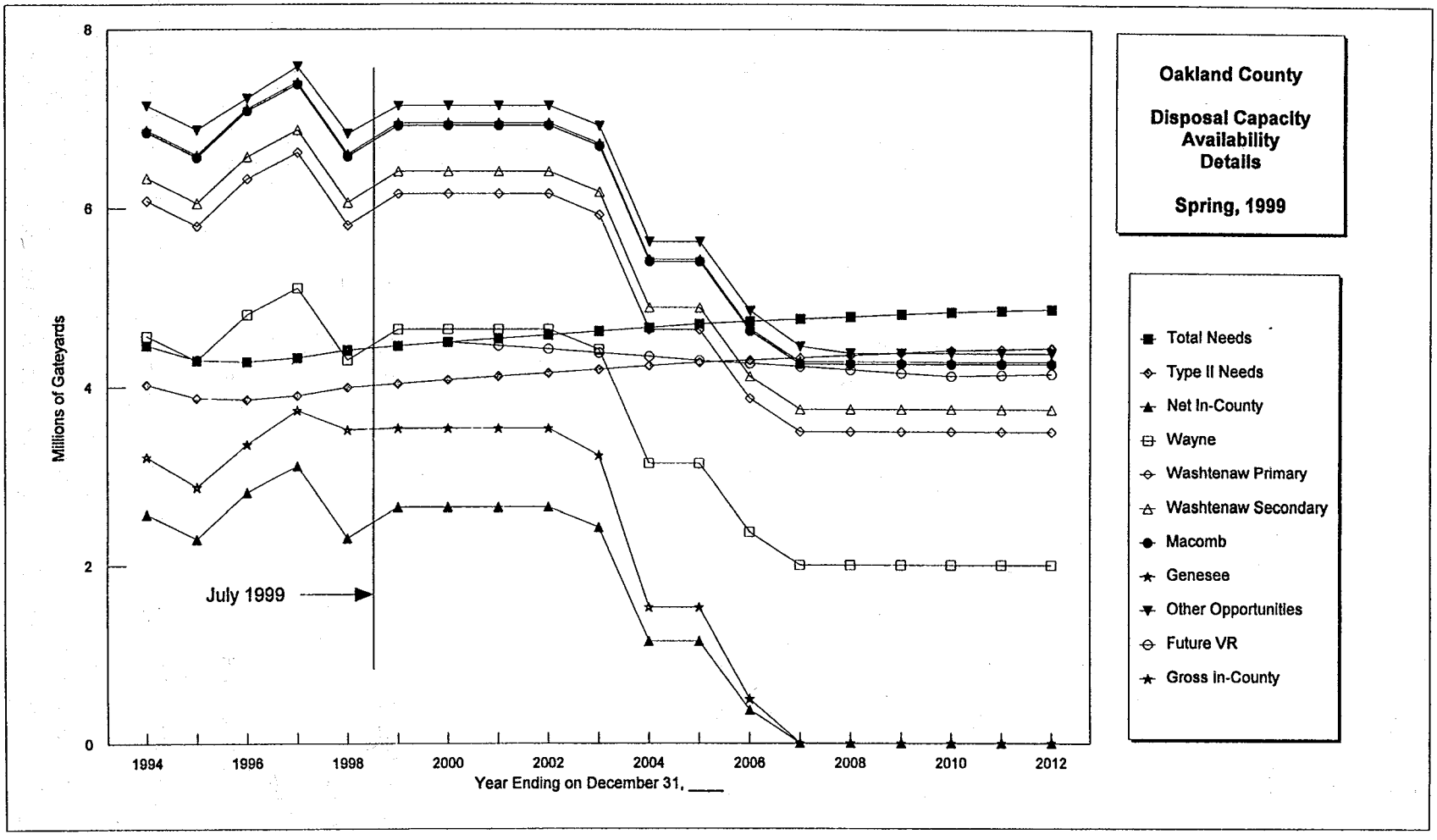
The overall waste generation rates of the three topmost 1998 units, Royal Oak, Troy and Southfield townships, declined slightly from the 1998 levels while all other areas increased. In terms of ISW generation, only Pontiac township increased in generation rates, six units dropped in waste generation while three units remained flat. Some caution has to be used when examining the ISW generations rates since it is based on the broad category of manufacturing employment and not upon specific manufacturing and/or industrial facilities.

Secondly, it may be assumed that the Plan's volume reduction goals are successfully achieved as a best case scenario. In the latter instance, the volume reduction scenarios shown in the table following are assumed to occur by the year 2010.

Waste Stream Category	Year 1998	Year 2010
Residential Yard Wastes	16.70%	16.70%
Residential Recycling	7.65%	15.00%
Commercial Yard Wastes	2.00%	2.00%
Commercial Recycling	13.00%	30.00%
Industrial Recycling	15.00%	32.00%
CDD Recycling	15.00%	32.50%
ISW Recycling	15.00%	32.50%
Net Totals After Residues	18.12%	30.49%

Exhibit 30 shows details of this best case volume reduction scenario. Although the total amount of waste generated prior to volume reduction efforts continues to increase since both population and employment are projected to smoothly increase over the next two decades, with achievement of the VR goals, the amount of wastes destined for disposal will decline by about 6.6% through 2010. Beyond that point in time, unless additional volume reduction achievement levels are

Exhibit 31



Principal Variables

Demonstrated Volume Reduction Achievement Levels			Region's Landfill Density Factor
2000 MSW VR	2000 CDD VR	2000 ISW VR	(Gateyards per Bankyard)
19.56%	15.00%	15.00%	1.940
	Imports as a % of available in-county capacity --->		25%

Annual gateyards from .....
Oakland County (wo Northville)
10/12/99 15:44

Export Opportunities in Millions of Gateyards

Wayne	2.000	Genesee	0.025
Washtenaw 1	1.500	Monroe	0.100
Washtenaw 2	0.250	Sanilac	0.000
Macomb	0.510	Others	0.099
	Year 2000 Total Export Opportunities		4.484

Chart Basis 4,465,025 99 gateyards

RJS, PE
10:56
10/15/99
99GYDREG.WK4

encountered, the total wastes destined for disposal will once again increase in magnitude.

The waste stream tonnage estimates are converted into annual landfill capacity requirements and are shown in bankyards. A bankyard is defined as a cubic yard of completed landfill volume which contains compacted wastes and a portion of daily cover. The density of each type of waste per bankyard is shown in Exhibit 14. High densities can be achieved in the large regional landfills, particularly those which are constructed in a high-rise mode. Lighter densities would be anticipated in the historically prevalent smaller low-rise landfill configurations. Additionally, the tonnage estimates are converted into annual gateyards. Gateyards are defined as the cubic yards of waste as delivered through the gate to the landfill. For a given tonnage of a certain type of waste, the number of gateyards delivered can vary considerably. This is basically a function of the type of delivery vehicle and the degree to which it is compacted into the vehicle. Although gateyards is a highly variable and suspect value, gateyards are used as a measure of imports and exports in most of the Michigan solid waste management plans where such flows are restricted.

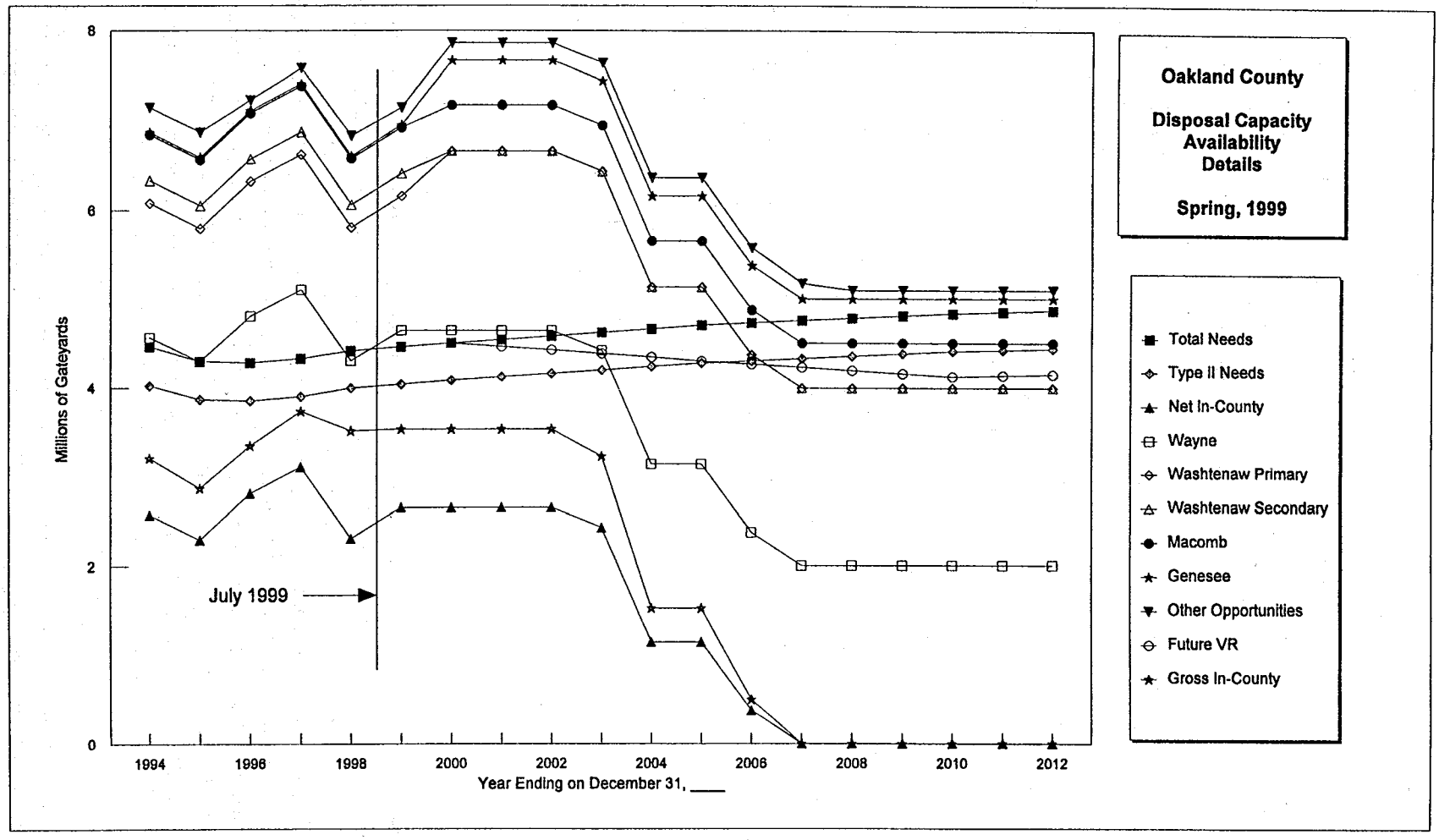
The Michigan Department of Environmental Quality has issued documents which summarize annual reports by landfill operators on the amount and point of origin of the wastes handled at that facility. The reports for fiscal years 1997 and 1998 are of specific interest since each contained rather complete information from all facility operators. These documents indicate that during the two year period from October 1, 1996 through September 30, 1998, that 8,918,662 gateyards of waste were generated within Oakland county. As may be seen from exhibits 29 and 30, the Oakland County waste stream estimates show 8,750,899 gateyards in 1997 and 1998, a value within 1.9% of the reported value. Given the wide variety of methods used to calculate the number of gateyards of waste as reported by the facility operators with many simply basing their reports on 3 gateyards per ton of wastes handled, it is believed that the projected values are an accurate representation of the Oakland County waste stream. It may be seen from the exhibits that Oakland County's gateyard projections show average weights in excess of 720 pounds per gateyard.

Future Disposal Capacity Availability:

Under current inter-county flow authorization levels, with current volume reduction achievement levels, with Oakland County landfills operating at their recent three year average intake levels, and with imports from elsewhere remaining at 25% of these total intake levels, Oakland County appears to have access to more than a sufficient amount of disposal capacity until some time during the year 2004 when some in-county landfill capacity will have been fully utilized. At that time, insufficient export opportunities exist and remaining in-county facilities are then presumed to increase their intake levels until capacity is reached. Under this theoretical scenario, sufficient disposal capacity would exist until approximately August, 2005. As certified in the 1999 Demonstration of Available Disposal Capacity effort, this date was more than 66 months from June 30, 1999 and the interim siting mechanism will not be called into action during calendar year 2000. Details of this analysis are contained in Reference Document #12.

With correction or adjustments to legal interpretations relating to permissible levels of exports from Oakland County to Wayne County (up to 2 million gateyards per year as has previously

Exhibit 32



Principal Variables

Demonstrated Volume Reduction Achievement Levels			Region's Landfill Density Factor
2000 MSW VR	2000 CDD VR	2000 ISW VR	(Gateyards per Bankyard)
19.56%	15.00%	15.00%	1.940

Imports as a % of available in-county capacity --->	25%

Annual gateyards from .....
Oakland County (wo Northville)
10/12/99 15:44

Export Opportunities in Millions of Gateyards

Wayne	2.000	Genesee	0.500
Washtenaw 1	2.000	Monroe	0.100
Washtenaw 2	0.000	Sanilac	0.000
Macomb	0.510	Others	0.099

Year 2000 Total Export Opportunities 5.209

Chart Basis 4,465,025 99 gateyards

RJS, PE
10:21
10/15/99
99GYDREG.WK4

been jointly agreed upon by the two counties), access to a sufficient amount of disposal capacity then appears to be available through the year 2006. However, by that time, all disposal capacity within Oakland County will have been utilized and the remaining approved export opportunities would not cover all of the County's needs if current volume reduction achievement levels were not dramatically improved upon. This is shown in Exhibit 31. Beyond 2006, and with no improvement in the current volume reduction achievement levels, the annual shortfalls in disposal capacity needs would run from 304,111 gateyards in 2007 to 489,899 gateyards in 2012. These shortfalls would represent 6.4% and 10.0% of the total disposal needs respectively.

Should Oakland County waste generators dramatically improve upon their volume reduction achievement levels and meet or exceed the year 2010 30% VR goal, the export opportunities (existing approved plus adjustment of the Wayne County values) would serve to some time beyond the end of the 10 year planning period.

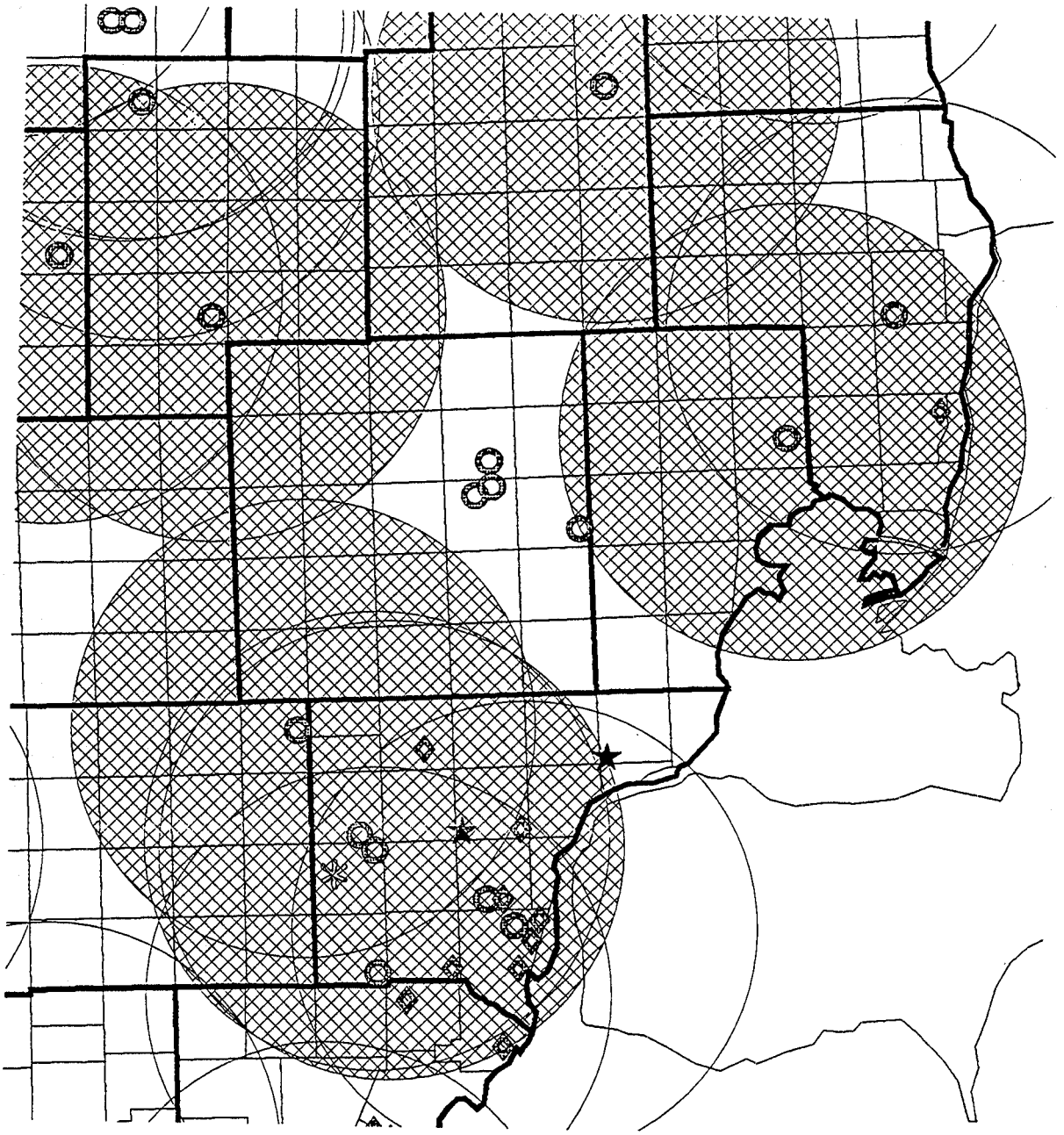
It should be noted here that MDEQ claims that the Wayne County Solid Waste Management Plan does not properly quantify permissible imports from Oakland County and takes the position that Oakland County may therefore not plan on the future availability of this resource. This position is taken in spite of Wayne County expressions of support for up to 2.0 million gateyards of imports from Oakland County and in spite of consent judgment agreement which allows one of the Wayne County landfills (Carleton Farms) to import an unlimited amount of wastes from other Michigan counties on an annual basis. Oakland County has taken the position that inter-county flows of waste between the two counties would be properly identified within the on-going plan update process.

Exhibit 32 shows improvement upon the adjusted previous situation even if the only other future addition of approved export levels were to Washtenaw and Genesee Counties. In this purposely limited scenario, Oakland County would continue to have access to more disposal capacity opportunities than required at facilities located within contiguous counties. However, beyond the year 2006, all wastes would have to be exported unless an existing landfill was expanded or a new landfill facility was authorized within Oakland County.

Evaluation of Existing Solid Waste Facilities and Services:

Municipally managed programs handle about 32% of Oakland's waste stream. The majority of this service is provided by private sector firms under contract to the municipalities. Local government officials are generally satisfied with the current levels of municipally offered solid waste services. All of the remaining waste stream is handled through arrangements made by the waste generators directly with the private sector providers. Intense competition exists among the private sector waste industries even with consolidation of the marketplace in recent years and generators are generally satisfied that good service is delivered or that it can easily be obtained.

The public generally perceives that solid wastes are being collected, handled, processed and disposed of in an adequate manner. The cost of providing solid waste services has remained highly competitive generally because of the regional excess of landfill capacity. Minimal problems are perceived. Public comments or questions generally are aimed at services that are



Type II Landfills - Theoretical Service Areas

What areas in Oakland County will be remote from Type II landfills when the Collier Road, Eagle Valley and Oakland Heights landfills close?

This exhibit displays the theoretical service areas of nearby existing landfills based upon a 20 mile radius service area. The areas that are remote will face economic pressures because of the increased travel time to alternative disposal facilities and where transfer station operations may be first required. Map details, facility names and symbol legends are shown on Exhibit 8.

Exhibit 33

not easily or readily available such as disposal points for household hazardous waste, oil and fuels, pesticides, yard wastes and etc.. Complaints about disposal facilities are generally handled quickly by the facility owners and/or operators and little public outcry or pressure exists for expanded or changed services. In fact, public interest in the overall subject has dwindled from that exhibited in the early part of this decade.

However, even given these prevalent viewpoints on the subject, a close look at existing facilities and management systems reveals several areas that are problematic and several that will be in the future. These points are enumerated below.

1. In-county landfill disposal capacity is limited. By the end of year 2006, a majority of existing approved landfill capacity will be depleted. Before this occurs, additional landfill capacity will have had to be sited in the County; arrangements will have had to be made with others so that 100% of the waste stream can be exported; or a combination of new landfill capacity and increased exports must occur. Costs will increase as the percentage of the waste stream handled by exports and the distance to the disposal points increases.

   Siting new landfills in the County is difficult at best for a variety of reasons. Land is extremely expensive, environmental considerations relating to soils and groundwaters make it difficult to find potentially suitable sites, and sites with access to the freeway system over all weather roads without seasonal load limitations are limited or the provision of such roadway facilities is expensive.

   During 1997 and 1998, an average of 40% of the County's waste stream was exported, principally to disposal facilities in contiguous counties. Once the existing landfills close and the average haul distance to available disposal capacity increases, transfer station operations will most likely become a normal part of hauling operations to minimize the costs of future disposal. Exhibit 33 displays those areas in Oakland County that would be more than 20 miles from remaining area landfills. Although it is recognized that this is not an accurate representation of landfill service areas, the display quickly shows those areas that would be first impacted.

2. The current plan update process must provide access to disposal capacity for the Oakland County waste stream for at least five years. If access to sufficient disposal capacity for at least 10 years (to some point beyond the end of year 2010[1]) does not result, the plan update must contain an interim siting mechanism which will provide for the nearly automatic approval of landfill capacity proposals which meet a defined set objective criteria. Access to additional disposal capacity can be accomplished by expanding existing facilities, by the siting of additional in-county landfills, by arrangements to utilize capacity in other willing Michigan counties, by arrangements to utilize capacity

---

[1]Michigan's Act 451 requires at least 10 years of access to sufficient disposal capacity. The measurement of time begins upon the date of plan approval by the MDEQ Director.

located elsewhere, or by any combination of these approaches.

