Amendments to the

1990
SOLID WASTE MANAGEMENT PLAN UPDATE

Oakland County, Michigan

Basic Solid Waste Database
Inter-County Flow Arrangements
Demonstration of Available Disposal Capacity
Interim Siting Mechanism
Contingency Plan
Designation of Additional Disposal Capacity

Adopted by the Board of Comissioners
on June 9, 1994

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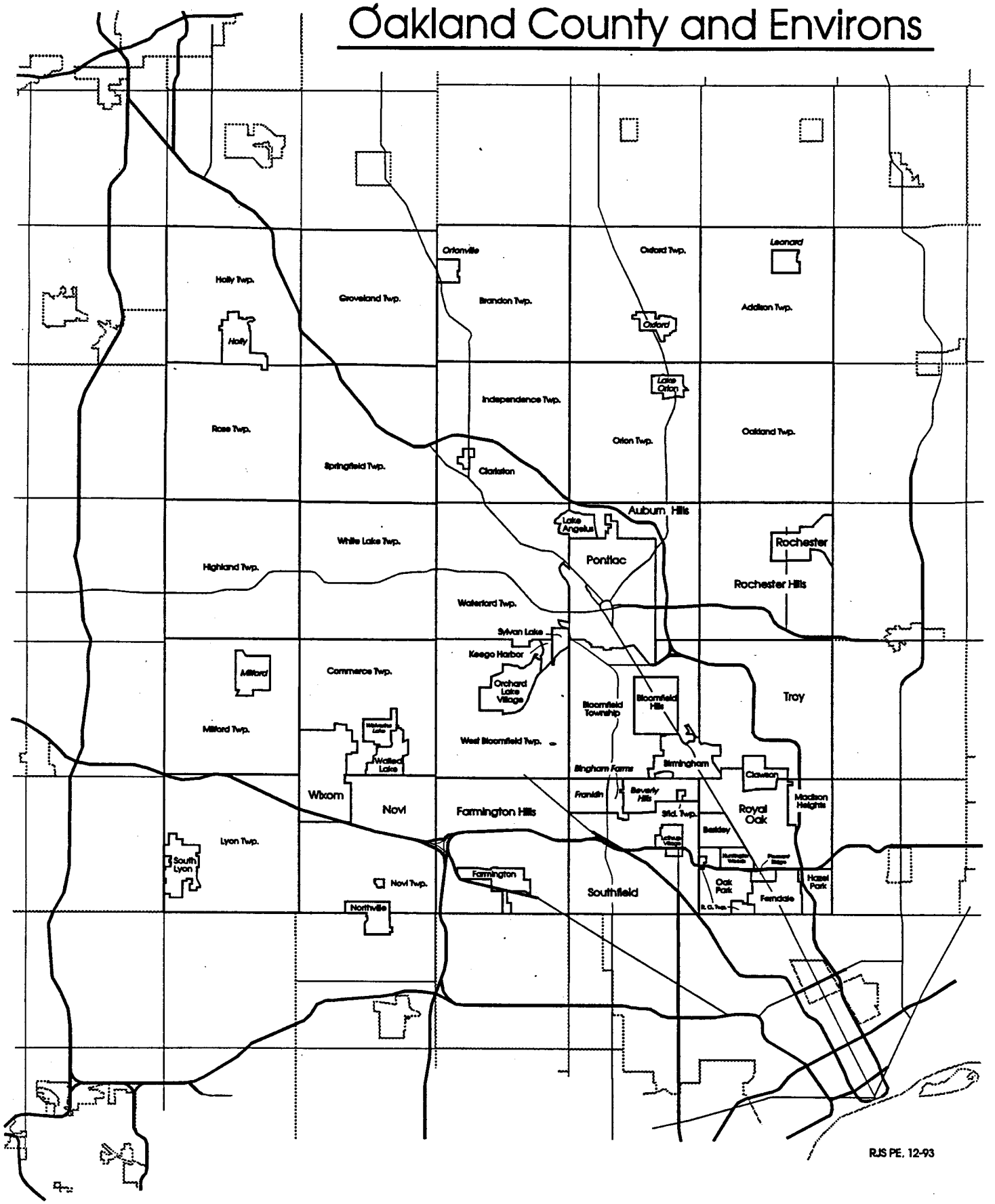
Oakland County and Environs



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Excerpts from Oakland County's July 10, 1992 Clarification Document Concerning MDNR's Conditional Approval of the 1990 Plan Update

Quantification of Inter-County Flows - General:

Michigan Law, MCL 299.430 (2), requires that...