3. Some Michigan counties that are willing to accept the import of wastes from Oakland County impose conditions that the municipality from which the wastes originated must have had volume reduction programs in place or the import of these wastes would be disallowed. The lack of municipally sponsored program levels in many of the County's municipalities may limit the availability of disposal options and result in the required long distance export of the wastes. Wayne County for example, currently requires the landfill operators to certify that the host municipality meets its minimal requirements. It is unknown to what extent these types of provisions will be contained in the new plan updates to be adopted for all of Michigan's counties.

4. Oakland County's successful municipal programs allow specialized solid waste services to be provided by funding these services through overall program funding. For example, HHW drop-off programs, recyclable material drop-off centers, mixed-waste drop-off points, etc. These special programs are generally limited to the municipality's residents but are offered to all, both single family and multi-family residents. In municipalities where no locally sponsored effort exists, such program elements are generally not offered.

5. The private sector has not stepped forward to provide convenient at-cost HHW disposal services for the general public. With the exception of those that reside within the SOCRRA municipalities, where appointments can be made on any business day to dispose of HHW materials at SOCRRA facilities throughout the year, the County's residents inquire or complain most frequently about this lacking.

6. Multi-family residents are generally not offered access to aggressive recycling programs, even in municipalities where such services to single family residents are offered. Logistics are a problem within many multi-family projects and the provision of such programs is sometimes difficult. However, few residents complain about their lack of access to recycling programs.

7. Local governments are willing to accept responsibility to manage solid waste services for residents. Primary focus is upon single family residents with some placing secondary focus upon multi-family residents. Few direct their attention to the non-residential waste stream. Thus, not all waste generators equally focus upon volume reduction programs.

8. The overall volume reductions currently being achieved do not begin to approach the goals adopted within the 1990 Solid Waste Management Plan update. The 1990 Plan Update goals were to achieve 30% reductions by the year 1995 and 50% by the year 2005. In detail, the 1995 goal set was 5% through source reduction and reuse, 5% through yard waste composting and 20% through recycling. The 2005 goal set was 10% by SR&R, 5% by yard waste composting and 35% by recycling. This goal set is shown in the table following. It is now recognized that the originally adopted volume reduction goals are not realistically achievable and that all waste generators do not equally participate in the efforts or that some waste generators simply do not have access to suitable program

offerings. **Revised, realistic goals need to be adopted.**

Volume Reduction Goals
Oakland County's 1990 Solid Waste Management Plan

VR Technique	Year 1995	Year 2005
Source Reduction & Reuse	5%	10%
Yard Waste Composting	5%	5%
Recycling	20%	35%
Totals	30%	50%

9. The solid waste industry in southeastern Michigan has undergone a dramatic restructuring during the past several years. Consolidations have occurred or are currently underway such that by the year 2000, services may essentially be offered by only 2 or 3 major service providers. Anecdotally, a decade ago, more than 60 haulers competed within the County to provide disposal services. Today, the total number of firms providing basic solid waste services numbers less than ten and although the names of some long established local businesses have remained unchanged, ownership of the firms is gradually being acquired by the large operations. A major current focus by the large industry operations is to produce enhanced financial reports and status for their stockholders. The result is that the quality of services and the level of attention paid to individual customers may be gradually diminishing. As the major handling, processing and disposal facilities come under the ownership of only a few, access to such facilities by the remaining small operations may become severely restricted. Given such pressures and given the increasing average distance to access facilities, the remaining small operations will most likely accept purchase by the major operations. All of these situations may cause the economics of the marketplace to be dramatically dynamic.

10. The economic times as measured by full employment and high average income levels are excellent. The cost of waste disposal services is generally viewed as being stable and reasonable. Excess daily operating capacity exists at the landfills within the region and wastes are imported into these facilities from generation points outside of Michigan. These several factors together may be contributing to attitudes which have permitted an increase in per capita waste generation rates. Few are willing to actively consider the subject of waste management planning (unless a designated facility is located or proposed to be located within their realm of influence) and many believe that the subject of waste disposal is simply not a problem to worry about. Some local governmental units have reduced their solid waste service offerings from levels that existed earlier in the decade and others are actively considering dropping some program elements to achieve short-term savings. These negative tendencies cannot be allowed to continue and must continually be challenged.

Solid Waste Management Alternatives Considered

Numerous management components and alternatives have been examined during Oakland County's continued study of solid waste management systems. As previously outlined in this document and as contained within detailed planning records, prior program directions were generally based upon proposed cooperative efforts by the County's municipalities to minimize the continued reliance upon landfills for the disposal of wastes. Individually, the municipalities were viewed for being too small to sustain independent approaches toward cost-effective solutions. Additionally, it was determined that with a common approach shared by all, public acceptance of specific program elements could be maximized.

Each of the historical studies included detailed analysis of several volume reduction alternatives and system components. These included such elements as incineration and waste-to-energy disposal utilizing such approaches as mass burn and refuse derived fuel systems; the use of other energy recovery technologies including pyrolysis systems, multiple hearth furnaces, fluidized bed combustion systems, suspension-fired waterwall and anaerobic digestion systems; coincineration of wastes with sanitary sewerage treatment sludges as well as several non-energy recovery volume reduction technologies such as baling, shredding, high density compaction, composting and chipping of the waste stream.

The alternative systems and system components were evaluated based upon technical feasibility, economic feasibility, access to sufficient land and facilities, the sufficiency of the transportation system, analysis of energy consumption and the potential for production of energy from the waste stream, environmental impacts, public health impacts, and upon the perceived public acceptability of the proposed alternative systems. Based upon these evaluations and subsequent rankings, specific programs were selected for implementation.

Although the details of each system selected for implementation as a result of the several studies were different, the basic approach for each remained essentially constant. Each study suggested that programs focusing upon incineration of the waste stream would be the most effective way to minimize the amount of required future landfill capacity. Each succeeding study placed more emphasis upon treatment of the waste stream prior to incineration. Ultimately, the proposed system included extensive volume reduction programs involving recycling and yard waste composting, included pollution prevention programs such as cleansing the stream by the removal of household hazardous wastes, and included the recovery of energy from the incineration process.

The proposals each included high standard, high volume, publicly sponsored handling, processing and disposal facilities. The success of these programs essentially depended upon the ability of the County to create a combination of a sufficient number of the County's municipalities (currently 61 cities, townships and villages exist) with a sufficiently large waste stream to justify the sale of bonds to finance the construction and operation of such a system. In the most recent implementation effort begun in the late 1980's, financing of the proposal utilized municipal control of the streets and highways as the basis for flow control arrangements wherein

each municipality would direct the waste stream generated within its boundaries to system facilities as long as bonds remained payable. All costs of the system ranging from bond payments to ongoing operational costs would be recovered from system tipping fees. Essentially, the program would be funded by ongoing revenues.

Exhibit 7 in the Database section identifies the prior Oakland County solid waste planning reference documents. No attempt is made herein to provide an additional detailed review of the complex alternative systems previously studied. These efforts along with supporting material can be readily reviewed in the historical documents. Copies are available for viewing at the Central Repository Location.

Efforts to implement a county-wide solid waste management system in Oakland County have not proven successful, principally because of a general lack of agreement among the County's 61 municipalities on a variety of issues. These have included such items as management authority and responsibility, economics, environmental concerns, and facility locations. Considerable public concern on environmental issues relating to air pollution from incineration facilities played a major role in defeating the massive implementation effort launched in 1988. This ultimately occurred even after the County's electorate approved the sale of up to 500 million dollar in bonds at the full faith and credit of the County in late 1991. Underlying public perceptions on the subject of waste incineration combined with dramatically low prices for the continued landfilling of wastes basically set the basic course for the future. U.S. Supreme Court decisions on flow control issues made the subject of financing of such solid waste management system facilities on the basis of long-term commitments of the waste stream rather doubtful.

In late 1993, after gross expenditures in excess of 15 million dollars, the Oakland County Board of Commissioners formally abandoned its attempts to assemble a sufficient number of municipalities together to warrant the implementation of the proposed system. Generally, the majority of the municipalities had chosen to continue with the existing level of solid waste services provided in their municipalities.

Although the several implementation efforts did not result in establishment of a county-wide management system, the extensive publicity given to the many planning efforts and well as the serious consideration given by the municipalities to the several specific proposals have produced many positive results. For example, the communities within the southeast and southwest portions of the County successfully established two solid waste management authorities. The Southeastern Oakland County Resource Recovery Authority (SOCRRA) was initially formed in 1951 prior to official records of countywide planning efforts but following extensive study and analysis by the municipalities. The Resource Recovery and Recycling Authority of Southwest Oakland County (RRRASOC) was formed in 1989. SOCRRA initially constructed and successfully operated incineration, transfer and landfill facilities. The incineration and basic landfill operations are no longer maintained although the landfill site is presently operated as a major yard waste composting facility. These two agencies currently join some 20 municipalities (having nearly 47% of the County's population within their jurisdictions) into substantial and continuing cooperative efforts. The principal focus of the offered programs are the residents of single family homes which represent approximately 79% of the authorities' total population.

These programs include recycling, composting, household hazardous waste collection programs, recyclable material drop-off collection points, recyclable material recovery facilities, transfer station facilities, and more. Other communities have adopted similar approaches to achieve reductions in the waste stream and the private sector service providers have offered such programs to their subscription customers. Additionally, due to increased public awareness of environmental issues and because of intensified national and state waste regulations, the industrial and commercial waste generators have contributed greatly towards pollution prevention by a general cleansing of the waste stream generated. Michigan's adoption of legislation banning the disposal of yard wastes in landfills since 1995 has resulted in the successful composting of this resource and quickly produced a significant reduction of materials landfilled. In Oakland County, it is calculated that a reduction in the waste stream of nearly 7.5% occurred because of the yard waste program.

As a result of the 1990 Plan Update effort by Michigan's 83 counties, a considerable amount of additional landfill capacity was sited and in southeast Michigan, a highly competitive, landfill market developed. Today, landfill operating capacity far exceeding southeast Michigan's daily needs is offered, principally by private sector facility operators. This has resulted in continuous heavy competition for the available waste stream and in low disposal tip fees. Tip fees charged in 1999 are substantially less than those charged in 1990. As a result of capacity availability and low tip fees, considerable out-of-state wastes are imported into this market. In spite of the large volume of wastes being handled, at least one lower volume landfill facility has been shuttered to maximize operating economics for the parent company. Thus ongoing operational economics are a continuing major issue.

The present Plan Update effort reviewed and examined each of the approaches previously studied, the economics involved in the development of new systems, and further examined the existing facilities, capabilities, and successes being achieved by the private sector service providers. Generally, it has been concluded that the existing free market has the capability to provide service levels that are both cost-effective and environmentally sound and that the existing free market has sufficient disposal facility capacity available (landfill facilities that are existing, proposed and/or contemplated) to meet Oakland County's needs.

Oakland County's Selected Management Alternative

Overview:

The Goals and Objectives of the Oakland County Solid Waste Management Plan can be effectively achieved with a continuation of the present day solid waste management practices employed by the County's more aggressive municipalities, by adoption of similar approaches by the remaining communities, and with a substantially greater focus upon resource conservation, waste reduction, pollution prevention and recycling by all of the County's waste generators including residents, businesses and industries. Therefore, the selected solid waste management system consists of the following components.

Citizens, businesses, and industries are encouraged to explore the options available to their lifestyles, practices, and processes which will reduce the amount of solid wastes requiring disposal and reduce the level of environmental pollutants contained in the wastes. Resource conservation, waste reduction and pollution prevention must be voluntarily provided by all.

The waste stream is normally to be separated by waste generators at the point of generation prior to collection into at least three components - recyclable materials, yard clippings, and solid wastes. One of the objectives of this planning effort is to achieve a reduction in the waste stream which is destined for final disposal (either incineration or landfilling) of at least 30% by the Year 2010 through source reduction, reuse, recycling and composting. Today, total wastes generated on a per capita basis are higher than previously recorded and a volume reduction rate of only 18.1% is observed through recycling and composting. Dramatic new efforts are required and not all waste generators currently participate in existing efforts.

Recyclable materials are to be collected from the sites of generation or from drop-off recycling centers and hauled either to material recovery facilities where they are to be processed and prepared for shipment to end users or hauled directly to end users where recyclables will be converted into raw materials and/or new products.

Yard clippings that must be disposed of away from the site of generation are to be collected from the site or from drop-off centers and transported to composting facilities for conversion to compost humus or transported to alternative yard clipping processing facilities.

Wastes remaining after removal of recyclable materials and yard clippings as well as residues from all recycling, processing and composting operations are to be disposed of in properly licensed landfills located in Oakland County, in properly licensed disposal facilities located in other Michigan counties (where the host county's locally approved solid waste management plan is permissive towards such imports), or in properly licensed disposal facilities located elsewhere.

Collection, handling, processing and disposal of the waste stream elements by private sector solid waste service providers operating either through contracts with municipalities or through direct contracts with the residential, commercial or industrial occupants of all properties in the County is generally recognized as being the most economical and preferred operating method.

The County's municipalities (cities, villages and townships) remain as the lead governmental units in setting solid waste program basics and in establishing minimum standards for community services. In this role, they monitor the service levels provided to solid waste generators within their jurisdictions by the private sector. The private sector solid waste service industry offers collection services for each of the basic waste stream elements - recyclable materials, yard clippings and the remaining wastes. To the extent that such collection services are not willingly offered by the private sector in a timely and effective manner or within competitive price ranges or should the waste generators not appropriately utilize the offered services, the County's municipalities are urged to cause the delivery of appropriate services. This can be accomplished by any one or a combination of approaches. These include awarding franchises for delivery of services, contracting for services on behalf of each solid waste generator, by the designation of preferred haulers, by the adoption of licensing scenarios aimed directly at full-service providers, or by other approaches.

Municipalities must be aware that some host counties of disposal facilities used for the disposal of locally generated wastes may well require that minimum volume reduction program effort levels exist within the municipality of generation prior to the continued acceptance of these export wastes. The municipality must be knowledgeable on local program achievement levels and be able to certify that it meets or exceeds such standards or the community's access to certain disposal facilities may be limited or restricted.

Oakland County's municipalities are urged to provide specialized solid waste services requested by many waste generators if such services as offered by the private sector are not readily or conveniently available. For example, such services might include the establishment of drop-off locations for recyclable materials, yard clippings and/or bulky household items; household hazardous waste collection programs; Freon removal programs; or mixed-waste drop-off points. Additionally, basic education and information efforts aimed directly at the services locally available should be periodically provided. Those municipalities who are not currently joined together with other municipalities on solid waste issues are encouraged to participate in joint efforts or to become involved in the creation of new authorities so that they may act as a single larger agency in the management and/or provision of solid waste services. The municipal authority approach can provide an excellent administrative and economic basis for the provision of necessary specialized solid waste services.

The County's continuing role on solid waste management plan issues will be to guide the on-going Act 451 solid waste planning efforts; to periodically monitor and report on the volume reduction achievement efforts and successes of each municipality; to urge and encourage the municipalities and the business community to expand program efforts to fulfill noted voids; to continually monitor the availability of handling, processing and disposal facilities to ensure that sufficient capacity continues to exist to handle the County's entire waste stream; to provide periodically updated information on programs, facilities and educational opportunities to the county's waste generators; to continually monitor the availability of waste stream generation and recovery data; to monitor legislation which may effect the provision of solid waste services and required processing, handling or disposal facilities; and to communicate on these issues with each municipality.

A primary function of the solid waste management planning process is the designation of sites upon which identified solid waste disposal area facilities may be constructed and operated. Michigan law will not allow the issuance of permits for such facilities without their specific designation within the planning documents of the host county. Oakland County has previously designated sites where specific disposal area facilities may be constructed and operated. At present, ten designated sites with existing or planned disposal area facilities remain. Four of the sites are specifically designated for Type II landfills, one site for a material recovery facility, three sites for both material recovery facilities and transfer stations, one site for a transfer station and one site is designated for any type of disposal area facility except for a sanitary landfill, incinerator or waste-to-energy plant. These facility sites are shown in Exhibit 26 in the Database Section of this document and are described in some detail in the Solid Waste Handling, Processing and Disposal Facility Designations Chapter. The existing disposal area facility designations will be retained with the exception of the broadly designated "disposal area" site which will be changed to transfer station. Additionally, the designation for Pontiac's Collier Road landfill will be modified to allow for the future operation of a material recovery facility and/or a transfer station should the City deem it necessary. All four landfill sites are owned by municipalities or are specifically managed to meet and address municipal concerns through host community agreements and/or consent judgment documents.

Existing landfill disposal capacity within Oakland County will be depleted within the planning period. Even given this circumstance, Oakland County in cooperation with other Michigan counties has access opportunities to more than a sufficient amount of landfill disposal capacity to meet its disposal needs for the five year and ten year planning periods. Inasmuch as capacity is available for more than the ten year planning period, an Interim Siting Mechanism for the designation of additional landfill disposal capacity is not contained within the plan and the County will not be required to annually prepare an analysis and certification of available solid waste disposal capacity and then report the results to the MDEQ.

However, an uncertainty exists as it relates to the continuing availability of in-county landfill capacity. While it is conceivable that Oakland County will be required to export 100% of its waste stream by the end of the next decade, conversely, it is also possible that an existing facility could be expanded and current disposal patterns and export opportunities could continue largely unchanged. The County is barred from participation in the decision process on this potential facility expansion. These two potential scenarios would result in dramatically different sets of required solid waste handling facilities. Therefore, should no agreement be reached to expand existing landfill facilities by September 30, 2001, a plan amendment process should be initiated by the County to either deal with the siting of additional landfill capacity within the County, to site additional handling facilities that might be required to ultimately bring Oakland County into a 100% export mode, to achieve agreement on some combination thereof, or to explore other alternative solutions. The amendment process should be completed by the end of Year 2002 so that sufficient time is available to design, permit, construct and begin operation of new or expanded facilities prior to depletion of existing disposal capacity resources.

Although annual certification to the MDEQ on available disposal capacity for Oakland County waste generators is not required, it is recommended that County staff continue to annually

examine these issues and to communicate their findings to the Board of Commissioners and to each municipality. This reflective approach will help ensure that a solid waste crisis situation does not suddenly appear.

Following is a description of key elements of the selected solid waste management plan.

Collection Services and Transportation Facilities:

Solid wastes generated within Oakland County are primarily collected by private sector solid waste service providers. Approximately one-third of the total waste stream is collected under contract with municipalities and the remainder is collected through agreements with individual waste generators. Some wastes are handled through transfer station operations prior to delivery for landfill disposal or composting and the remainder are transported directly to landfills, compost operations or material recovery facilities. Existing transfer station operations in Oakland County are owned and managed by SOCRRA and by Allied Waste Industries. Approximately 22.5% of the County's waste stream is handled through these facilities. Additional material recovery and transfer station facilities have been designated but have yet to be constructed because of the adequacy of the current mix and location of existing facilities.

Existing collection services and the existing transportation infrastructure are sufficient to accommodate the future waste stream amid the existing matrix of disposal area facilities to which the stream is currently distributed for processing, composting or disposal. Some incremental changes will emerge as individual municipalities impose minimum standards or policies on existing inadequate services or as full service program elements are implemented and refined. Even with these incremental changes, the current collection and transportation system, once fine-tuned to full performance, is judged to be both efficient and economical in scope.

However, dramatic changes will occur as landfill capacity within the county becomes depleted. If additional landfill capacity is not made available within close proximity, Oakland County will require access to a considerable additional amount of transfer station capacity to serve its needs. Facility specifics such as sizing and location will be have to be developed as details of future disposal capacity availability are known and as industry develops alternative solutions.

Resource Conservation, Waste Reduction, and Pollution Prevention:

Oakland County supports the basic concepts of resource conservation (reduced resource use per product, increased product life, product reuse and decreased consumption of products which become solid waste); of waste reduction (changes in manufacturing or other processes which generate solid waste so that a reduced amount of waste is created); and of pollution prevention (changes in manufacturing or other processes or changes that may be made directly to the waste stream to produce waste that contains less potential for environmental pollution). Oakland County seeks the benefits that may be achieved from such efforts. This plan encourages all waste generators to explore means to increase resource conservation, to reduce the amount of waste generated and to minimize the environmental pollutants contained in the final stream.

Successful resource conservation, waste reduction, and pollution prevention efforts are driven by knowledgeable waste generators. A considerable amount of educational, informational, and promotional effort is needed on a regular basis to sustain and increase interest in these concepts. It is believed that beyond the local sponsorship of household hazardous waste programs, little of significance can be accomplished towards these items by the simple adoption of county-wide or community-wide regulations or informational programs to promote resource conservation, waste reduction or pollution prevention. Such efforts must instead be very broad based and be aimed at every waste generator, state and nation-wide. The state and federal governments should provide educational, informational and promotional materials on these subjects. Educational efforts could not only be directed to commercial and industrial waste generators but towards individual consumers on such items as the purchase of reusable items rather than disposable, selecting products that are manufactured using recycled materials, that are packaged in recyclable containers, or by purchasing goods in the bulk to reduce the amount of packaging waste. The state level material should be widely promoted in every forum and distributed to all educational institutions and local governmental units from where it may additionally be transmitted to the individual generators and consumers. Since resource conservation, waste reduction and pollution prevention efforts are provided voluntarily and will change with technologies and public awareness, and since it is extremely difficult to measure the current success levels being achieved, this plan does not assign a specific volume reduction goal for these items or establish a value on the amount of wastes currently diverted from landfill disposal.

Household hazardous waste collection programs are not uniformly available to all residents of the County. The County will encourage and promote the establishment of such programs by each of the municipalities, whether through their own individual efforts or through collective approaches. Additionally, the County will encourage the private sector to establish free market collection points which may be accessed by any resident for the proper disposal of household hazardous wastes for nominal fees. Such programs should be available to the public throughout the year. Finally, the County will periodically identify the availability of such programs, be they municipally or private sector sponsored, and make such information widely available.

Resource Recovery Programs:

Oakland County believes that resource recovery programs must be a continued part of the ongoing solid waste management system. The extremely successful efforts conducted by the SOCRRA and RRRASOC municipalities are proof of what concerted efforts can produce. These efforts are highlighted in other sections of this document.

The composition of the Oakland County waste stream has been analyzed in earlier planning efforts. Continued review and analysis of the waste stream and comparison of this material to updated national data confirms that little change in waste stream composition has occurred from that noted within the Oakland County 1990 Plan Update and the 1994 Plan Amendment documents. A substantial percentage of the stream is potentially recoverable through yard clipping programs and through the recovery of recyclable materials.

Michigan's banning of yard clippings from landfills produced remarkable volume reduction

results within a short time period. Although minimal additional improvements may be anticipated in the future (both in the diversion percentage achieved and in the end product quality areas), the successes of this program have largely been realized. In Oakland County, no additional volume reduction over that rate currently observed is projected for the yard clipping programs. Recovery of recyclable materials is however another story. Much more can be accomplished and impediments to achievement of the county-wide volume reduction goals do exist. These impediments generally result from the lack of convenient full-service program offerings and/or the lack of participation by all generators in programs that do exist. These impediments are viewed as nearly universal problems.

Existing municipal programs are highlighted within the Database section of this report and in the appendix material ("Report of Municipally Sponsored Solid Waste Programs"). It is anticipated that program offerings within all municipalities will ultimately be expanded to match the level of services currently offered within the principal authority municipalities.

The County will urge that appropriate resource conservation, waste reduction, pollution prevention and resource recovery programs be adopted by each municipality and by the business community. Facilities that accept recyclables as well as solid waste educational providers and opportunities will be periodically identified as resources for each waste generator within the County, and this information will be made widely available. Municipalities that find it necessary to become involved with waste reduction and recycling programs to increase volume reduction achievement levels will be urged to do so; and to increase the economic effectiveness of these efforts, they will be urged to consider cooperative approaches along with other municipalities. Technical assistance and education will be offered by the County to municipalities and businesses that are in the process of establishing new programs.

Over the coming years, additional opportunities to assist all waste generators in achieving higher volume reduction levels are possible. These might include County recognition of high performance resource conservation, waste reduction and pollution prevention efforts by businesses; recognition of municipalities that aid their citizens and businesses in achieving high volume reduction levels; identification and recognition of school programs and other organizations that offer continuing solid waste educational opportunities; and perhaps the organization of a business advisory council to provide an open forum on recycling and volume reduction issues . Oakland County will remain flexible and be open to the use of all reasonable avenues which will continue the encouragement of resource conservation, waste reduction, pollution prevention, and resource recovery programs.

Volume Reduction Techniques:

Solid waste disposal facilities or techniques aimed directly at reducing the volume of material destined to landfill disposal have been examined. Previously, a portion of Oakland County wastes were co-fired with other fuels to produce energy or simply incinerated prior to disposal of process residues. Such efforts (facilities owned by General Motors and SOCRRA) reduced the amount of landfill capacity that would have been required by these waste streams without the programs on the order of 90%. However, public concern over the issue of air emissions and the

extremely high costs of maintaining such facilities to meet ever changing national requirements resulted in the closure of these facilities.

Other potential volume reduction techniques (such as baling or shredding) are minimally used in Michigan because landfill disposal costs are currently so inexpensive that such techniques are simply not considered to be economically valid. However, the long-term trend in the size of Michigan landfill facilities away from small local landfills to large regional landfills (which are generally operated in a high-rise mode) is resulting in dramatically increased landfill final waste densities. This factor, coupled with improved landfill operating methods in the use of daily cover materials, has had the impact of reducing landfill bankyard needs by a significant amount.

Projected Diversion Rates:

In 1999, it is estimated that a considerable amount of the residential waste stream (24.35%) is currently diverted from disposal in landfills through recycling (7.65%) and yard clipping (16.7%) programs. Additionally, it is estimated that 15% of the commercial municipal solid waste stream is recovered (13% through recycling and 2% through yard clipping composting), and that 15% of the industrial municipal solid waste, construction and demolition debris and industrial special waste is recovered through recycling efforts. The final diversion rate currently being achieved, net after allowance for process residues which result from the recycling and composting operations, is calculated to be 18.12%.

The year 2010 diversion rate goal can be reached if all municipalities in the County quickly strive to reach the same residential volume reduction achievement levels currently being achieved by municipalities within the two authorities, if every residential program including the existing successful programs reaches to even higher levels by increased participation and effort, and if dramatically improved diversion rates are accomplished by waste generators of other portions of the waste stream.

It is recognized that failure to achieve the projected diversion rates would result in a greater future need for landfill disposal capacity. Therefore, this document frequently displays future disposal needs at existing observed diversion rates and at the projected diversion goal rates. Exhibits 29 and 30 in the Database section of this document show details of the waste stream in terms of tons per day before and after volume reduction efforts and in terms of annual gateyards and bankyard needs. Exhibit 29 shows the baseline effort with unchanged diversion rates and Exhibit 30 shows the same information under the more aggressive volume reduction achievement assumptions.

Achievement of the projected diversion rates for the Oakland County waste stream will not meet Michigan's original solid waste management goals (as adopted by Michigan's Natural Resources Commission in May, 1988 and published in the June, 1988 Solid Waste Policy documents) to reduce land disposal to only "unusable residues" or 10-20% of the waste stream by the year 2005. First, the use of incineration or waste-to-energy incineration facilities, both having been previously utilized in the County, are not considered to be socially or politically acceptable technologies for use in the future. Placing this issue to the side, Michigan's remaining goal

elements were established to dispose of only 40-60% of the waste stream in landfills after reduction (8-12%), reuse (4-6%), composting (8-12%), and recycling (20-30%). Diversions achieved through reduction and reuse are extremely difficult to measure and no diversion goal is set for these approaches. It must once again be noted that the existing waste stream, prior to yard waste composting or recycling, is higher on a per capita basis than previously recorded or projected. However, it is believed that Oakland County's goal of a 25% diversion rate by the year 2005 and a 30% diversion rate by the year 2010 through yard waste composting and recycling programs is realistically achievable (but only with aggressive implementation efforts).

Existing and Projected Diversion Rates
(Percentage of the Waste Stream Not Destined for Final Disposal)

Waste Stream Category	Year 1999	Year 2005	Year 2010
Residential Yard Wastes	16.70%	16.70%	16.70%
Residential Recycling	7.65%	12.00%	15.00%
Commercial Yard Wastes	2.00%	2.00%	2.00%
Commercial Recycling	13.00%	23.00%	30.00%
Industrial Recycling	15.00%	24.00%	32.00%
CDD Recycling	15.00%	25.00%	32.50%
ISW Recycling	15.00%	25.00%	32.50%
Net After Inclusion of Process Residues	18.12%	25.31%	30.49%

While in the process of examining diversion rates, it quickly becomes obvious that little concrete data exists with regard to the waste stream. With the exception of the residential waste stream handled by the County's two existing solid waste authorities, little detailed information is readily available. Few others are willing to share specific information on the waste stream that they handle. The County will therefore continue to encourage the development of programs to capture detailed waste generation and resource recovery data across all segments of the total waste stream and across all types of waste generators. Additionally, these programs should examine the amount of process residues that result from the various composting, recycling, and volume reduction operations. Only with accurate data on these items can existing diversion rates be reasonably calculated or can future diversion rates be projected with some degree of certainty.

Market Availability for Collected Materials:

Market availability for recovered recyclable materials is the key to the success level that can be achieved with recycling programs. If there is no market for a collected material, there is little reason to collect such materials since they would ultimately have to be disposed of to clear storage areas. At present, the operators of the material recovery facilities which handle the Oakland County recyclables, have been successful in moving the materials back into the manufacturing stream. The market for recovered materials, whether located within Michigan or

elsewhere, changes frequently and is dependent even upon world economics. At times, it has been necessary to accept negative prices for collected materials but over the long run, the materials have been moved to market. It is anticipated that these successes will continue to exist.

Identification of Resource Recovery Management Entities:

The level and intensity of the resource recovery programs offered within each community are ultimately established by the local municipality. This remains true even if it appears that the municipality plays no active role and the entire program is that represented by private sector offerings. Should the private sector offerings fail to measure up to local expectations, the municipality has the ability to cause specified programs to be offered. While some municipalities have been reluctant to become involved, others have made great strides in achieving proper program implementation. Excellent existing programs are directly managed by each form of municipal government in Oakland County, be that a city, village or township government. An educated public has frequently persuaded local elected officials to increase their access to such programs. This planning document encourages citizens to maintain an active dialogue with municipal officials on these issues and to make their needs known. In 1999, the only entities separate from municipalities who have management responsibility for dealing with such programs are the two solid waste authorities, SOCRRA and RRRASOC. These authorities are owned and governed by their member municipalities. SOCRRA currently has 12 member municipalities which represent 25% of the County's total population and RRRASOC has 8 municipal members which represent an additional 21% of the total population.

Educational and Informational Programs:

Educational and informational programs regarding the various components of the locally offered solid waste services are generally required to avoid improper handling of wastes and to maximize the effectiveness of the program offerings. Oakland County's municipalities are well aware of the need for proper communications as reported in the appendix material on the municipal programs. RRRASOC and SOCRRA have each established excellent Internet web sites providing detailed information on their communities' programs and upon authority owned facilities. These may be viewed at "oeonline.com/rrrasoc" and at "socrra.org" and both are considered to be an excellent examples of providing for communication of program basics.

In addition to the use of the Internet, it is anticipated that traditional delivery mediums will continue to be utilized to deliver educational and informational topics. These generally include direct mailings, workshops, newspapers, newsletters, cable tv, flyers and posters and cover the whole realm of solid waste services such as recycling, yard waste, household hazardous waste, drop-off sites, bulky items, and specific rules and schedules for collection programs. The target audience for this material is generally the resident population or general public. Specialized programs are sometimes aimed at a more specific audience such as businesses or industries or to the children within the K-12 school system. The provider of the programs generally is the municipality or operating under the direction of the municipality, the solid waste service provider. In Oakland County with 61 local units of government, the potential number of individual program providers is large and no specific attempt is made here to be all inclusive.

However, municipal efforts in this area will be periodically reported upon by the County.

Timetable for Selected System Implementation:

All elements of the selected management plan may essentially be considered as on-going components. In terms of volume reduction achievement levels, it is anticipated that all Oakland County municipalities will have ensured that a full range of "curb-side" collection services is provided by the private sector or is offered through special efforts of the municipality to each residential waste generator by the year 2005. This target will allow county-wide achievement of the residential recycling goal at the rate currently observed within the RRRASOC and SOCRRA authority municipalities. By the Year 2010, it is anticipated that a full and continuous public awareness of the benefits of waste reduction and resource recovery will have made a dramatic difference in the amount of materials recovered and allow the County to meet its Year 2010 goals. As indicated elsewhere, a specific time line has been established for a potential plan amendment effort should existing in-county landfill disposal capacity not be expanded by a date certain.

Capacity Certification Process:

As demonstrated later in this Chapter of the Plan Update, Oakland County will have access to more than a sufficient amount of disposal capacity to meet disposal needs to some point well beyond the Year 2010 once all plan updates are approved. This capacity is currently available at facilities located both within Oakland County and at facilities located within other Michigan counties (and later only at facilities located elsewhere) where the host county solid waste management plan has provided for the reception of wastes generated within Oakland County and where the facility operators are willing to receive Oakland County wastes. Therefore, an annual certification process is not included within this plan. It is noted that if less than 10 years of capacity availability had been identified in the plan, that a capacity certification process would have been included within the plan. This process would have had to be conducted annually, approved by the Board of Commissioners, and submitted on prescribed forms to the Michigan Department of Environmental Quality prior to June 30 of each year.

Interim Siting Mechanism Process:

As previously indicated, Oakland County will have access to more than a sufficient amount of disposal capacity to meet disposal needs to some point beyond the Year 2010. Therefore, an interim siting mechanism which contains objective criteria and procedures for the selection of additional disposal area landfills is not included within this plan. It is noted that should less than 10 years of capacity have been identified in this plan, that such a mechanism and process would have been included within the plan and the process would have to be initiated to site additional landfill capacity if reserves fell below 66 months of availability as identified within a capacity certification process.

Solid Waste Management Components and Responsible Parties:

The Oakland County Board of Commissioners is the legislative and policy-making body of Oakland County government. The City Councils of the County's 30 cities, the Village Boards of the County's 10 villages and the Board of Supervisors of the County's 21 townships are the legislative and policy-making bodies of Oakland County's 61 municipalities. The Board of Directors of the Southeastern Oakland County Resource Recovery Authority and of the Resource Recovery and Recycling Authority of Southwest Oakland County are the policy making bodies of the existing solid waste authorities. Following is the identification of parties within the County who are responsible for key management plan elements.

Resource Conservation, Waste Reduction and Pollution Prevention.
Each solid waste generator and/or product manufacturer

Resource Recovery Programs including composting, recycling and energy production.
Each municipality

Volume Reduction Techniques.
Solid waste service providers

Collection processes.
Private Sector Service Providers and the Municipalities

Transportation.
Private Sector Service Providers and the Municipalities

Educational and Informational Programs.
Municipalities and the Private Sector Service Providers

Disposal Area Facilities including each facility designated within the Oakland County Solid Waste Management Plan which requires construction and operating permits as issued by the Michigan Department of Environmental Quality such as processing plants, transfer stations, Type II and Type III landfills and incineration facilities.
Facility owners and State of Michigan

Ultimate Disposal Area Uses.
Facility owners working in conjunction with host municipalities

Local Responsibility for Plan Preparation, Amendment, Monitoring and Enforcement.
Board of Commissioners and its appointed Solid Waste Planning Committee

Local Ordinances and Regulations Affecting Solid Waste Disposal:

Act 451 and related Administrative Rules provide that county and local ordinances and regulations pertaining to solid waste disposal facilities may not be enforced unless explicitly

included within the approved Solid Waste Management Plan. Oakland County is blessed with the existence of 61 local municipalities, more than any county in the State of Michigan. Oakland County therefore does not choose to allow the enforcement of a variety of local ordinances and regulations pertaining to disposal facilities.

Import and Export Authorizations:

Oakland County authorizes the export of wastes generated within the County to existing and future disposal facilities located in each of the other 82 Michigan counties and to existing and future disposal facilities located elsewhere. **No limitation is placed upon the amount of wastes that may be exported.**

Oakland County waste generators and service providers operating within Oakland County must understand that although this export authorization is broadly given, as Michigan law is currently written, the right to export to facilities located in a given Michigan county is subject to any limitations that may be imposed by the facility's host county's solid waste management plan and then finally subject to additional limitations that may be imposed by the facility operator. Caution must be exercised to ensure that anticipated exports are in fact permissible.

Oakland County authorizes the import of wastes generated within each of the other 82 Michigan counties to existing and future disposal facilities located in Oakland County subject to the following. **Limitations on the amount of wastes that may be imported into Oakland County from a given county will be equal to the limitations imposed by that county's solid waste management plan upon exports from Oakland County or upon a lower value if specified by the exporting other county.** Additional limitations may be imposed by the operators of existing and future Oakland County disposal facilities.

Solid Waste Disposal Areas Presently Utilized (Not in Oakland County):

All existing non-hazardous waste landfill disposal areas in Michigan are identified within MDEQ's annual landfill reports and by reference, the FY 98 report is included herein (also see http://www.deq.state.mi.us/wmd/). The name and location of each facility may be viewed within this basic reference material. The landfill and waste-to-energy facilities located within contiguous and other nearby counties are listed below. Most were specifically used during the past three years, some were available and not used and others are anticipated to become newly available as indicated. Disposal areas of all types that exist within Oakland County and those that may be constructed and operated in the future are those specifically outlined in a following section titled "Solid Waste Handling, Processing and Disposal Facility Designations".

Landfill	Host County	Notes
Arbor Hills	Washtenaw	
Adrian Landfill	Lenawee	
Brent Run	Genesee	
Carleton Farms	Wayne	

Citizen's Disposal	Genesee	
Ford Motor Company	Wayne	
GDRRA *	Wayne	
Pine Tree Acres	Macomb	
Phillip McGill Road	Jackson	
Pioneer Rock	Lapeer	
Riverview	Wayne	Available, not used in last three years
Salzburg Road	Midland	
Sauk Trail Hills	Wayne	
Sibley Quarry	Wayne	
Standard Rockwood	Monroe	
Tri City	Sanilac	Newly available, 99 plan update
Venice Park	Shiawassee	
Westside	St. Joseph	Newly available, 99 plan update
Woodland Meadows	Wayne	

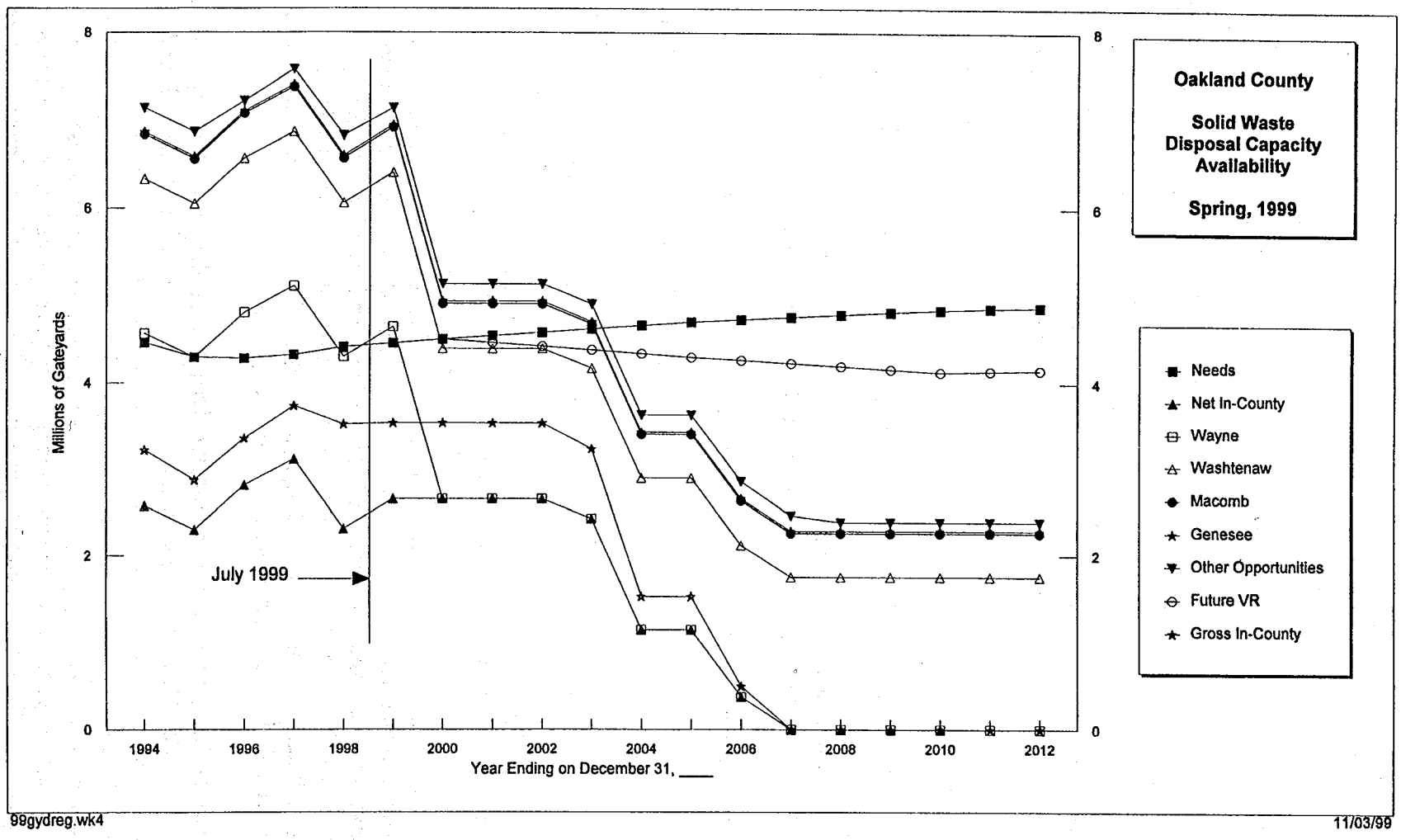
* Greater Detroit Resource Recovery Authority waste-to-energy plant

Other disposal area facilities such as transfer stations or processing plants are also utilized. No attempt is made herein to specifically identify those located in contiguous counties.

Consideration of a Year 2002 Plan Amendment Process:

It is conceivable that the existing private sector landfills in Oakland County will reach the limits of their permitted capacity and be closed by the end of 2006. Should this occur and should no new landfill capacity be designated within the County, a majority of the wastes generated within the County will have to be exported to disposal facilities located elsewhere. Although a considerable amount of landfill disposal capacity is currently available to Oakland County solid waste generators and additional capacity is anticipated to be available elsewhere as a result of the on-going plan update process presently underway within Michigan's 83 counties, some of the available capacity is not readily accessible because of its remote location. Significant use of these remote opportunities will result in dramatically increased disposal costs because of the necessary and dramatic changes that will occur in current handling and transportation practices. The analysis following displays the reasoning behind the recommendation for considering a potential plan amendment by the end of Year 2001. Sufficient time would then remain after adoption of the amendments for the necessary design and construction of recommended facilities needed for long-range solutions prior to closure of the existing landfills.