> "In order for a disposal area to serve the disposal needs of another county, state, or country, the service, including the disposal of municipal solid waste incinerator ash, must be explicitly authorized in the approved solid waste management plan of the receiving county. With regard to intercounty service within Michigan, the service must also be explicitly authorized in the exporting county's solid waste management plan."

Oakland County's Plan Update authorized imports from and exports to several Michigan counties as shown in Exhibit A. It was Oakland County's viewpoint that the language met the "explicit" designation required by law.

However, MDNR takes the position that the inter-county flows must also be quantified as to amount and time so that each county may determine with some precision where it stands with regard to the Administrative Rules contained in R 299.4711 (e) (iii) as follows.

> "(A) The selected alternative shall identify specific sites for solid waste disposal areas for the 5-year period subsequent to plan approval or update."

> "(B) If specific sites cannot be identified for the remainder of the 20-year period, the selected alternative shall include specific criteria that guarantee the siting of necessary solid waste disposal areas for the 20-year period subsequent to plan approval."

Absent such mutually agreed upon quantifications over time, MDNR rules that the inter-county flows will be prohibited. This would protect an unwilling receiving county's disposal capacity from being unilaterally used by another county and preserve the receiving county's capacity for its own intended uses, be that for waste generated within the county or for wastes from another county with whom an agreement had been reached.

MDNR has held that if a county has not designated disposal capacity at the then existent generation rates and volume reduction levels utilizing then existent processing and disposal facilities for at least 5-years (or reached a specific quantified agreement with another county to receive its exports of wastes), MDNR will site by mandate, appropriate disposal capacity in the first county.....

Oakland County accepts the reasoning and logic behind MDNR's interpretation requiring quantification as it applies to the initial 5-year planning period .....

EXECUTIVE SUMMARY

On November 8, 1991, by letter to the Chairman of the Oakland County Board of Commissioners, the Director of the Department of Natural Resources formally approved Oakland County's 1990 Solid Waste Management Plan Update. Oakland County had submitted notification to the Department some 8 months earlier (on March 7, 1991), that a large majority of the County's 61 municipalities (74%) had approved the document. However, the Director's approval of the Plan noted several deficiencies.

A. Although the Plan Update explicitly authorized inter-county flows to and from the Counties of Wayne, Washtenaw, Genesee, Lapeer, and Macomb (the Adjacent Counties), to and from Livingston County if certain conditions were met, and to Lenawee County - the Plan did not quantify inter-county flows to and/or from these several counties. Therefore, authorized inter-county transportation and disposal of solid waste was deemed to be not properly identified in the Plan and such inter-county flows could be prohibited.

B. Lacking the required authorization of inter-county flows, MDNR could not verify that twenty (20) years of disposal capacity existed for the disposal of Oakland County's Act 641 wastes. Either the Plan Update had to be amended to properly authorize inter-county flows through which access to a sufficient amount of disposal capacity could be gained, be amended to contain a process guaranteeing approval to a site proposal meeting specific criteria, or be amended to designate additional disposal capacity. The siting process originally contained in the Plan Update did not comply with the requirements of Act 641 and was not approvable. A properly amended interim siting mechanism would remain operational until more than 20 years of disposal capacity was available, either because additional disposal capacity was found consistent with the Plan Update or because the County had made formal, approvable arrangements elsewhere for the proper disposal of Act 641 wastes.

C. Finally, the Plan was judged to have failed in the provision of necessary documentation to validate the Plan's contingency disposal mechanisms.

Background:

Oakland County's Plan Update essentially provided for 20 years of disposal capacity at the time of its adoption by the Oakland County Board of Commissioners in June, 1990. This finding was based upon the assumptions that (1) the County's long discussed, fully integrated solid waste management system (SWMS) would be implemented for use by all waste generators in the County's 61 municipalities, (2) the aggressive volume reduction goals contained in the Plan Update would be achieved, (3)the proposed volume reduction facilities were constructed in a timely manner, and (4) that industrial special wastes and construction & demolition debris would continue to be exported to special landfills elsewhere.