The "Apparent Disposal Capacity Availability" graphic, Exhibit 34 (which is a partial reprint of Exhibit 31), displays Oakland County's disposal capacity needs (see Exhibits 29 and 30) and shows the resources available (existing export opportunities along with adjustment to the authorized export limit to Wayne County) where wastes generated within the County could be disposed of. As shown, solid waste service providers have the opportunity to access approximately 60% more disposal capacity than is currently required. The future availability calculations are based upon the assumption that each landfill operation will continue to operate at



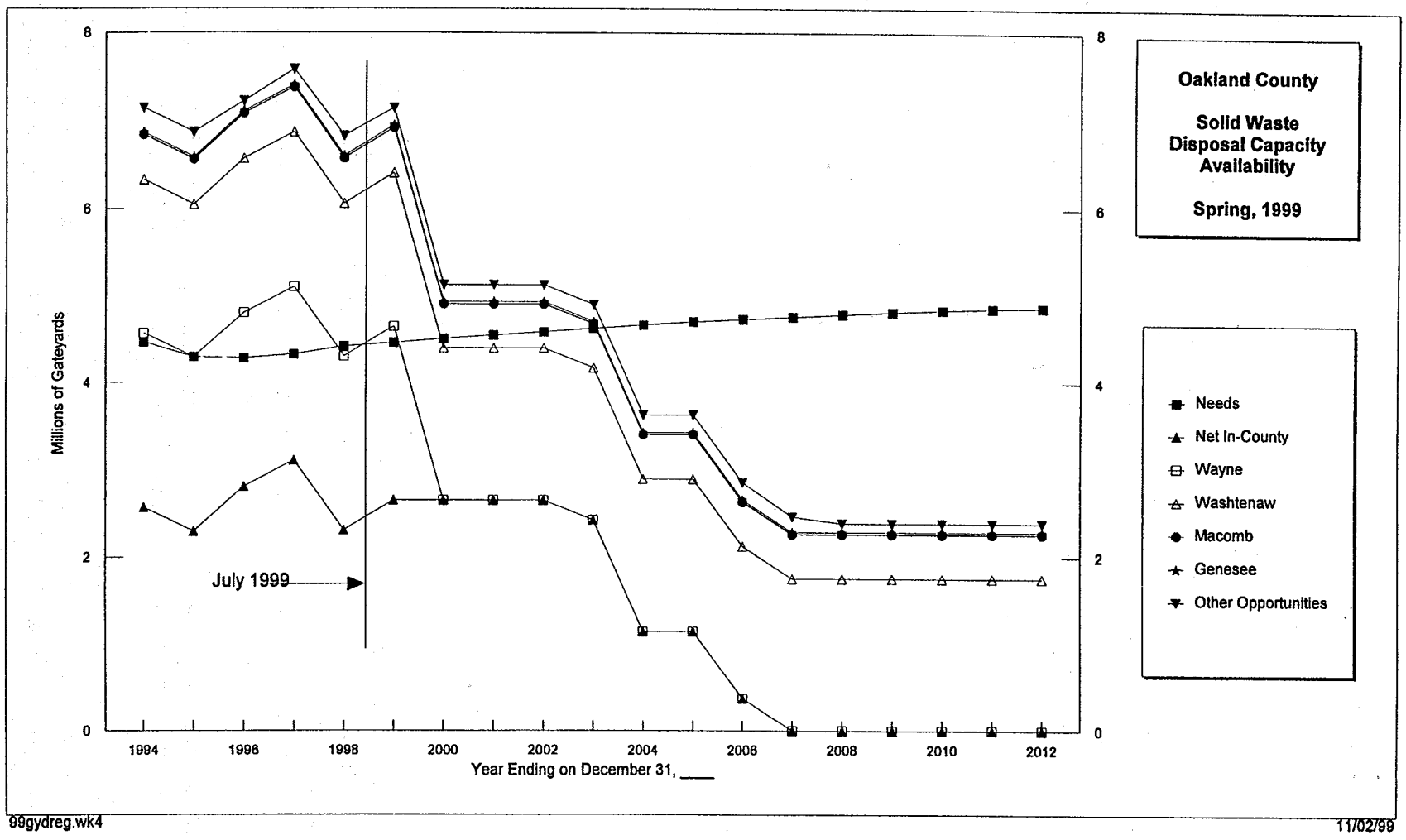
Apparent Disposal Capacity Availability - Exhibit 34

average levels reported over the last three years to MDEQ, that imports of wastes into Oakland County landfills will average 25% of the total annual intake of these facilities, and is based upon current estimates of remaining landfill capacity. Details of the analysis are included within the Demonstration of Available Disposal Capacity, Spring 1999 reference document listed elsewhere on Exhibit 7. This graphic shows that Oakland County has theoretical access to a sufficient amount of available disposal capacity through the end of the year 2006. By that time, available landfill capacity within Oakland County will have been entirely utilized and all wastes generated within the County would have to be exported to landfills located in willing contiguous counties and elsewhere. Year 2000 availability values are shown below. In theory, if Oakland waste generators were to dramatically improve upon their current volume reduction efforts to the Year 2010 volume reduction goal level of 30%, it is theoretically conceivable that existing permissible exports (as adjusted) to facilities elsewhere would be sufficient to some point well beyond 2010.

Year 2000 Needs	4,508,479 gateyards
Amount available at in-county landfills	2,653,363 after allowance for 25% imports
Maximum available in other Counties	2,000,000 - Wayne County
	1,750,000 - Washtenaw County
	510,000 - Macomb County
	25,000 - Genesee County
	199,405 - Other counties
Total Capacity Available	7,137,768 gateyards
Year 2000 Excess Opportunities	2,629,289 gateyards or 58.3%

Several problems exist with the previous analysis. These are illustrated in the "Without Permissible Exports to Wayne County" graphic, Exhibit 35. First, permissible exports to other counties are "up to" maximum allowed amounts and in each instance, landfill operators must be willing to receive such wastes. Second, the existing Wayne County Solid Waste Management Plan does not properly quantify permissible imports from Oakland County and MDEQ takes the position that Oakland County may not plan on the future availability of this resource. This position is taken in spite of Wayne County expressions of support for up to 2.0 million gateyards of imports from Oakland County and in spite of a 1995 consent judgment agreement between the Carleton Farms landfill owner, Wayne County, and the host municipality that this facility could import an unlimited amount of wastes from other Michigan counties on an annual basis. Finally, when demonstrating disposal capacity availability, Michigan law is structured such that only existing volume reduction achievement levels may be counted upon.

Therefore, given these limitations, operating under the approved import / export limits as they now exist, Oakland County can only currently demonstrate that it has theoretical access to a sufficient amount of future disposal capacity into the year 2005. The graphic shows limitations occurring during 2004. However, when this occurs, it is anticipated that remaining existing in-county landfill capacity would be rapidly used and a theoretical date of insufficient capacity of August, 2005 occurs. Oakland County's annual demonstration of available disposal capacity (as required by the 1994 Plan Amendments), which was last adopted by the Board of Commissioners



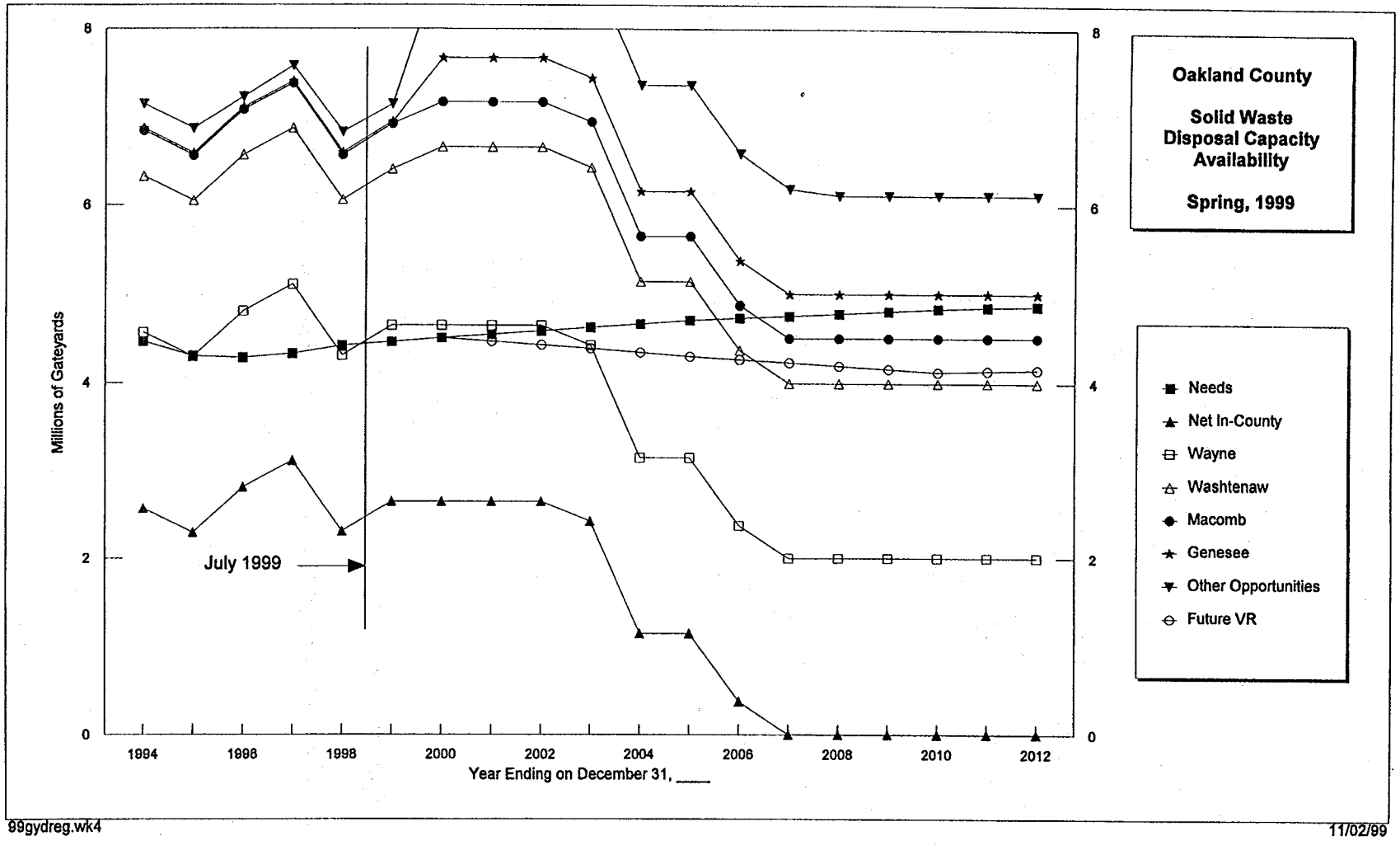
Without Permissible Exports to Wayne County - Exhibit 35

in May, 1999, was based upon this analysis. Since the theoretical insufficient disposal capacity date of August, 2005 was more than 66 months from June 30, 1999, Oakland County was not required to initiate its Interim Siting Mechanism for the designation of additional landfill capacity sites during the Year 2000.

The next graphic, "Plan Update Approach", Exhibit 36, displays the approach being taken in the ongoing Plan Update effort. Existing import/export authorizations are being modified to reflect current understandings and market realities. Oakland County will not place limits upon the import or export of solid wastes other than to respect the wishes of other counties or to reflect limitations that may be adopted by the other counties. Additional export opportunities to other Michigan counties will become available. The result will be that more than a sufficient amount of disposal capacity will be theoretically available to some point beyond the 10 year planing period. This approach essentially says that 100% of Oakland County's waste stream could be exported by the end of the decade (44.5% of the stream was exported in 1998). Additionally, this approach means that the County will not have to adopt an Interim Siting Mechanism as part of its Plan Update. Such a mechanism would have to be employed should less than 66 months of disposal capacity availability ever occur and would result in the nearly automatic siting of any landfill proposal which meets minimum criteria for such sitings.

Exhibit 36 is based upon the following export authorizations which are anticipated to be included within the county plans of the other involved counties. In addition to the opportunities displayed, other remotely located disposal opportunities are anticipated to be available. The other counties category shown below includes Lenawee, Monroe, Sanilac, Shiawassee and St. Joseph counties.

Year 2000 Needs	4,508,479 gateyards
Amount available at in-county landfills	2,653,363 after allowance for 25% imports
Maximum available in other Counties	2,000,000 - Wayne County
	2,000,000 - Washtenaw County
	750,000 - Macomb County
	500,000 - Genesee County
	1,199,405 - Other counties
Total Capacity Available	9,102,768 gateyards
Year 2000 Excess Opportunities	4,594,289 gateyards or 101.9%



Plan Update Approach - Exhibit 36

Year 2010 Needs	4,847,114 gateyards (existing VR %)
Amount available at in-county landfills	0 without new landfill capacity
Maximum available in other Counties	2,000,000 - Wayne County
	2,000,000 - Washtenaw County
	750,000 - Macomb County
	500,000 - Genesee County
	1,199,000 - Other counties
Total Capacity Available	6,449,000 gateyards
Year 2010 Excess Opportunities	1,601,886 gateyards or 33.1%

It is recognized that in the real world, problems would be encountered if Oakland County were to rely on such an approach. The impact of the closure of the existing Oakland County landfills will occur rather suddenly, landfill operators in contiguous counties may not be able to quickly accept large additional amounts of wastes from Oakland County, and some of the "other opportunity" facility locations are quite remote. Disposal service prices will increase as a function of the increased distance to available disposal facilities and transfer station operations by the major operators will eventually become a necessary part of normal life. Certainly, small, independent solid waste service providers will be placed at a disadvantage as their access to nearby landfills becomes increasingly limited.

The planning community has not yet dealt with solutions to these potential problems, other than a general acknowledgment that future solid wastes will have to be exported from Oakland County and that operational and economic difficulties will occur.

A tri-party consent judgment finalized in early 1991 involving the County, Orion Township, and Waste Management contained provisions that an expansion of the Eagle Valley landfill would not occur without the prior approval of the Township Board and that the County expressly agreed that no further expansion of the facility or Plan Updates containing expansions or new landfills in the Township would be proposed without the written consent of the Township. It is currently projected that should the facility operator and the Township Board reach agreement on an expansion of the landfill prior to the beginning of 2002, the facility could continue operations without a break in service.

Given this large question mark on the availability of future in-county landfill capacity coupled with the existence of two sites (owned by major service providers) which are designated for material recovery facilities and transfer stations and the proposed designation of Pontiac's Collier Road Landfill for a material recovery facility and a transfer station, any one of which could fairly quickly be constructed and placed into service if necessary, it can easily be understood why few are willing to move towards other potential solutions.

At this point, it becomes important to think beyond the current 10 year Plan Update planning period. Although events or facilities which may occur beyond the year 2010 are certainly less surely projected than those within the next few years, some feelings for the future can be quickly

be developed and several important observations can be made. First, without additional landfill sitings in contiguous counties, capacity there will start to become limited. This simply equates to a future where known close-in landfill capacity will eventually cease to exist or to which access will be limited. Oakland County's access to disposal capacity will then be dependent upon the market place and full scale transfer station operations will certainly be required as remaining available disposal facilities and opportunities are all remotely located.

The principal point to be made here is that the future is known. Without the addition of new landfill disposal sites within Oakland County, the only question remaining is exactly when must Oakland County be fully postured to operate within a 100% export mode? Without a locally agreeable expansion of the Eagle Valley landfill, this could occur as early as year 2005 and with such an expansion on the order of 12 million bankyards, as early as year 2013. A larger expansion would simply extend this time estimate further into the future. It should be noted that a 100% export mode is an operating position that 38 of Michigan's 83 counties currently occupy.

It is recommended that Oakland County take a very cautionary approach towards resolution of the noted problems. The 1999 Plan Update should be structured to provide for the permissive export of all of Oakland County's Act 451 waste stream to each of Michigan's counties and to all out-of-state disposal points. Additionally, imports from each of Michigan's counties should be permissive and limited only to the extent that Oakland's imports may be restricted by that individual county plan. This will allow present day service scenarios and levels to continue.

Further, it is recommended that the Eagle Valley expansion possibility be carefully monitored. Should no agreement be reached to significantly expand this facility by September 30, 2001, it is recommended that Oakland County initiate a Plan Amendment. This process would be designed specifically to either deal with the siting of additional landfill capacity within the County or to appropriately site additional facilities (such as transfer stations) that might be necessary to adequately handle and process the waste stream should the County have to operate within a 100% export mode. Even a combination of such alternatives might be appropriate. Even if the Eagle Valley facility is ultimately expanded, care must be taken to ensure access by Oakland County waste generators to sufficient disposal facility capacity at facilities owned by more than one service provider so that a competitive service provider environment is maintained.

A September, 2001 date is suggested as the latest possible date for initiating the next required steps because of the length of time required to complete a plan update or plan amendment process and the subsequent length of time for design, permitting, and construction of necessary facilities. Previous plan approval processes have taken 279, 232, 442 and 75 days just for the municipal and state approval processes once the plan documents were finalized and approved by the Board of Commissioners. Assuming a one year time period for plan amendment development and 90 days for the full approval process, design activity on required and approved new facilities could commence by January, 2003 with probable operation by 2005. Exhibits 34 and 35 provide an oversight on this timing framework.

It is recognized that other elements beyond the possible expansion of an existing landfill are key to Oakland County's future opportunities for access to disposal capacity. These include the

location of disposal capacity within other Michigan counties and elsewhere, the imposition of any limitations upon intercounty flows by the planning documents of other Michigan counties and the existence of willing landfill operators. Michigan law is currently interpreted such that intercounty flows of waste may occur only to the extent that (1) the exporting county's solid waste management plan quantifies the amount of wastes that may be exported to the receiving county, (2) the receiving county's solid waste management plan quantifies the amount of wastes that may be received from the exporting county, and (3) a willing disposal facility operator exists to receive the resultant waste stream.

It is anticipated that the future in southeastern Michigan will include the location of large regional landfill facilities located along the freeway or railroad systems which are designed to operate at high daily levels and handle without limitation, the waste stream from the entire region. It is currently unknown where such facilities might be located and Michigan's Act 451 would have to be revised for this to occur. If such a scenario does not occur, export of wastes to out-of-state locations may be necessary. In any event, the future local scene in Oakland County involves major transfer station operations.

Notes on the Disposal Capacity Availability Analysis:

The graphics used in this analysis depict the County's annual disposal capacity needs in terms of gateyards. Gateyards are the prevalent measure of wastes as delivered to area landfills. A gateyard is described as a cubic yard of wastes as delivered through the gate to the landfill. Gateyards are not a uniform measure of wastes as the actual weight of wastes contained within a gateyard can vary considerably, simply dependent upon the compaction of wastes within the delivery vehicle, upon the type of waste contained therein or upon the type of delivery vehicle. Previous sections of this document display the characteristics of the Oakland County waste stream, see Exhibits 29 and 30.

Additionally, the graphics show historically the amount of Oakland County's waste stream that was disposed of at in-county landfills and shows the opportunities available for disposal of the remainder elsewhere. It is estimated that in future years, imports of wastes from elsewhere into Oakland County facilities will measure approximately 25% of the total volume handled.

The export opportunities displayed in these graphics for Year 2002 are those shown below. It is recognized that future actual export/import authorization levels will be different (more opportunities will be available and specific authorized values may be larger or smaller) than displayed, but the values shown readily serve for the purpose of this illustration.

Host County	Existing Exhibit 35	Proposed Exhibit 36
Wayne	0 *	2,000,000
Washtenaw Primary	1,500,000	2,000,000
Washtenaw Secondary	250,000	0
Macomb	510,000	750,000
Genesee	25,000	500,000
Lenawee	99,405	99,405
Monroe	100,000	100,000
Sanilac	0	500,000
St. Joseph	0	500,000
Total Opportunities	2,484,405	6,449,405

* = disputed amount vs. 2,000,000 gtyds (see Pages IV-13 through IV-17 of this Chapter for details).

Solid Waste Handling, Processing and Disposal Facility Designations

Designation of Existing Solid Waste Disposal Facilities:

Each of the disposal area sites identified in the following sections was designated in the existing Oakland County Solid Waste Management Plan as it has been updated and amended. Each site is herewith re-designated as part of the current plan update process as specifically identified in the following material.

Type II Landfills: This disposal area designation is for a sanitary landfill which will handle municipal solid waste and/or municipal solid waste incinerator ash. Municipal solid wastes are generally defined as household waste from single and multiple dwellings, hotels, motels, and other residential sources, or this household waste together with solid waste from commercial, institutional, municipal, county, or industrial sources that, if disposed of would not be required to be placed in a hazardous wastes disposal facility. These facilities may also receive other types of solid waste, such as nonhazardous sludges, industrial wastes, and all wastes which may be legally disposed of in a Type III landfill.

Type II landfill designations are applicable to all acreage of the named sites and the site's total disposal capacity and disposal area footprint sizes may be maximized to the extent permitted by Act 451. Any limitations to this basic designation approach are specifically identified.

1. Collier Road Landfill, 575 Collier Road, City of Pontiac. The Type II landfill site contains 210 acres, more or less. The site is located in Sections 4, 5, 8 and 9 of Pontiac Township and is currently owned and operated by the City of Pontiac.

2. Eagle Valley Recycling and Disposal Facility, 600 West Silverbell Road, Orion Township. The Type II landfill site is located in Sections 26 and 27 of Orion Township and contains 330 acres, more or less. Capacity is limited by a tri-party consent judgment involving the County, the Township and the site owner controlling certain aspects of the disposal area which was filed in 1991 in the Oakland County Circuit Court. Expansions of the disposal area footprint beyond limits identified in the consent judgment documents may not occur without the approval of the Township Board. The site is currently owned and operated by Waste Management. A host community agreement exists between Waste Management and Orion Township.

3. Oakland Heights Development, 2350 Brown Road, City of Auburn Hills. The Type II landfill site contains 175 acres, more or less, with a sanitary landfill footprint of approximately 94 acres. The site is located in Section 2 of Pontiac Township and is currently owned and operated by Allied Waste Industries, Inc. A host community agreement exists between Allied Waste Industries, Inc. and the City of Auburn Hills.

4. Southeastern Oakland County Resource Recovery Authority, 1741 School Road, City of Rochester Hills, containing 183 acres more or less. The Type II landfill site is located in Sections 13 and 24 of Avon Township and is currently owned and operated by the Southeast Oakland County Resource Recovery Authority. A consent judgment involving the City of Rochester Hills and SOCRRA as filed in 1994 in the Oakland County Circuit Court controls existing operations at this site. The facility is presently operated as a composting site and the disposal area is used for yard waste debris and compost residues.

Type III Landfills: This disposal area designation is for a sanitary landfill which will not handle municipal solid wastes or hazardous wastes but will accept construction and demolition debris, industrial special wastes, and other Type III wastes.

None designated.

Waste-to-Energy Plants and Incinerators: This disposal area designation is for municipal solid waste incinerators, incinerators which will additionally incorporate recovery of energy from the waste stream, and waste-to-energy plants.

None Designated.

Materials Recovery Facilities (MRF): This disposal area designation is for processing plants or manufacturing or industrial operations which are designed for the purpose of recovering materials from a solid waste stream which is not generated onsite. Processing plants, recycling facilities or yard waste composting facilities that process only source separated materials do not require Act 451 designation unless process residues equal or exceed 10% of the total volume of material received. Several of the facilities designated as MRFs do not strictly require such a designation. However, maximum flexibility is sought for the projects in case ultimately, some recyclables might best be processed from mixed-wastes. Should that eventuality occur, the owners or operators of the MRF involved may choose to apply for construction and/or operating permits from the Michigan Department of Environmental Quality. Otherwise, the facilities are operated as source separated MRFs.

5. SOCRRA MRF site, 995 Coolidge Highway, City of Troy. The site is located in Section 32 of Troy Township. This facility shares a 10.88 acre site with a SOCRRA transfer station. At present, the facility is operated as a source separated MRF.

6. RRRASOC MRF site, 20000 West 8 Mile Road, City of Southfield. The site is located in Section 35 of Southfield Township and is 6.2 acres in size, more or less. At present, the facility is operated as a source separated MRF.

7. Allied Waste Industries MRF site, 1591 Highwood, City of Pontiac This site is located in Sections 8 and 9 of Pontiac Township and contains some 40 acres, more or less. The proposed MRF facility has not been placed under construction as of January, 1999. The site is to be shared with a transfer station facility.

8. Waste Management - City Waste Systems, Inc. MRF site, 1525 West Highwood, City of Pontiac. This site is located in Section 9 of Pontiac Township and contains some 15 acres, more or less. The proposed MRF facility has not been placed under construction as of January, 1999. The site is to be shared with a Waste Management transfer station facility.

Transfer Stations: This disposal area designation is for a tract of land, a building and any appurtenances, or a container, or any combination of land, buildings, or containers that is used or intended for use in the rehandling or storage of solid waste incidental to the transportation of the solid waste, but is not located at the site of generation or the site of disposal of the solid waste. It should be noted that transfer stations not designed to accept wastes from vehicles with mechanical compaction devices or those that accept less than 200 uncompacted cubic yards of solid wastes per day, are not subject to the construction and operating license requirements of Act 451. However, these facilities must comply with the operating requirements and rules of Act 451. Additionally, transfer stations that are designed and operated to receive domestic and commercial solid wastes from vehicles unloaded by hand are labeled as Type B transfer facilities.

Oakland county chooses not to inventory existing Type B transfer facilities and to declare that all Type B transfer facilities as defined above which exist within the County as of October 1, 1999 are consistent with the plan. New Type B transfer facilities which become operational after this date and which are owned or sponsored by county agencies or host municipalities will automatically be consistent with the plan.

Following are the designated sites for the remaining types of transfer stations within Oakland County.

9. Allied Waste Industries Transfer Station, 21430 West 8 Mile Road, City of Southfield. The site is located in Section 34 of Southfield Township and contains 5.5 acres, more or less.

10. SOCRRA Transfer Station, 991 Coolidge Highway, City of Troy. The site is located in Section 32 of Troy Township and contains 10.9 acres, more or less. The site is shared with the SOCRRA MRF facility.

11. Allied Waste Industries Transfer Station, 1591 Highwood, City of Pontiac. The transfer station site is located in Sections 8 and 9 of Pontiac Township and contains 40 acres, more or less. The proposed transfer station has not been placed under construction as of January, 1999. The site is to be shared with a MRF facility.

12. Waste Management - City Waste Systems, Inc. Transfer Station, 1525 West Highwood, City of Pontiac. The transfer station site is located in Section 9 of Pontiac Township and contains 15 acres, more or less. The proposed transfer station has not been placed under construction as of January, 1999. The site is to be shared with a Waste Management MRF facility.

Changes to Existing Solid Waste Disposal Facility Designations:

The 1994 Plan Amendments established a special designation category for SOCRRA properties located at 29470 John R Road in the City of Madison Heights. The 19 acre site was designated as a "disposal area" which could be used for any Act 451 disposal area facility except that the site could not be used for a sanitary landfill, an incinerator or as a waste-to-energy plant. This location was the site of SOCRRA's incinerator which ceased operations in 1988 after operating for more than 30 years. Since that time, the site has been operated as a transfer station and has been used for various recyclable materials processing and recovery purposes.

The "disposal area" designation for the SOCRRA site at 29470 John R Road in the City of Madison Heights is herewith changed to the designation of transfer station. The site description is changed as follows.

13. SOCRRA Transfer Station, 29740 John R Road in the City of Madison Heights. The site is located in Section 12 of Royal Oak Township and contains 19 acres, more or less. The site is to be shared with various SOCRRA source separated recyclable materials processing and recovery activities.

Designation of Additional Solid Waste Disposal Facilities:

New disposal area facilities not previously designated within this Chapter may be considered for plan consistency as part of a future 5-year plan update process or as a free-standing plan amendment, depending upon where in the planning cycle such applications are received by the County.

As part of this plan update process, designation for additional disposal area facilities has been requested and is recommended for approval as identified in the following sections. The material presented outlines the specific requests received and details any limitations imposed on each specific designation.

City of Pontiac Material Recovery Facility and Transfer Station Designation Request: Collier Road Landfill, 575 Collier Road, City of Pontiac. The designation request was originally for all non-wetlands portions of the 210 acre Collier Road Landfill properties which lay to the south and east of the railroad tracks which traverse the property. Access to the future facilities would be limited to the Collier Road frontage of the site. A copy of the designation request is contained in the appendix.

The City of Pontiac is faced with financial and engineering obstacles which may prevent the expansion of the existing Collier Road Landfill within the near future. In this event and with pending closure of the landfill, the City is preparing for the possibility that municipal solid wastes may have to be transferred to distant disposal sites should other closely located landfill sites not remain available. Therefore, having a site already designated for a transfer station would greatly ease the long range solid waste management planning process for the City. Additionally, the City wishes to have the site designated for a material recovery facility which will allow for processing of the waste stream for the purpose of recovering recyclable and/or reusable materials. Again, this designation would maximize Pontiac's future solid waste management options.

Inasmuch as the proposed designations, once operational, would represent a diminished usage of the site from its current use as a Type II landfill facility and in order to maximize Pontiac's future waste handling, processing and disposal options, the City of Pontiac's request is herewith granted as delineated in the following.

14. City of Pontiac Material Recovery Facility, 575 Collier Road, City of Pontiac. This facility may be located on the non-wetlands portions of the Collier Road Sanitary Landfill properties identified in Pontiac's November, 1998 designation request which lay in Section 8, Section 9 and in that part of Section 4 which lies southeast of a line which runs through a point on the joint section line between Section 4 and Section 5 which is located 470 feet North of the joint corner of Sections 4, 5, 8 and 9 and which line has a bearing of North 53 degrees 21 minutes 00 seconds East. Access to the facility from the public road system must be from Collier Road. The permissible area contains 132 acres, more or less.

15. City of Pontiac Transfer Station, 575 Collier Road, City of Pontiac. This facility may be located on the non-wetlands portions of the Collier Road Sanitary Landfill properties identified in Pontiac's November, 1998 designation request which lay in Section 8, Section 9 and in that part of Section 4 which lies southeast of a line which runs through a point on the joint section line between Section 4 and Section 5 which is located 470 feet North of the joint corner of Sections 4, 5, 8 and 9 and which line has a bearing of North 53 degrees 21 minutes 00 seconds East. Access to the facility from the public road system must be from Collier Road. The permissible area contains 132 acres, more or less.

Previously Designated Facilities:

Four sites which were previously designated as part of the Act 641 Solid Waste Management Act of 1978 (now codified as Part 115 Act 451 of 1994), each of which was constructed and/or operated as a licensed disposal area and which are now closed are herewith recognized but continued or additional operation as a waste disposal area is not designated in this plan. These sites included the Lyon Land Development Company Landfill located at 5380 Milford Road in Lyon Township, the Waterford Hills Landfill at 7900 Gale Road in Waterford Township, the

General Motors Truck and Bus Division waste-to-energy plant on South Boulevard in the City of Pontiac, and the Kingston Type III landfill in Avon Township.

Other Facilities Excluded or Facilities Not Requiring Designation:

Any facilities that require construction permits under Michigan's Natural Resources and Environmental Protection Act (Act 451 of 1994 as amended) that have not been explicitly listed herein except those facilities outlined below are specifically excluded from the Plan.

This Plan Update purposely does not designate a variety of other solid waste facilities, including the following, inasmuch as these are permissible under Act 451 (or other laws and regulations) without specific designation. Specifically, Oakland County chooses to let the location of such facilities to be controlled by the host municipalities through their normal zoning and site plan approval processes.

A. Recycling drop-off centers
B. Source separated compost sites
C. Source separated recyclable materials processing plants
D. Household Hazardous Waste drop-off centers or sites
E. Medical waste incinerators (regulated under Act 23, P.A. of 1990 and the Michigan Public Health Codes.)

APPENDIX

Appendix

Special Notes on Appendix Material:

The appendix material to be included with the final approved 1999 Update to Oakland County's Solid Waste Management Plan will include voluminous additional material relating to a variety of subjects as required by the Michigan Department of Environmental Quality. This material will cover subjects such as system details, public participation and approval processes, responses to questions and issues raised by the public during the public comment period, Solid Waste Planning Committee appointment records and meeting attendance records, listed facility capacity, maps, special conditions re: imports and exports, and other items. Additionally, the final appendix material will include the Board of Commissioners formal approval process results and documents. All of this type of required material will be contained within a reformatted document prior to publication of the document which will be transmitted to the 61 municipalities for their final approval.

For the purpose of clarity, only those items relating directly to the proposed management plan are included herein. These items include the following.

Request for Material Recovery Facility and Transfer Station Designations by the City of Pontiac at the Collier Road Sanitary Landfill, 575 Collier Road, City of Pontiac.

Site map showing 132 acre (+/-) restricted site limits as contained in the MRF and transfer station site designation, May, 1999.

Report on Municipally Sponsored Solid Waste Programs - January 1, 1996

CITY OF PONTIAC
MICHIGAN

MAYOR WALTER MOORE

July 13, 1998

RECEIVED
JUL 20 1998
OAKLAND COUNTY
FACILITIES MANAGEMENT

Oakland County Solid Waste Planning Committee
c/o Oakland County Solid Waste Planning
One Public Works Drive
Waterford, MI 48328-1097

Attn: Ardath Regan, Chairwoman

Re: Solid Waste Management Plan Update: Disposal Area Designation

Dear Ms. Regan and Members of the Committee:

The City of Pontiac has historically disposed of residential, commercial, and much industrial non-hazardous solid waste generated within its boundaries at disposal facilities owned and operated by the municipality.

The City's current disposal site, the Collier Road Landfill, may reach the limits of its capacity before the next Solid Waste Management Plan Update process begins. In order to prepare for future needs, I am requesting that the 1998 Oakland County Solid Waste Plan Update include the designation of the City's property on Collier Road as a solid waste transfer station.

The two transfer stations designated in the current Plan Update at facilities located in the city have not been built and there are no agreements in place which would cause them to be built and made available to City of Pontiac waste generators. With the depletion of available landfill space in close proximity to the site of solid waste generation and with financial and engineering obstacles which prevent the expansion of the Collier Road Landfill in the near future. the City must be prepared to transfer solid waste to more distant disposal sites should the need arise.

Attached is a drawing and legal description of the City's property north of Collier Road. I am requesting that the entire non-wetlands portion of the site to the south and east of the railroad tracks which traverse the property be included in the transfer station designation to provide the greatest flexibility for the City in the use of its property

450 EAST WIDE TRACK DRIVE, PONTIAC, MICHIGAN 48342-2245
TELEPHONE: (248) 857-7601 • FAX: (248) 338-7680

after the landfill closes. Access to a future transfer station at this site would be gained from Collier Road.

Thank you for your consideration.

Sincerely,

Walter Moore

Walter Moore, Mayor

Enclosure

cc: The Honorable Gary Peters, Michigan State Senate
The Honorable Hubert Price, Michigan House of Representatives
Honorable JoAnne Holbert, Oakland County Commissioner
Honorable Jeff Kingzett, Oakland County Commissioner

CITY OF PONTIAC
MICHIGAN

MAYOR WALTER MOORE

DEPARTMENT OF PUBLIC UTILITIES
SANITATION DIVISION

November 16, 1998

Oakland County Solid Waste Planning Committee
c/o Oakland County Solid Waste Planning
One Public Works Drive
Waterford, MI 48328-1097

Attn: Ardath Regan, Chairwoman

Re: Solid Waste Management Plan Update: Disposal Area Designation

Dear Ms. Regan and Members of the Committee:

The City of Pontiac has historically disposed of residential, commercial, and much industrial non-hazardous solid waste generated within its boundaries at disposal facilities owned and operated by the municipality.

The City's current disposal site, the Collier Road Landfill, may reach the limits of its capacity before the next Solid Waste Management Plan Update process begins. In order to prepare for future needs, I am requesting that the 1999 Oakland County Solid Waste Plan Update include the designation of the City's property on Collier Road as a solid waste processing plant and solid waste transfer facility. Enclosed is a resolution of the Pontiac City Council in support of this request.

The two solid waste processing plant/transfer stations designated in the current Plan Update at facilities located in the city have not been built and there are no agreements in place which would cause them to be built and made available to City of Pontiac waste generators. With the depletion of available landfill space in close proximity to the site of solid waste generation and with financial and engineering obstacles which prevent the expansion of the Collier Road Landfill in the near future, the City must be prepared to transfer solid waste to more distant disposal sites should the need arise.

Attached is a drawing and legal description of the City's property north of Collier Road. I am requesting that the entire non-wetlands portion of the site to the south and east of the railroad tracks which traverse the property be included in the processing plant/transfer station designation to provide the greatest flexibility for the City in the use of its property after the landfill closes. Access to a future transfer station at this site would be gained from Collier Road.

575 COLLIER ROAD, PONTIAC, MICHIGAN 48326
TELEPHONE: (810) 857-5700 • FAX: (810) 857-5705

It should be noted that a solid waste processing plant/transfer station operation has a lower negative environmental impact potential than a Type II landfill which is the current state-permitted use of this property.

Thank you for your consideration.

Sincerely,

Walter Moore

Walter Moore, Mayor

Enclosures:

- Resolution of the Pontiac City Council
- Site Drawing and Property Description

cc: The Honorable Gary Peters, Michigan State Senate
The Honorable Hubert Price, Michigan House of Representatives
Honorable JoAnne Holbert, Oakland County Commissioner
Honorable Jeff Kingzett, Oakland County Commissioner

RESOLUTION OF THE PONTIAC CITY COUNCIL

State of Michigan)
SS
County of Oakland)
City of Pontiac)

WHEREAS, on October 29, 1998, the City Council passed a resolution supporting the request to designate City property at 575 Collier Road as a solid waste transfer facility in the 1999 Oakland County Solid Waste Management Plan update; and

WHEREAS, state law requires a solid waste processing plant license for those facilities which separate out the recyclable portion of solid waste from the non-recyclable portion; and

WHEREAS, in order to maximize the City's ability to utilize its own property to provide comprehensive solid waste management services to its citizens, a solid waste processing plant license may be desirable; and

WHEREAS, it is necessary for a facility to be designated in the Oakland County Solid Waste Management Plan in order to receive state permits to construct and operate such facilities; and

WHEREAS, designation of a facility in the Oakland County Solid Waste Management Plan does not confer an obligation on the owner to construct and operate such a facility;

NOW, THEREFORE, BE IT RESOLVED, that the Pontiac City Council approves a request to the Oakland County Solid Waste Planning Committee to designate the property owned by the City at 575 Collier Road, Pontiac MI 48326, as a solid waste processing/ solid waste transfer site in the county's 1999 Solid Waste Plan Update; and

BE IT FURTHER RESOLVED THAT the Mayor is authorized to submit said request on behalf of the City of Pontiac.

I, Mary Williams, City Clerk of Pontiac, Michigan, do hereby certify that the foregoing is a true copy of a Resolution adopted by the Pontiac City Council at a regular meeting held on November 12, 1998.

Given under my hand and seal of
the City of Pontiac, Michigan
This 13th day of November, A.D., 1998

Mary D. Williams

MARY H. WILLIAMS, CMC
CLERK OF THE CITY OF PONTIAC, MICHIGAN

DESCRIPTION FOR
LAND OWNED BY THE
CITY OF PONTIAC
COMMONLY KNOWN AS
COLLIER ROAD SANITARY LANDFILL

Land located in the City of Pontiac, Oakland County, Michigan, described as:

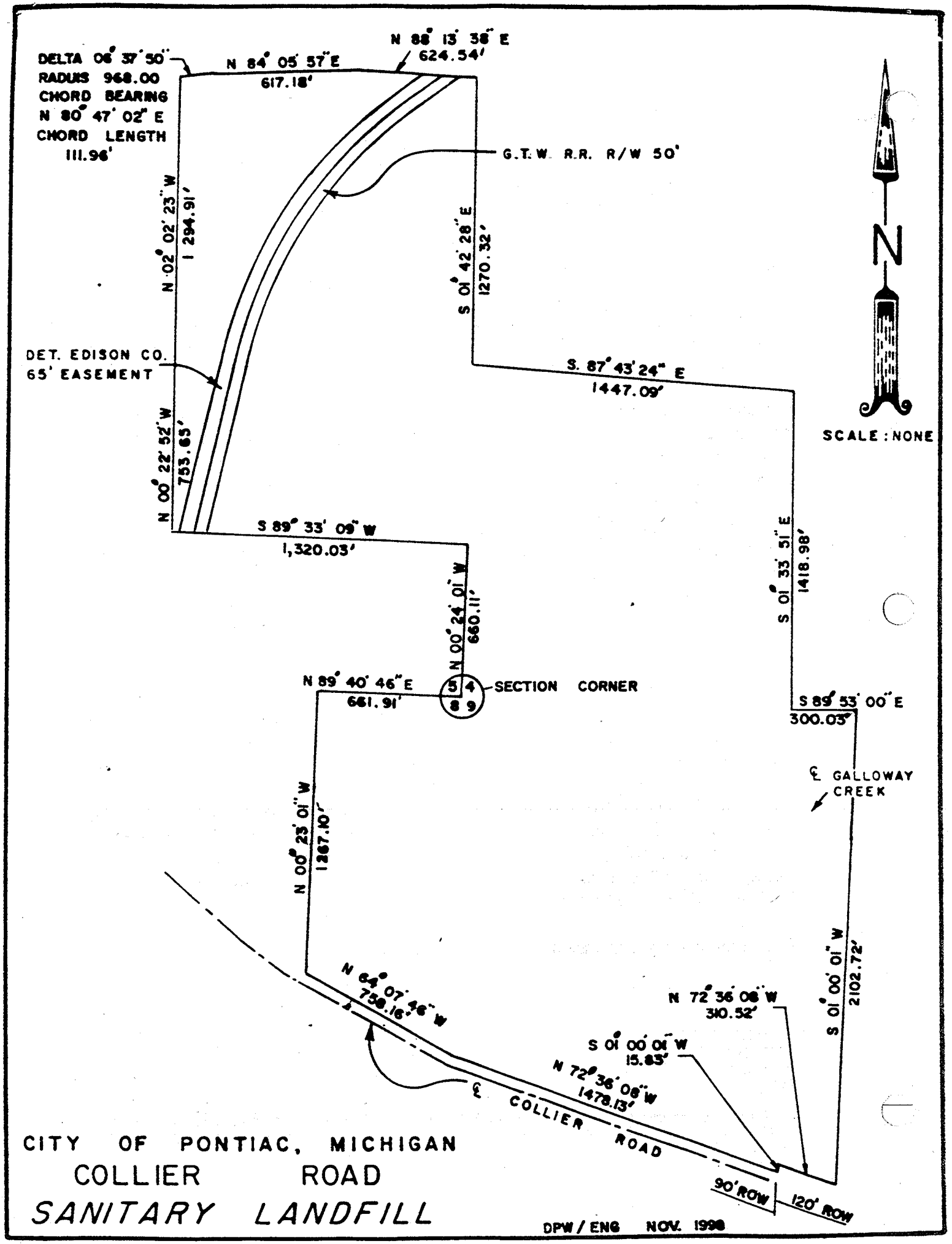
Parts of the Southwest 1/4 of Section 4, Southeast 1/4 of Section 5, Northeast 1/4 of Section 8 and Northwest 1/4 of Section 9, Pontiac Township, Town 3 North, Range 10 East, Oakland County, Michigan, generally described as follows:

Beginning at the Southwest corner of above mentioned Section 5, said point being the joint corner of said Sections 4,5,8 and 9; Thence North 00 degrees 24 minutes 01 seconds West, 660.11 feet; Thence South 89 degrees 33 minutes 09 seconds West, 1320.03 feet; Thence North 00 degrees 22 minutes 52 seconds West, 753.65 feet; Thence North 02 degrees 02 minutes 23 seconds West, 1294.91 feet; Thence along an arc to the right 112.02 feet (Delta = 06 degrees 37 minutes 50 seconds, Radius = 968.00 feet), Long Chord Bearing = North 80 degrees 47 minutes 02 seconds East, 111.96 feet; Thence North 84 degrees 05 minutes 57 seconds East, 617.18 feet; Thence North 88 degrees 13 minutes 38 seconds East, 624.54 feet; Thence South 01 degrees 42 minutes 28 seconds East, 1270.32 feet; Thence South 87 degrees 43 minutes 24 seconds East, 1447.09 feet; Thence South 01 degrees 33 minutes 51 seconds East, 1418.98 feet to a point on the North line of above mentioned Section 9; Thence South 89 degrees 53 minutes 00 seconds East, 300.03 feet; Thence South 01 degrees 00 minutes 01 seconds West, 2102.72 feet to the North line Collier Road (120 feet wide); Thence North 72 degrees 36 minutes 08 seconds West, 310.52 feet; Thence South 01 degrees 00 minutes 01 seconds West, 15.83 feet, to a point on the North line Collier Road, said road 90 feet wide; Thence North 72 degrees 36 minutes 08 seconds West, 1478.13 feet along the North line Collier Road; Thence North 64 degrees 07 minutes 46 seconds West, 758.16 feet along said North line Collier Road; Thence North 00 degrees 23 minutes 01 seconds West, 1267.10 feet to a point, said point lying on the south line of above mentioned Section 5; Thence North 89 degrees 40 minutes 46 seconds East, 661.91 feet to the Point of Beginning. Contains 210 Acres, more or less.

Except railroad right-of-way and easements of record.

DPW&S/ENG. DIV.
NOV. 1998
c:\DESCLAND
JAC

This description was compiled from a Title search from The Philip F. Greco Title Company, surveys of the property along Lake Angelus Road from Johnson & Anderson, relative to the land exchange with Great Lakes Crossing and existing survey information in the files of the City Engineer.

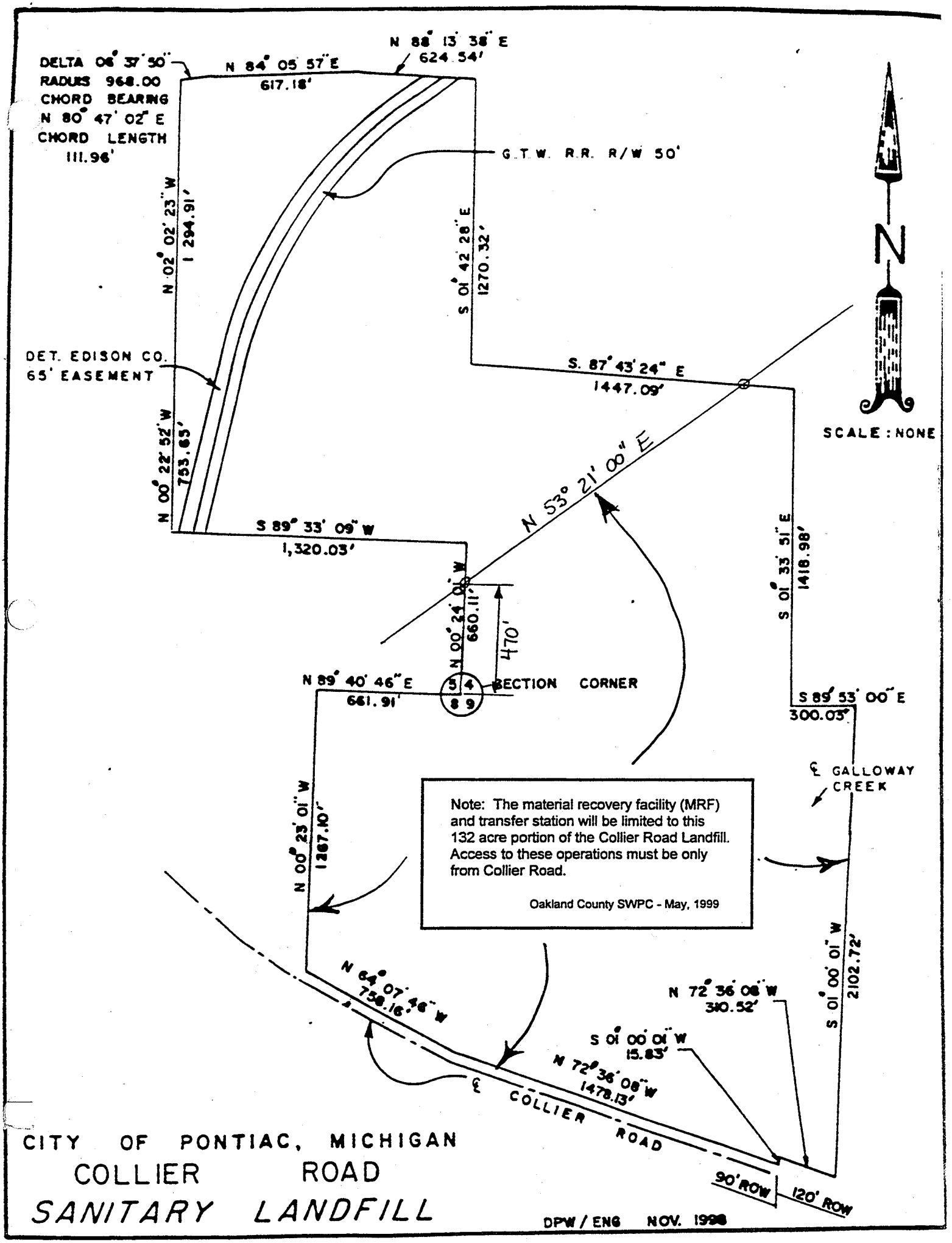


CITY OF PONTIAC, MICHIGAN

COLLIER ROAD

SANITARY LANDFILL

DPW / ENG NOV. 1998



CITY OF PONTIAC, MICHIGAN

COLLIER ROAD SANITARY LANDFILL

DPW / ENG NOV. 1998

Report on

Municipally Sponsored Solid Waste Programs

as of January 1, 1996

Oakland County, Michigan

December 30, 1997

Oakland County Solid Waste Planning

Oakland County's Act 451 Waste Stream - 1996

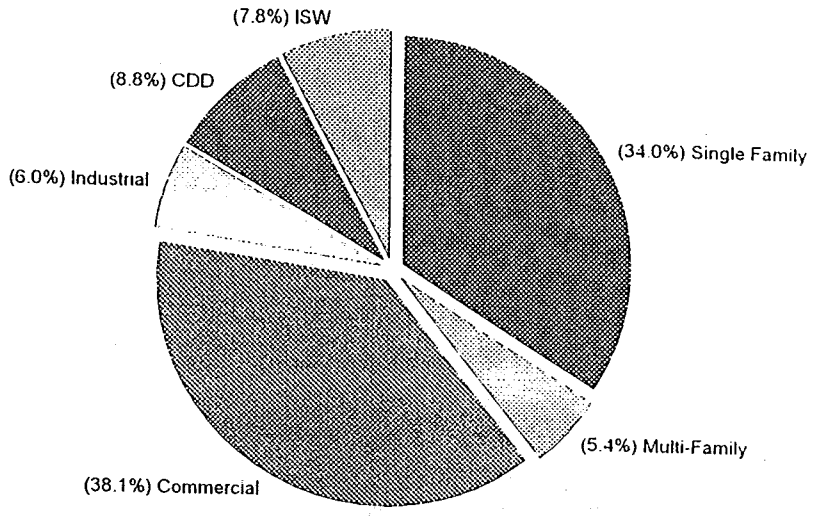
Waste Type	Tons / Day	Percent of Stream	Estimated VR Percent	
MSW				
Single Family	1,715.54	33.96%	26.88%	1
Multi-Family	272.20	5.39%	4.43%	2
Commercial	1,922.79	38.06%	14.25%	
Industrial	302.32	5.98%	38.01%	3
MSW sub-total	4,212.85	83.40%	20.46%	
CDD	445.23	8.81%	13.88%	
ISW	393.59	7.79%	13.88%	
Total, Act 451	5,051.66	100.00%	19.37%	

VR = Volume Reduction prior to disposal

1 High because of yard wastes

2 Low because of limited yard wastes and lack of convenient services

3 High because of GM WTE plant

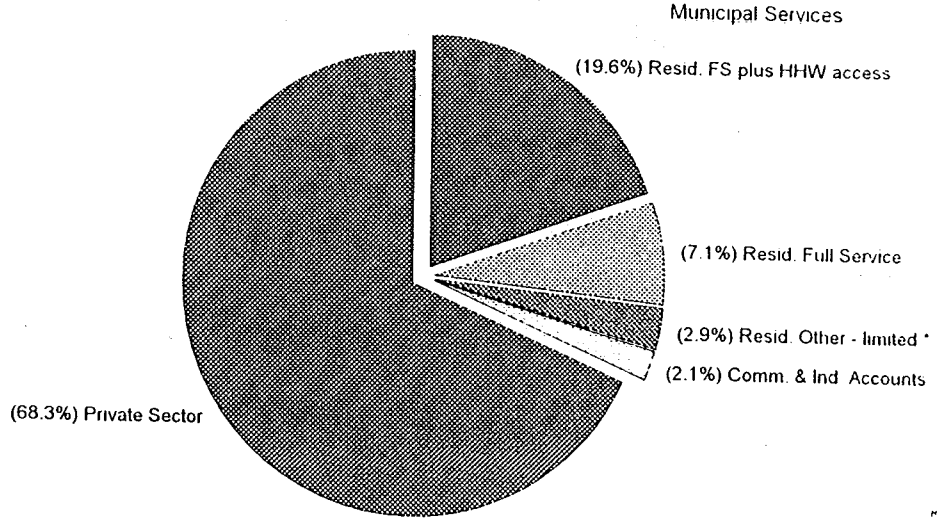


Program Providers - 1996

Program Type	Tons / Day	Percent	Municipal Programs
Services Managed by Municipalities			
Resid. FS plus HHW access	989.73	19.59%	24
Resid. Full Service	357.45	7.08%	14
Resid. Other - limited *	147.15	2.91%	4
Comm. & Ind. Accounts	104.63	2.07%	n.a.
Municipal sub-total	1,598.96	31.65%	42
Direct Private Sector Services	3,452.70	68.35%	n.a.
Total, Act 451	5,051.66	100%	42

FS or Full Service includes curbside...
Mixed-waste collection,
Recyclables collection, &
Yard Waste collection

* Where at least mixed-waste curbside collection is provided by or through a municipality



(With one exception, all municipal collection services are provided by contracted private sector forces.)

Report on Oakland County's Municipally Sponsored Solid Waste Programs as of January 1, 1996

December 30, 1997

INTRODUCTION

The goal of the survey upon which this report is based was to measure solid waste service levels offered by Oakland County municipalities as of January 1, 1996 and to provide updated information from the municipalities regarding solid waste issues. The information collected is compared to similar information on municipal programs as they existed on January 1, 1993.

The non-hazardous solid waste stream generated within Oakland County is comprised of several elements. Residential municipal solid waste (MSW) accounts for approximately 39% of the total weight generated. Commercial MSW represents 38%, industrial MSW 6% and the remaining 16% consists of industrial special wastes (ISW) and construction and demolition debris (CDD).

The information within this report is based upon that portion of the waste stream that is managed in someway by municipalities. The managed stream is principally residential MSW representing 30% of the total waste stream and some commercial and industrial MSW representing 2% of the stream. The remaining 68% of the waste stream is generally managed by the waste generators through arrangements with private sector service providers.

The Municipal Solid Waste (MSW) Survey Form used to collect information on the municipal solid waste programs was broken into six basic categories: Mixed Wastes, Recycling, Yard Waste, Other Elements, Financing, and Education. Survey data was provided by municipal and authority representatives. The same format is used in this report.

Oakland County is governed by 61 cities, villages and townships. This report is based upon data from 58 of these units. Northville is not included because it is legally considered to be within the Wayne County solid waste planning effort and for statistical purposes, Novi and Southfield Townships having been discounted because of the extremely small waste stream generated relative to that in all other municipalities. This yields the final total of 58 municipalities highlighted in the report which follows.

Two solid waste authorities existed in the County as of January 1, 1996. The Southeastern Oakland County Resource Recovery Authority (SOCRRA) was comprised of 14 member municipalities including Berkley, Beverly Hills, Birmingham, Clawson, Ferndale, Hazel Park, Huntington Woods, Lathrup Village, Madison Heights, Oak Park, Pleasant Ridge, Royal Oak, Royal Oak Township and Troy. The Resource Recovery and Recycling Authority of Southwest Oakland County (RRRASOC) was comprised of 8 member municipalities including Farmington, Farmington Hills, Lyon Township, Novi, South Lyon, Southfield, Walled Lake, and Wixom.

Solid Waste Database
Oakland County, Michigan

Municipal Program Levels - January 1, 1996

12/11/97
15:32

Municipality	Curbside Single Family Services: Mixed	Recycle	Yard Wastes	Annual Clean Up	Single Family Drop-off Services: HHW + Recycle	Single Family Drop-off Services: Recycle	Drop-off Services for all Residents: HHW	Recycle	Yard Wastes	Clean Up	Curbside Multi-Family Services (generally to a limited number of DUs): Mixed	Recycle	Yard Wastes	Annual Clean Up
Addison Township								X		X				
Auburn Hills				X			X			X				
Berkley	X	X	X		X		X	X	X				X	
Beverly Hills	X	X	X		X		X	X	X		X	X		
Bingham Farms	X	X	X		X		X				X	X		
Birmingham	X	X	X		X		X	X	X	X	X	X	X	
Bloomfield Hills	*	*	*		X		X			X	*	*	*	
Bloomfield Township	X	X	X	X	X		X				X	X	X	X
Brandon Township								X		X				
Clarkston								X		X				
Clawson	X	X	X		X		X	X	X		X	X	X	
Commerce Township	X	X	X			X					X	X		
Farmington	X	X	X		X		X	X			X	X	X	
Farmington Hills	X	X	X	X	X		X	X			X	X	X	X
Ferndale	X	X	X		X		X	X	X		X	X	X	
Franklin	X	X												
Groveland Township										X				
Hazel Park	X	X	X		X		X	X	X		X	X	X	
Highland Township	X	X	X			X			X		X	X		
Holly	X	X	X			X				X				
Holly Township								X		X				
Huntington Woods	X	X	X		X		X	X	X					
Independence Township								X		X				
Keego Harbor	X	X	X			X								
Lake Angelus														
Lake Orion	X	X	X			X		X			X			
Lathrup Village	X	X	X		X		X	X	X		X	X	X	
Leonard	X	X	X			X								
Lyon Township								X						
Madison Heights	X	X	X		X		X	X	X			X		
Milford	X	X	X		X		X				X	X		
Milford Township	X	X	X		X		X				X	X		
Northville (part)	(Not included in survey since municipality participates in the Wayne County Program)													
Novi								X						
Novi Township	(Not included in survey because of limited statistical significance)													
Oak Park	X	X	X	X	X		X	X	X		X	X	X	X
Oakland Township														
Orchard Lake	X	X	X			X								
Orion Township										X				
Ortonville								X		X				
Oxford	X	X	X			X				X	X			
Oxford Township								X		X				
Pleasant Ridge	X	X	X		X		X	X	X		X	X	X	
Pontiac	X		X					X	X		X			
Rochester	X	X	X		X		X				X	X		
Rochester Hills	*	*	*					X	X					
Rose Township								X		X				
Royal Oak	X	X	X		X		X	X	X		X	X	X	
Royal Oak Township	X			X			X	X	X		X			X
South Lyon	X	X	X	X		X		X			X	X		X
Southfield	X	X	X	X	X		X	X						
Southfield Township	(Not included in survey because of limited statistical significance)													
Springfield Township								X		X				
Sylvan Lake	X						X		X					
Troy	X	X	X		X		X	X	X		X			
Walled Lake	X	X	X			X		X						
Waterford Township								X	X					
West Bloomfield Township							X							
White Lake Township	X	X	X			X					X	X		
Wixom	X	X	X		X		X	X						
Wolverine Lake	X	X	X			X					X	X	X	
County Totals	40	37	37	7	23	12	27	35	19	16	27	23	14	5
Less Northville														
Planning Values	40	37	37	7	23	12	27	35	19	16	27	23	14	5
Designated Hauler Programs														
Waterford Township	DH	DH	DH			X								
West Bloomfield Township	DH	DH	DH		X									
Program Totals	42	39	39		24	13								

* Ordinance required services

sum_1 wk4

MIXED WASTES

As of January 1, 1996, 54 of 58 municipalities have some level of involvement in the provision or management of mixed waste services. The level of involvement ranges from minimal type programs such as an annual one-day clean-up drop-off programs or ordinance required minimum service levels to full service weekly curbside service programs.

Thirty eight municipalities are involved in the curbside pickup of mixed solid waste. Private firms are contracted by 35 municipalities for weekly mixed waste disposal services. One municipality manages the program entirely with municipal forces, including landfilling (Pontiac). Two municipalities provide service and labor for a portion of the program but use contractors for disposal and oversight (Madison Heights and Walled Lake). Six of these municipalities offer annual or semi-annual curbside clean-up programs in addition to weekly services to allow for extra bulk item pickup and special waste collection. Three additional offer an annual drop-off clean-up program for such items.

These basic curbside programs handle 67% of the County's single family residential mixed-waste stream. Programs servicing multifamily dwelling units in these same communities is quite limited, serving only 23% of the multi-family waste stream although 66% of the County's multi-family residents live within these jurisdictions. Considering both the single family and multi-family waste streams, 61% of the total tonnage generated is serviced by the municipally managed programs.

Although limited daily involvement is provided by the municipality, two communities (Bloomfield Hills and Rochester Hills) have adopted an ordinance requiring that all private haulers provide a prescribed minimum level of services. These programs raise the residential waste percentage served values to 73% single family, 30% multi-family and 67% total. Finally, a tool used by some to manage mixed waste services is a Designated Hauler (DH) program that offers services at fixed prices, if so chosen by the residents, (West Bloomfield and Waterford Townships). Assuming that 75% of the single-family residential units used the DH, the total residential waste percentage served values rise to 82% single family, 30% multi-family and 75% of all tonnage generated.

Twelve additional municipalities, who do not offer weekly curbside service, do provide an annual or semi-annual mixed waste drop-off clean-up program. A variety of contractors are used for annual clean-up days and many drop-off site operations involve the use of municipal staff and volunteers for these efforts. The waste stream at most of these drop-off clean-ups consists of bulky goods, construction debris, and scrap metal. Tires and other special wastes may be taken, but a service fee is imposed in most cases. This type of program is open to all residents including multifamily. These communities include Auburn Hills, Clarkston, Ortonville, and Addison, Brandon, Groveland, Holly, Independence, Orion, Oxford, Rose and Springfield Townships. This remains the same as the 1993 information.

One municipality not counted within the 54 previously described limits its mixed-waste involvement to licensing haulers and their collection vehicles (Oakland Township). It should be noted that 12 other municipalities, who do provide some level of service, also license haulers and 8 of these also license the hauler's vehicles.

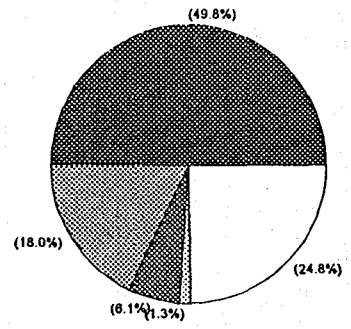
Oakland County's Residential Waste Stream - 1996

Generator Type	Population	%	Occupied Dwelling Units (DUs)	%	Persons per Occupied DU	Waste Stream (tons/day)	%	Total Pounds per Capita per Day	Less Yard Wastes	YW Pounds per Capita per Day	Net Waste Stream	%	Net Pounds per Capita per Day
Single Family Residential	932,422	80.16%	313,829	70.53%	2.971	1,715.54	86.31%	3.680	(363.68)	0.780	1,351.86	83.47%	2.900
Multi-Family Residential	230,826	19.84%	131,110	29.47%	1.761	272.20	13.69%	2.359	(4.48)	0.039	267.73	16.53%	2.320
County Residential Totals	1,163,248	100%	444,939	100%	2.614	1,987.74	100%	3.418	(368.16)	0.633	1,619.58	100%	2.785

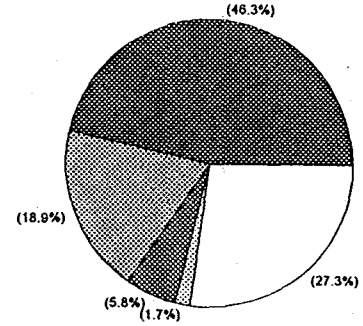
Residential Solid Waste Service Levels - 1996

Service Level / Provider	Waste Stream in tons / day				Population				Occupied Dwelling Units			
	SF	MF	Total	%	SF	MF	Total	%	SF	MF	Total	%
Municipal - Resid FS plus HHW access	957.28	32.45	989.73	49.79%	511,329	27,433	538,762	46.32%	179,001	17,390	196,391	44.14%
Municipal - Resid Full Service	339.18	18.26	357.45	17.98%	204,517	15,432	219,949	18.91%	67,296	8,242	75,538	16.98%
Municipal - Resid Mixed + 1 Other Curbside	108.69	12.63	121.32	6.10%	56,779	10,786	67,565	5.81%	17,490	6,254	23,744	5.34%
Municipal - Resid Mixed Only	6.73	19.10	25.83	1.30%	3,482	16,137	19,619	1.69%	1,357	8,831	10,188	2.29%
Municipal Sub-total	1,411.89	82.45	1,494.33	75.18%	776,107	69,789	845,896	72.72%	265,144	40,717	305,861	68.74%
Direct Private Sector Services	303.65	189.75	493.41	24.82%	156,315	161,037	317,352	27.28%	48,685	90,393	139,078	31.26%
County Totals	1,715.54	272.20	1,987.74	100%	932,422	230,826	1,163,248	100%	313,829	131,110	444,939	100%

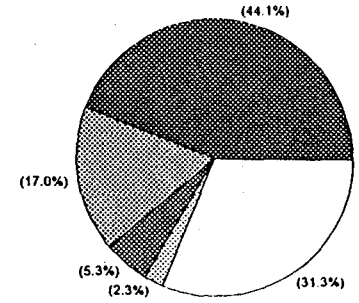
Residential Waste Stream

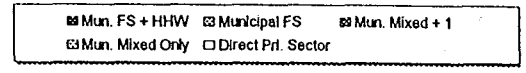


Population



Occupied Dwelling Units





12/29/97 09:28 RJS, PE SurcutS wk4

Five haulers provided the majority of residential service for mixed waste curbside pickup and recycling (based on total tonnage collected) - Waste Management, Laidlaw, Tringalli, BFI and City Waste Systems. Other haulers providing contracted municipal services include - Clarkston Disposal, Car Trucking, Right Way Clean Up, Duncan Disposal, and Painter & Ruthenberg. The distribution of contractors among communities has remained fairly stable over the past three years. Most contracts run for a 3-5 year period, but some run as long as 15 years. The long term contracts generally are renegotiated several times during their lifetime. The contracts generally cover a complete mixed waste service, including white goods and bulky item pickup. Freon removal from refrigeration appliances is limited and usually requires a special notification to the contractor and possible payment of a fee. The largest problem items for general disposal are automotive items, construction and demolition debris (CDD), and used oil.

The destination of the residential mixed waste stream collected from the municipalities is split between landfills in Wayne, Washtenaw, Oakland, Macomb and Genesee Counties.

HOUSEHOLD HAZARDOUS WASTES

Twenty seven municipalities provided some access to a household hazardous waste (HHW) drop off collection program. Because of the expense involved, all such programs are limited to residents only and identification is generally required. Only one permanent year-round HHW program existed in the County. This appointment only program is operated by SOCRRA at it's facilities and is limited to residents from the 14 participating communities (both single family and multi-family residents). Two municipalities offered drop off programs at temporary sites twice per year (Southfield and Bloomfield Township) and nine communities offered a one day drop off collection every year. The nine additional communities included Auburn Hills, Bloomfield Hills, Farmington, Farmington Hills, Milford, Milford Township, Sylvan Lake and West Bloomfield Township. Two others offer a program every 2-3 years as budgets allow (Bingham Farms and Rochester).

Three of the HHW programs represent a collaborative effort between neighboring communities (the 14 SOCRRA municipalities, Farmington Hills and Farmington operating together and Sylvan Lake joining with the West Bloomfield Township effort) and cover a majority of the County's residents having such program access.

Three contractors were used for HHW services - City Environmental, Chemical Waste Management, and SQS. Many programs rely on the use of local staff and volunteers to make the drop-off day efforts proceed smoothly. These programs have increased from 19 since 1993. If offered, this is one of the few solid waste programs that is universally available to all residents from within the municipality offering the program, be they single family or multi-family residents.

Solid Waste Database
Oakland County, Michigan

recycle2.wk4
12/09/97

Recyclable Materials Collected at Curbside, January 1, 1996

Municipality	#	Plastics	Newspapers	OCC	Magazines	Phone books	Junk mail	Other Paper	Cans	Metal cans	Pallets	CDD	Tires	Lead Batteries	Used Oil	Other 1	Other 2
Addison Township	1																
Auburn Hills	2																
Berkley	3	X	X		X	X			X	X				X			
Beverly Hills	4	X	X		X	X			X	X				X			
Bingham Farms	5	X	X		X	X			X	X				X	X		
Birmingham	6	X	X		X	X			X	X				X			
Bloomfield Hills	7	X	X	X					X	X							
Bloomfield Township	8	X	X		X	X			X	X			X	X			
Brandon Township	9																
Clarkston	10																
Clawson	11	X	X		X	X			X	X				X			
Commerce Township	12	X	X		X	X	X	X	X	X							
Farmington	13	X	X		X				X	X							
Farmington Hills	14	X	X		X				X	X							
Ferndale	15	X	X		X	X			X	X				X			
Franklin	16	X	X		X				X	X							
Groveland Township	17																
Hazel Park	18	X	X		X	X			X	X				X			
Highland Township	19	X	X	X	X		X	X	X	X			X			Boxboard	Styrofoam
Holly	20	X	X						X	X						Aerosol cans	
Holly Township	21																
Huntington Woods	22	X	X		X	X			X	X				X			
Independence Township	23																
Keego Harbor	24	X	X						X	X							
Lake Angelus	25																
Lake Orion	26	X	X		X	X			X	X							
Lathrup Village	27	X	X		X	X			X	X				X			
Leonard	28	X	X						X	X							
Lyon Township	29																
Madison Heights	30	X	X		X	X			X	X				X			
Milford	31	X	X	X	X		X	X	X	X							
Milford Township	32	X	X		X	X	X		X	X							
Northville (part)	33	(Not included in survey since municipality participates in the Wayne County program)															
Novi	34																
Novi Township	35	(Not included in survey because of limited statistical significance)															
Oak Park	36	X	X		X	X			X	X				X			
Oakland Township	37																
Orchard Lake	38	X	X						X	X							
Orion Township	39																
Ortonville	40																
Oxford	41	X	X						X	X							
Oxford Township	42																
Pleasant Ridge	43	X	X		X	X			X	X				X			
Pontiac	44																
Rochester	45	X	X	X	X	X	X	X	X	X			X	X			
Rochester Hills	46	X	X						X	X							
Rose Township	47																
Royal Oak	48	X	X		X	X			X	X				X			
Royal Oak Township	49																
South Lyon	50	X	X						X	X							
Southfield	51	X	X		X				X	X							
Southfield Township	52	(Not included in survey because of limited statistical significance)															
Springfield Township	53																
Sylvan Lake	54																
Troy	55	X	X		X	X			X	X				X			
Walled Lake	56	X	X	X	X		X		X	X							
Waterford Township	57	X	X						X	X							
West Bloomfield Township	58	X	X	X	X	X	X	X	X	X	X						
White Lake Township	59	X	X	X					X	X							
Wixom	60	X	X		X				X	X							
Wolverine Lake	61	X	X	X				X	X	X						Glossy news inserts	
Number of Programs		39	39	8	28	21	7	6	39	39	1	0	3	16	1	3	1

RECYCLING

The number of curbside recycling programs has grown from 35 to 39. As shown in the Exhibit, thirty-five municipalities offer curbside services, two require such services by ordinance (Bloomfield Hills and Rochester Hills) and two provide this in the Designated Hauler programs (Waterford Township and West Bloomfield Township). These programs service 60% of the single family population and 17% of the multi-family residents for a total of 58% of the County's population. Again, as with the mixed-waste programs, service for multi-family residents is limited. Even with 58% of the County's multi-family residents residing within the municipalities that offer curbside recycling services, only 17% of these residents are served.

Although most municipalities with curbside programs offer these services to all single family dwelling units and to some selected multifamily residential units, only a select few offer any recycling services to commercial and industrial sites. Of the 39 programs, 22 offer some service to multi-family residents, 9 offer service to some commercial accounts and only 2 offer limited industrial account service.

Four materials still predominate in the materials collected at curbside: metal cans, #1-2 plastics, glass, and newspaper. Others that are somewhat popular - magazines, phone books, and household batteries. Some small offerings exist for tires, junk mail, other paper, aerosol cans, and Styrofoam.

The number of municipalities offering recycling drop-off services has remained constant at 35. All of these programs are limited to residents only and some are periodic (i.e. once per month). Twenty communities offer both curbside and drop off services. Thirteen municipalities with curbside recycling services do not offer drop-off programs. This is quite unfortunate since these programs would have extended access to all of the municipality's multifamily residents who are not normally offered direct access to the municipal programs.

Materials collected at drop-off sites are similar to the curbside programs and many also collect some of the following - old corrugated cardboard (OCC), magazines, phone books, tires, household batteries, other paper, and used oil. Some scattered offerings include scrap metals, auto batteries, foam, plastic bags, and sharps (medical items). Persons leaving mixed wastes and in some instances HHW, have caused a contamination issue at some unmanned drop off locations. The additional materials collected at drop off sites in municipalities that also have a curbside program, allow the opportunity to generate additional revenue with minimal cost or investment without making a change with curbside program equipment and structure. This variety of materials has increased since 1993, when most accepted only the basic four items.

The number of drop off sites has diminished from 23 to 18 since 1993. Several of these sites service a number of communities with 35 claiming access. Nine permanent municipal sites are supplemented by three commercial sites and six periodic (Saturday only or monthly programs) municipal programs. The RRRASOC drop-off site and the Lyon Township site provide the most public availability with 24 hour access. The remaining permanent sites are open business hours only. The contractors who service these programs include CWS, BFI, WMI as well as the authorities. Many sites are staffed by volunteers or other municipal staff as required.

PERMANENT RECYCLING DROPOFF SITES
January 1, 1996

1. **SOCRRA- Transfer station - Coolidge Rd., Troy, MI**
   Berkley, Beverly Hills, Birmingham, Clawson, Ferndale, Hazel Park, Huntington Woods, Lathrup Village, Madison Heights, Oak Park, Pleasant Ridge, Royal Oak, Royal Oak Township, Troy

2. **RRRASOC - MRF, 8 Mile Rd., Southfield, MI**
   Southfield, Novi, Novi Twp, Farmington, Farmington Hills, Walled Lake, South Lyon, Lyon Twp,

3. **Independence Twp. DPW, Independence Twp, MI**
   Independence Twp and Clarkston residents

4. **Farmington- Nine Mile Rd., Farmington, MI**
   Farmington

5. **Farmington Hills DPW, Farmington Hills, MI**
   Farmington Hills,

6. **Novi, Dewal Drive, Novi, MI**
   Novi

7. **Lake Orion, Village Hall, MI**
   Lake Orion

8. **Rochester Hills DPW, Rochester Hills, MI**
   Rochester Hills

9. **Lyon Twp, Whipple and Pontiac Trail, Lyon Twp, MI**
   Lyon Twp.

10. **Eagle Valley, Silverbell Road, Orion Township.**
    Addison Twp., Orion Township

11. **Smith's Disposal**
    Springfield Twp.

12. **Clarkston Disposal**
    Springfield Twp.

YARD WASTE

The 1995 statewide yard waste ban has had a notable effect on the number of yard waste collection programs. Thirty-five communities manage curbside collection programs along with two DH communities and two ordinance required programs bringing the total to thirty-nine. This could be compared to thirty programs in 1993, but most of the programs existing in 1993 were fairly limited, being seasonal in nature, focusing principally upon fall leaf collection services. Subscription services for yard wastes is readily available in other areas of the County through privately contracted haulers. In the rural environment, many residents don't generate significant amounts of collectable yard waste because of large lot sizes, home composting operations and alternative landscaping practices and simply do not utilize this type of service extensively.

A transition in collection containers for curbside yard waste programs is occurring, changing from plastic bags to kraft bags or to tagged cans only. Some haulers still collect yard wastes in plastic bags. Other bulky compostable materials (food, wood, lumber) are not accepted for curbside collection.

Only two municipality managed compost sites exist in the County. Highland Township's site is the only site open to the general public for use within the County boundaries. Yard waste is collected curbside in that community by the contracted hauler, but residents can drop off curbside materials (no fee being charged). Fees are charged to non-residents for all drop off materials and to residents for special items (i.e. stumps). The SOCRRA compost site handles the materials from most of its 14 communities' curbside programs, but does not offer formal drop off services on site. Yard waste can be dropped off at the SOCRRA transfer site in Troy for a fee.

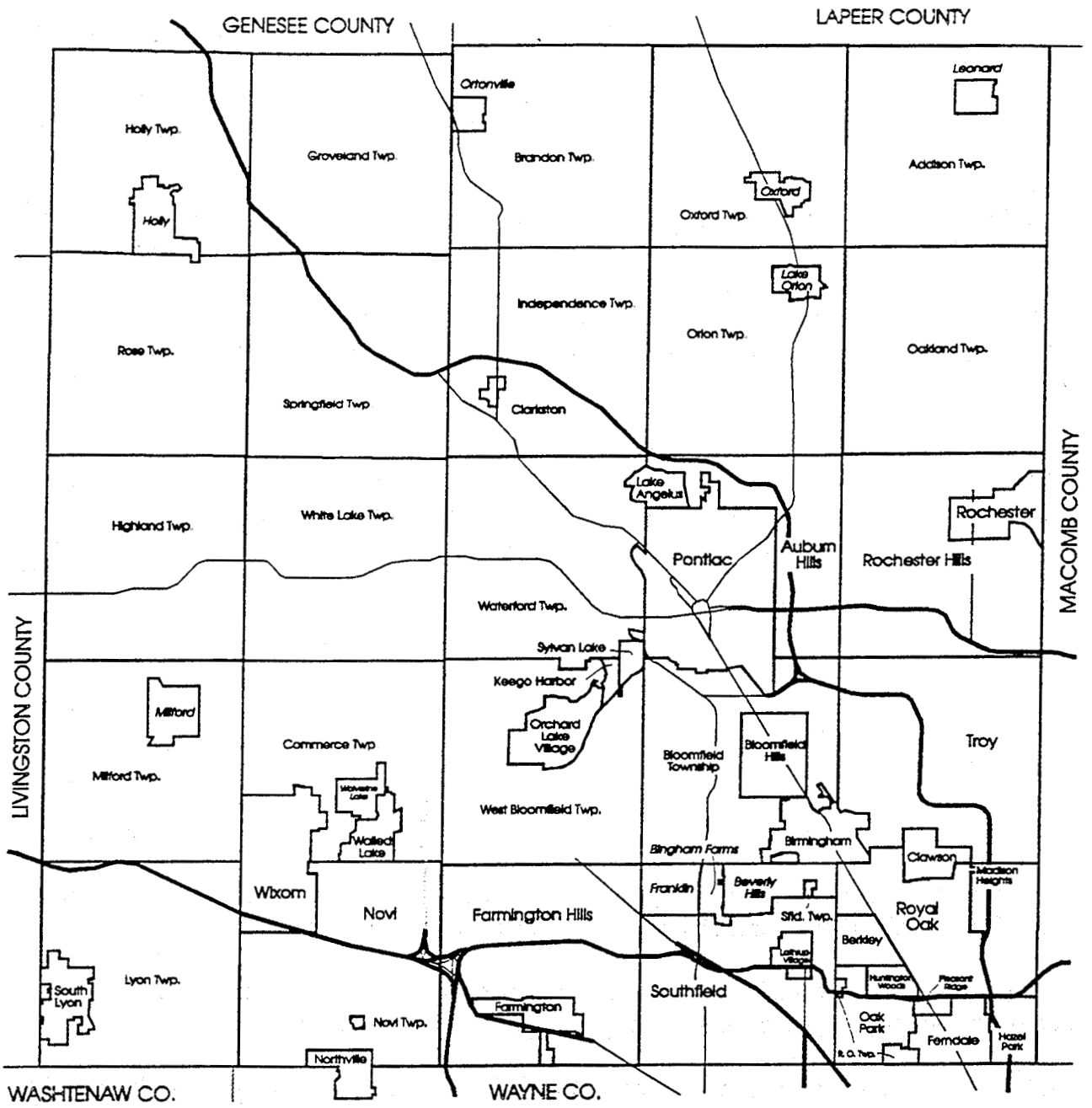
Four yard waste drop off only programs are offered by municipalities. Waterford Township's site is for use by residents only. No fees are charged for using this drop off. Rochester Hills has a special agreement for drop off use of the SOCRRA site by its residents. Pontiac allows residents to drop-off yard waste material at the landfill site. Sylvan Lake offers leave/brush collection drop off with cooperation of a local nursery operation. Each program is restricted to residents only.

Free access to finished compost products is available only through the SOCRRA municipalities, generally through the municipal Department of Public Works operations.

Thirteen communities offer brush chipping on a periodic basis, most have contracted this service out, but a few are provided by municipal staffs. This number is the same as 1993.

Thirty two Christmas tree municipal programs are offered, with 27 being curbside pickups during the first 2 weeks of January, primarily through contract services. Drop off sites are also provided in 8 municipalities (3 of which offer curbside collection as well). Additionally, the County Parks and Recreation Department offers drop off services for the general public at several of it's park sites and these services are identified by 4 additional municipalities as their program source.

Oakland County's Municipalities



30 Cities
21 Townships
10 Villages
61 Total

OTHER PROGRAM ELEMENTS

Program service levels appeared to be stable between 1993 and 1996. Most communities continued to provide the same or very similar services. SOCRRA added new materials for curbside recycling (OCC, paperboard, and junk mail) in January 1996. Changes by others under consideration for late 1996 implementation included the addition of a Christmas tree program, a new sewage disposal facility, assessing bulky item fees, yard bag and tag program extension, and HHW collection.

Thirty-four municipalities collaborate with another community or authority. The authorities' program levels and collaboration levels have remained strong and continue to grow. Key examples include the RRRASOC joint venture with Waste Management in the construction of a new Materials Recovery Facility (MRF) in Southfield. West Bloomfield Township offers collaboration with other communities for its HHW program (which it sponsors every 2-3 years). Some natural Townships/Village groups cooperate for recycling dropoffs, annual clean-up programs, or HHW programs. This trend has continued to increase as the cost efficiencies made possible with larger operating bases become apparent.

In terms of waste diversion (source reduction, reuse, recycling, and composting) few communities had any estimate or hard information on progress since 1990. SOCRRA collects weight information on its entire program. RRRASOC collects weight information on recyclables only, but compiles refuse bulk information (gateyards) from haulers and other sources. These authorities are the only communities that have a history of consistent data collection practices. Most municipalities obtain some general level of service information reports and sketchy volume data from their contractors, but most don't receive or maintain regular feedback that would be useful for planning purposes.

In-house recycling programs for municipal offices exist for a majority of the communities. Collection is limited to paper in most offices.

Ordinances directly impacting the waste stream are used in variety of forms in the County. Twelve municipalities have no ordinances on solid waste. Eleven have ordinances addressing yard waste, burning, recycling, and scavenging. The remaining thirty-five have ordinances addressing one or two of these issues.

Ordinances impacting commercial property waste handling were also common in terms of dumpster placement, screening and other restrictions on handling and number of containers.

Street sweepings are collected in 31 of the municipalities. Twenty-nine offer some kind of road litter pickup. Of these, many are connected to an annual cleanup program and such programs are more prominent in the rural areas. Seven communities have sewage treatment plants and the sludges/waste produced is either incinerated, land applied, or are landfilled by the haulers. The only municipalities that own and or operate major solid waste facilities are Highland Township, Pontiac, RRRASOC, and SOCRRA.

Solid Waste Database
Oakland County, Michigan

Miscellaneous Municipal Solid Waste Services - January 1, 1996

12/16/97
11:09

Municipality	Brush Chipping	Leaves swept or vacuumed	Christmas Trees Curbside	Christmas Trees Dropoff	In-house Recycling	Waste Ordinances Full	Waste Ordinances Partial	Street Sweeping	Roadside Pickup	Sewerage Treatment	Education Information
Addison Township							X				X
Auburn Hills				X	X			X	X		X
Berkley			X		X		X	X			
Beverly Hills			X		X		X	X			
Bingham Farms			X				X		X		X
Birmingham	X	X	X		X			X			X
Bloomfield Hills							X	X			X
Bloomfield Township	X		X		X	X		X	X		X
Brandon Township					X						X
Clarkston							X	X			X
Clawson	X	X	X		X	X		X	X		
Commerce Township					X		X			X	X
Farmington		X	X		X	X		X	X		X
Farmington Hills					X	X			X		X
Ferndale	X	X	X		X	X			X		X
Franklin					X		X	X			
Groveland Township				X					X		X
Hazel Park			X		X		X	X			
Highland Township				X			X				X
Holly			X				X	X		X	X
Holly Township					X		X		X		X
Huntington Woods	X	X	X		X	X		X			X
Independence Township	X			X	X		X		X		X
Keego Harbor			X	X			X				X
Lake Angelus					X						
Lake Orion		X			X		X	X			X
Lathrup Village			X		X		X	X			X
Leonard											X
Lyon Township											X
Madison Heights	X	X	X		X	X		X	X		X
Milford			X		X		X	X	X	X	X
Milford Township					X				X		X
Northville (part)	(Not included in survey since municipality participates in the Wayne County Program)										
Novi					X		X		X		X
Novi Township	(Not included in survey because of limited statistical significance)										
Oak Park	X	X	X		X		X	X	X		X
Oakland Township					X						
Orchard Lake					X		X	X	X		X
Orion Township				X	X		X				X
Ortonville					X		X	X			X
Oxford				X	X		X	X			X
Oxford Township				X	X		X		X		X
Pleasant Ridge	X	X	X		X		X	X			
Pontiac		X	X		X		X	X	X	X	X
Rochester	X	X	X		X	X		X	X		X
Rochester Hills				X	X	X		X	X		X
Rose Township					X						X
Royal Oak			X	X	X	X		X	X		X
Royal Oak Township					X						
South Lyon	X		X					X		X	X
Southfield	X		X		X		X	X	X		X
Southfield Township	(Not included in survey because of limited statistical significance)										
Springfield Township				X	X		X		X		
Sylvan Lake		X			X		X		X		X
Troy			X	X	X		X	X	X		X
Walled Lake	X		X				X	X	X	X	
Waterford Township			X		X		X		X		
West Bloomfield Township							X				X
White Lake Township					X		X				X
Wixom		X	X		X	X		X	X	X	X
Wolverine Lake			X				X		X		X
County Totals	13	13	27	12	44	11	35	31	29	7	46

Full equates to ordinances on...
- Burning prohibited
- Recycling required
- Composting Required
- Scavenging banned

sum_1.wk4

FINANCE

Information collected on this section was limited and hard to interpret due to various cost accounting structures. As a result, costs for specific program elements were extremely difficult to acquire and comparisons are therefore not made to 1993 data.

Most communities have a single vendor contract for all related solid waste services. In municipalities with full service programs, the average cost reported per unit for services ranged between $120-150 per year per single family dwelling unit.

Twenty four municipalities charge residents for some of the cost of provided solid waste services through special billings. The most common method used to collect fees is combining with water bills (7), summer tax bills (5) or winter tax bills (5). Two communities use a Special Assessment District for taxation (Ferndale and Pontiac).

Only one community has attempted to offer service on a volume based fee. This was limited to yard waste in a 1995 community trial program by the City of Rochester. Many have looked at similar programs for mixed waste in the past, but interest has waned with public opposition in making any changes to the tax or fee structure.

Most programs are administered by the chief municipal official or their designee. Thirteen communities have a committee that address waste or environmental issues and provide input to this official.

For resource information on solid waste, municipal officials utilize haulers, county officials, and other authorities for resource information. The largest areas of interest for more information for these officials are education (20), composting (16), and recyclable material collection (15). Other areas of interest included contract negotiation, HHW programs, participation rates, recycling directories, buy recycled, littering, non-returnables, and general waste reduction.

PROGRAM INFORMATION AND PUBLIC EDUCATION

Forty seven communities offered some level of program information or program education to their residents. In forty municipalities, the service was either provided directly or in concert with the community's hauler or authority. In seven instances, the municipality relied totally upon their hauler or authority. Eleven communities did not provide information or educational efforts.

Program topics most frequently emphasized were recycling (40), composting (36), and household hazardous wastes (24). Most basic education programs consist of newspaper notices of activities, general information on program and definitions, generally in the form of an annual information sheet on program levels and service information.

Ten communities had programs that offered coverage of all types of waste (MSW, recycling, yard waste, HHW, and on reuse and reduction) and use 4 or more media approaches including school programs and public exhibits. A wide variety of program providers were used throughout the

Solid Waste Database
Oakland County, Michigan

Single Family Residential - Basic Service Levels - January 1, 1993

12/08/97
14:22
serv wk4

Community	Mixed Wastes	Seasonal Yard Wastes	Recycling	Full Program?	HHW Program	Ordinance Required Full Program	Ordinance Required Mixed & Recycle	Designated Hauler Full Program	Voluntary Extra $ Recycle	Recycling Drop-Off Center	Cleanup Days (CuD) Curb-Side	Cleanup Days (CuD) Drop-off	Comment
Addison Township											X		
Auburn Hills												X	
Berkley	X	X	X	X	SOCRRA					SOCRRA			
Beverly Hills	X	X	X	X	SOCRRA					SOCRRA			
Bingham Farms	X	X	X	X							X		
Birmingham	X	X	X	X	SOCRRA					SOCRRA	X		
Bloomfield Hills						X							
Bloomfield Township	X	X	X	X	X								
Brandon Township										1/Month		X	
Clarkston										Use Others		X	Fall Leaf Program
Clawson	X	X	X	X	SOCRRA					SOCRRA			
Commerce Township	X								X				
Farmington	X	X	X	X	X					X			
Farmington Hills	X	X	X	X	X					X		X	CuD Yd Waste Only
Ferndale	X	X	X	X	SOCRRA					SOCRRA			
Franklin	X		X										
Groveland Township												X	
Hazel Park	X	X			SOCRRA					SOC. & X			Curbside Newspapers
Highland Township	X	X	X	X						Compost			
Holly	X	X	X	X							2		
Holly Township										1/Month		2	
Huntington Woods	X	X	X	X	SOCRRA					SOCRRA			
Independence Township							X			X		X	
Keego Harbor	X	X	X	X								X	
Lake Angelus													
Lake Orion	X	X	X	X						Use Others			
Lathrup Village	X	X			SOCRRA					SOC. & X			
Leonard	X		X								X		
Lyon Township										Use Others			
Madison Heights	X	X	X	X	SOCRRA					SOCRRA			
Milford	X	X	X	X									
Milford Township	X	X	X	X									
Northville (part)	(Not included in survey since municipality participates in the Wayne County program.)												
Novi										X			
Novi Township													
Oak Park	X	X	X	X	SOCRRA					SOCRRA	X		
Oakland Township										1/Month		X	
Orchard Lake	X		X									X	
Orion Township										Use Others			
Ortonville										Use Others		X	
Oxford	X		X									X	
Oxford Township												X	
Pleasant Ridge	X	X			SOCRRA					SOC. & X			Curbside Newspapers
Pontiac	X									Saturdays			
Rochester	X	X	X	X							X		
Rochester Hills										X		X	
Rose Township										1/Month		2	
Royal Oak	X	X	X	X	SOCRRA					SOCRRA			
Royal Oak Township	X				SOCRRA					SOCRRA		2	
South Lyon	X	X	X	X						X	X		
Southfield	X	X	X	X	X					X	X		
Southfield Township													
Springfield Township												2	
Sylvan Lake	X	X							X				
Troy	X	X	X	X	SOCRRA					SOC. & X			
Walled Lake	X	X	X	X							X		
Waterford Township								X		X			
West Bloomfield Township								(No Compost)		Saturdays			
White Lake Township	X	X	X	X									
Wixom	X	X	X	X	X					X	X		
Wolverine Lake	X		X										
County Totals	38	30	31	26	19	1	1	2	2	35	11	17	
% of Tot. Population Served	54.15%	46.78%	45.33%	44.26%	40.91%	0.36%	1.84%	9.62%	1.97%	65.45%	12%	17%	
% of SF Population Served	68.15%	58.87%	57.04%	55.70%	51.49%	0.45%	2.32%	12.11%	2.48%	82.37%	15%	21%	

Single Family Residential Programs

Category	#	Estimated Percent of Total Pop.	Estimated Percent of SF Pop.
Full Programs with HHW	15	38.39%	48.31%
Full Programs wo HHW	12	6.23%	7.85%
Partial Programs	10	5.43%	6.83%
Mixed Waste Only Programs	3	6.31%	7.94%
Designated Haulers	2	9.62%	12.11%
Sub-totals	42	65.98%	83.03%
Minimal to No Involvement	18	13.48%	16.97%
Totals	60	79.46%	100.00%

5.17% With Compost
6.51%

33 Programs involve Compost in one form or another, or
52.40% of total population served or
65.94% of Single Family Population served

22 Municipalities require SF residents to arrange for services or
31.85% of Single Family Population not served.

2 Of the above municipalities allow SF residents to select vendors, but the service level is pre-determined, or
2.77% of Single Family Population involved.

16 Full Time Sites *
6 Occasional Sites
1 Compost Site

23 Total Drop-off Sites

* Includes 2 private sites (BFI Lyon & WM Eagle Valley) and 2 SOCRRA sites.

County including volunteers, municipal staff, authority staff, the school system, and the haulers. For example, Royal Oak has a full time recycling coordinator on staff, providing information and education to all sectors of the community. Some activities include: holding special public events, school programs, flyers, special material packets, and displays and exhibitions. These efforts were provided in addition to a basic service provided by SOCRRA.

It must be acknowledged that some excellent comprehensive public information and education programs exist in the county, principally focused upon the excellent efforts provided by the two authorities.

One highly successful target program sponsored by SOCRRA was the grass clipping/mulching campaign which resulted in a major reduction in the tonnage of grass collected between 1990 and 1996. This was done in conjunction with some extra programs from participating municipalities with discounts on mulching and backyard composting equipment. This program was also augmented by the 1995 yard waste landfilling ban with a heightened community awareness. This is the most significant waste diversion measure accomplished to date in this area.

RRRASOC has since the January 1, 1996 survey established an excellent Internet web site providing information on its communities' programs. This may be viewed at the following web site, [http://oeline.com/rrrasoc]. This is an excellent new approach to public education and outreach efforts.

The public inquiries made to the municipalities regarding solid waste varied, depending on level of service. Those with full service asked specific questions about how to prepare items, what materials are accepted, and about the possibility of adding more materials. Those with limited programs had more inquiries on getting programs going, complaints of basic service levels, and options for disposal. One of the most popular topics as expected with any new regulation was regarding yard waste options. The most frequent public calls relate to the handling of household hazardous wastes such as gas, diesel fuel, paints or pesticides.

Municipal Solid Waste Services - January 1, 1996
Oakland County, Michigan

Public Contact Points

Municipality	Department	Phone	Street Address	Street Address 2	Post Office	Zip Code
Addison Township	TWP OFFICE	(810) 628-3317	1440 ROCHESTER RD		LEONARD	48367
Auburn Hills	PS	(810) 391-3777	1500 BROWN RD		AUBURN HILLS	48326
Berkley	DPS	(810) 546-2430	3338 COOLIDGE HIGHWAY		BERKLEY	48072-1690
Beverly Hills	DPS	(810) 646-6404	18500 W. 13 MILE RD		BEVERLY HILLS	48025
Bingham Farms	CLERK	(810) 644-0044	30400 TELEGRAPH	SUITE 32B	BINGHAM FARMS	48025
Birmingham	DPS	(810) 644-1807	851 S. ETON		BIRMINGHAM	48009
Bloomfield Hills	CITY CLERK	(810) 644-1520	45 E. LONG LAKE RD		BLOOMFIELD HILLS	48304-2322
Bloomfield Township	SUPERVISOR	(810) 433-7708	4200 TELEGRAGH RD		BLOOMFIELD HILLS	48302-0489
Brandon Township	SUPERVISOR	(810) 627-4918	395 MILL STREET		ORTONVILLE	48462
Clarkston	CITY MANAGER	(810) 625-1559	375 DEPOT		CLARKSTON MI	48346
Clawson	DPW	(810) 288-4499	425 N. MAIN ST.		CLAWSON	48017
Commerce Township	CLERK	(810) 960-7020	2840 FISHER AVE		COMMERCE TWP	48390
Farmington	RECYC. COORD	(810) 473-9503	23600 LIBERTY ST		FARMINGTON	48335
Farmington Hills	RRRASOC	(810) 473-9503	31555 ELEVEN MILE RD		FARMINGTON HILLS	48336-1165
Ferndale	DPS	(810) 546-2361	300 E. NINE MILE RD.		FERNDALE, MI	48220-1791
Franklin	CITY MANAGER	(810) 626-9666	32325 FRANKLIN RD		FRANKLIN	48025
Groveland Township	SUPERVISOR	(810) 634-1531	4695 GRANGE HALL RD		HOLLY	48442
Hazel Park	DPS	(810) 542-0340	24211 COUZENS		HAZEL PARK	48030
Highland Township	REFUSE DEPT	(810) 887-3506	205 N. JOHN	P.O. BOX 249	HIGHLAND	48357
Holly	VILLAGE	(810) 634-9571	202 SAGINAW ST		HOLLY	48442-1694
Holly Township	TWP	(810) 634-9331	102 CIVIC DR		HOLLY	48442-1503
Huntington Woods	DPW	(810) 547-1888	12795 W. 11 MILE RD		HUNTINGTON WOODS	48070
Independence Township	DPW	(810) 625-8222	FLEMINGS LAKE RD		CLARKSTON	48347
Keego Harbor	CITY MANAGER	(810) 682-1930	2025 BEECHMONT	P.O. BOX 665	KEEGO HARBOR	48320
Lake Angelus	CITY OFFICE	(810) 335-5396	45 GALLOGLY RD		LAKE ANGELUS	48326
Lake Orion	VILLAGE	(810) 693-8391	37 E. FLINT STREET		LAKE ORION	48362
Lathrup Village	CITY	(810) 557-2600	27400 SOUTHFIELD RD		LATHRUP VILLAGE	48076-3489
Leonard	VILLAGE	(810) 628-7380	28 E. ELMWOOD	P.O. BOX 789	LEONARD	48367-0789
Lyon Township	TWP	(810) 437-2240	57100 PONTIAC TRAIL		NEW HUDSON	48165
Madison Heights	DPS	(810) 588-1200	801 AJAX DR		MADISON HEIGHTS	48071
Milford	PS	(810) 685-3055	1100 ALANTIC STREET		MILFORD	48381
Milford Township	TWP	(810) 685-8731	1100 ATLANTIC		MILFORD	48381
Northville (part)	DPW	(810) 349-3271	215 W. MAIN ST.		CITY OF NORTHVILLE	48167-1599
Novi	CITY	(810) 347-0456	45175 W. TEN MILE RD		NOVI	48375-3024
Novi Township	TWP	(810) 348-0365	P.O. BOX 924		NORTHVILLE	48167
Oak Park	DPW	(810) 691-7497	10600 CAPITAL		OAK PARK	48237
Oakland Township	TWP	(810) 651-4440	4393 COLLINS RD		ROCHESTER	48306-1670
Orchard Lake	CLERK	(810) 682-2400	3955 ORCHARD LAKE RD		ORCHARD LAKE	48323-1605
Orion Township	SUPERVISOR	(810) 391-0304	2525 JOSLYN RD		LAKE ORION	48360
Ortonville	VILLAGE	(810) 627-4976	395 MILL ST	P.O. BOX 4280	ORTONVILLE	48462-0428
Oxford	VILLAGE	(810) 628-2543	22 W. BURDICK ST	P.O. BOX 94	OXFORD	48371
Oxford Township	TWP OFFICE	(810) 628-9787	18 W. BURDICK ST	P.O. BOX 3	OXFORD	48371-0003
Pleasant Ridge	CITY OFFICES	(810) 541-2900	23925 WOODWARD AVE		PLEASANT RIDGE	48323-1605
Pontiac	D.P.U.- SANITATION	(810) 857-5700	575 COLLIER RD		PONTIAC	48326
Rochester	CITY HALL	(810) 651-9061	400 SIXTH ST.		ROCHESTER	48307
Rochester Hills	PUBLIC SERVICES	(810) 656-4687	1000 ROCHESTER HILLS DR		ROCHESTER HILLS	48309-3033
Rose Township	SUPERVISOR	(810) 634-1222	204 FRANKLIN ST		HOLLY	48442
Royal Oak	DPW	(810) 544-9710	1600 N. CAMPBELL RD		ROYAL OAK	48067
Royal Oak Township	TWP	(810) 547-1415	21075 WYOMING AVE		FERNDALE	48220
South Lyon	CITY	(810) 437-1735	214 W. LAKE ST		SOUTH LYON	48178
Southfield	DPW	(810) 354-9180	25501 CLARA LANE		SOUTHFIELD	48034
Southfield Township	CLERK	(810) 540-3420	18550 W. 13 MILE		BEVERLY HILLS	48025
Springfield Township	SUPERVISOR	(810) 625-4802	650 BROADWAY	P.O. 1038	DAVISBURG	48350-0038
Sylvan Lake	CITY OFFICE	(810) 682-1440	1820 INVERNESS		SYLVAN LAKE	48320-1637
Troy	ENGINEERING	(810) 524-3399	500 W BIG BEAVER		TROY	48084
Walled Lake	DPW	(810) 624-4847	1499 E. WEST MAPLE RD	P.O BOX 9007	WALLED LAKE	48390-9007
Waterford Township	DPW	(810) 674-2278	5200 CIVIC CENTER DR		WATERFORD TWP	48329-3773
West Bloomfield Township	SUPERVISOR	(810) 682-1200	4550 WALNUT LAKE RD	P.O. BOX 250130	WEST BLOOMFIELD	48325
White Lake Township	SUPERVISOR	(810) 698-3300	7525 HIGHLAND RD		WHITE LAKE	48383-2900
Wixom	DPW	(810) 624-0141	49045 PONTIAC T		WIXOM	48393-2567
Wolve ake	VILLAGE	(810) 624-1710	425 GLENGARY F		WOLVERINE LAKE	48390-1404

SUMMARY

The January 1, 1996 survey has provided information that represents a useful database for the 1998 Solid Waste Management Plan Update. The information is a single snapshot in time of municipally sponsored solid waste services within the County. Since municipally sponsored services rapidly change, it must be viewed as a snapshot, nothing more. This type of information further allows an examination of the changes in services and volume reduction efforts over time when it is compared to previous surveys. Such changes can quickly be envisioned by comparing the current programs to historical programs (see "The Ups & Downs of Waste Reduction: An Historical Perspective" exhibit which was taken directly from the 1994 plan amendment documents) and the January 1, 1993 survey summary exhibit.

It must be noted that the data values and quantifying numbers for the solid waste programs are not well tracked at the local level within the County, except for the data available from the two authorities. This general lack of detailed information is a widespread dilemma which exists throughout the region and the state. The basic lack of data sharing between the communities, residents and haulers leaves many issues open to debate and views can be dramatically skewed with these basic gaps in the data. This basic data lack also leads to questionable estimates of volume reduction achievement levels from program to program.

Where full service municipally sponsored programs exist, the public currently appears reasonably content with the available solid waste services. Much of this is due to the increased service level offerings and the maintenance of stable pricing. The stable pricing is primarily due to intense local competition for the waste stream by the service providers and because of the high availability of landfill capacity within the region.

The most prominent complaint or inquiry received from the public relates to household hazardous wastes. Most generally, the inquiry has to do with handling of HHW or is a search for a location where such wastes can be disposed of. Usually, the inquiry holds some urgency since the call is related to a pending move of the household. "I'm moving Saturday, where can I take ....." Only the SOCRRA HHW program, which is available year round and by appointment to residents of the member municipalities, is readily available for such situations.

The Ups & Downs of Waste Reduction: An Historical Perspective

Waste reduction & recycling, like many trends in life is cyclical, depending on the economic, political and environmental climate. During times of prosperity more things are thrown away. During times of recession or national emergencies the emphasis shifts to conservation of resources. In addition, growing environmental awareness today has led to different waste management options becoming more desirable.

In Oakland County, Michigan, the principal northwestern part of the Metropolitan Detroit area, the history of waste reduction reflects these trends. Some of us are old enough to remember World War II when, in the early 1940's, both businesses and citizens faithfully recycled a number of items, especially metals, as part of the "War Effort." It was our patriotic duty! After the war, recycling dropped off as an age of prosperity began and wonderful, new, "convenience" (throwaway) items flooded the market. The Nation had come through a great depression and a war. The emphasis was on living the American Dream.

But the dream couldn't last forever nor did it include everyone. (One of the sad things that happened during this time was that people were never taught the basic conservation skills the older generation grew up with. How to repair things; how to cook from "scratch,")

Then the environmental movement came along. In 1970 Oakland County school children became very involved in the first "Earth Day" and public and political attention began to be focused on pollution and what all this new convenience was costing us in environmental terms. Between 1970 and 1979 (also a time of recession) eight municipal recycling drop-off centers sprang up, collecting mostly glass and newspaper. Oakland County government assisted these centers by providing containers and a location for one center on Telegraph Road in Pontiac. The centers were mostly manned by volunteers. Additionally, some municipalities collected white goods and several collected fall leaves.

In 1976 the "bottle bill" passed in Michigan. Intended primarily as an anti-litter measure it greatly reduced the amount of glass collected by Oakland's drop-off centers. Interest lagged. Between 1979 and 1984 all the centers closed except the one in the Oakland community of Birmingham.

In 1978 the State of Michigan passed Act 641, the Solid Waste Management Act, requiring all its counties to prepare 20 year Solid Waste Management Plans. Although Oakland County government had been involved with solid waste plans previous to this time, the new law focused attention on more environmentally compatible disposal options. However, waste reduction and recycling were not really considered to be methods that would have significant impact.

It wasn't until the late 1980's that a new resurgence of interest in these options occurred. As required by law, the County's solid Waste Planning Committee was working to update its original Act 641 plan. The committee recommended a study on the feasibility of including reduction recycling and composting in the plan. A consultant was hired and a recycling committee formed. This resulted in a Solid Waste Management Plan Update which included a 50% volume reduction goal through reduction, reuse, recycling and composting. Hopes were high for this proposed fully integrated plan which included not only the aggressive volume reduction goals, but also the use of waste-to-energy technology and sanitary landfilling. It was envisioned that Oakland County would own a Material Recovery Facility (MRF) for the processing of recyclables, at least one waste-to-energy facility and would provide adequate landfill space for its municipalities. Implementation required that the 60 municipalities eligible to participate sign intergovernmental flow-control agreements with the county.

In 1990 and 1991 intense discussions took place among the various municipalities and the county on this issue. In the end, the plan was not implemented for a variety of reasons, not the least of which was the perception of high additional costs to participants and a simultaneous drop in the region's landfill fees.

And what happened to the lofty volume reduction goals? Interestingly enough, rekindled interest occurred among the general public. Individual municipalities began programs on their own in response to the citizens increased demand to do something other than "burn it of bury it." In July 1991, eleven municipalities had single family residential curbside collection of recyclables & yard wastes and 31 drop-off centers were in existence. By January 1993 the number of full curbside programs had increased to 26. In addition, 8 municipalities picked-up <u>either</u> recyclables <u>or</u> yard wastes. Two municipalities had community-wide voluntary programs, two had recycling required by ordinance and two had recycling for extra cost. However, as the curbside programs increased, the municipal recycling drop-off centers began to close. This number dropped to 21.

Most municipalities continue to improve their programs. Since January 1993, one additional municipality has started a full residential curbside pick-up program, one has added curbside pick-up of yard wastes, another has added curbside pick-up of recyclables and one will have a full curbside program mandated by ordinance as of January 1, 1994. As of this date only seven municipalities of Oakland's 60 do not offer any recycling opportunities to their citizens, but five of these seven do offer clean-up days where metals and wood are usually recycled.

Actual percentages of waste reduction are hard to calculate. Programs vary and with few exceptions actual figures are not available from the haulers. Only one waste authority, the Southeastern Oakland County Resource Recovery Authority (SOCRRA) and one city (Southfield) keep detailed statistics and are willing to share their data. In addition, single family residential waste is now only about 23% of the total waste stream although 27 municipalities offer recycling to all or part of multiple dwellings and 12 offer it to businesses.

So what does it all mean? Well, in spite of the fact Oakland County was unable to implement a county-wide System, the pressure to "do something" with volume reduction was felt by our municipalities. As more municipalities insist their haulers provide statistics on amounts of total waste versus recyclables and yard wastes the sooner we'll know how well we are really doing with volume reduction.

Anne M. Hobart, OCDSWM, 1993