However, numerous events unfolded which dramatically impacted both upon the County's long term, direct landfilling needs and upon sufficiency of the disposal capacity available. These events ranged from (1) the closure of an in-county landfill because of environmental problems shortly after Board approval of the Plan Update; (2) protracted permitting processes which made the implementation schedules contained in the Plan Update un-achievable and which contributed to local uncertainties about elements of the proposed county-wide SWMS; and on to (3) significantly lowered landfill prices

throughout southeastern Michigan caused by the opening (or planned and approved construction) of several large, new landfill facilities which occurred nearly simultaneously with a general regional decline in the volume of wastes destined to be landfilled. In the latter instance, short term landfill prices (3 to 5 years) became so attractive, that many municipalities opted for the status quo rather than signing-on for the proposed county-wide SWMS which would, at least initially, have proven quite expensive.

A combination of several of these factors and others resulted in the County being unable to initiate its SWMS because of a lack of flow control contracts with its municipalities. These contracts would have formed the base upon which guaranteed System bonds would have been sold to construct or license the proposed facilities. Meanwhile, the rehabilitation of SOCRRA's closed 600 tpd incinerator as a modern waste-to-energy plant (originally proposed at the time of closure in 1988) was also indeterminately delayed by permitting processes. By early 1993, the 14 member municipalities began examining alternative volume reduction technologies as a potential replacement project and by late 1993, new Michigan legislation was adopted which essentially made the original rehabilitation project untenable.

All of this (including the formal abandonment of the County SWMS in November of 1993) resulted in the continuing disposal of substantially more wastes than originally envisioned in the area's landfills and the County's long term disposal needs had to be dramatically restated.

US Supreme Court Decision:

On June 1, 1992, the US Supreme Court struck down certain provisions of Michigan's law which allowed counties to restrict imports, including out-of-state wastes, if they so desired. (Michigan's courts subsequently upheld the ability of the counties to restrict inter-county flows.) This resulted in the unrestricted flow of inter-state and inter-country wastes, particularly into southeastern Michigan landfills where available daily operating capacity of the several landfills exceeded the size of the locally generated waste stream. This area previously operated in an unrestricted free-market mode with few inter-county flow restrictions, and most counties had barred out-of-state wastes.

In the face of this new reality (increasing unwanted imports from out-of-state and out-of-country sources), the Act 641 Plans of several southeastern Michigan counties were now being made restrictive with regard to inter-county flows. The local restrictions essentially being imposed as a defensive measure to protect available disposal capacity to the extent possible in light of the US Supreme Court decision, for use by wastes generated in-county. An alternate strategy of negotiated or imposed annual operating limits is being pursued by some counties to gain an additional measure of control.

It was within this rather uncertain regulatory environment and in the face of continuing pressure from MDNR for Oakland County to amend its Plan Update, that this series of Plan amendments was originally proposed. A paradox arises however, when one realizes that excess operating capacity, caused by the simultaneous operation of so many landfills that the available operating capacity exceeds the locally generated waste stream, tends to invite imports. If these imports are unwanted and not controllable, ie - out-of-state and out-of-country wastes, available capacity could simply be used in an uncontrolled way. If more capacity were then forced to be sited as the interim siting mechanisms automatically came into play, it quickly could become a never ending, circular paradox - unless the involved county also sought to restrict the number of landfills operating at any given time or sought to control the levels at which future landfill sitings or expansions were allowed to be operated.

Revisions to Act 641:

Oakland County proposed that an alternate regulatory stance by the MDNR could have provided some avenue of relief. Rather than requiring the siting of additional landfill capacity, if proposed, whenever available disposal capacity fell below 20 years of reserves, a greater focus could have been placed on the amount of operating capacity then available and require additional sitings only when it appeared that less than 5 years of disposal capacity remained. Oakland County believed that administrative re-interpretations of the existing Act 641 Administrative Rules could have partially helped to solve the paradox then faced. However, MDNR was firm on this issue and as a result, the County sought to change the Act 641 20 year planning period to 10 years while at the same time, requiring forced landfill sitings only when less than five years of capacity reserves remained. This strategy would ultimately place less landfill resources at risk to unwanted imports.

The revised legislation was adopted and took immediate effect in June, 1994.

Plan Update Amendments:

In drafting this amendment to the 1990 Oakland County Plan Update, all sections of the original 1990 Plan Update that were compatible with MDNR's approval letter were retained. Therefore, the basic provisions of the Plan reflect the desires of the County as they were included in the originally prepared 1990 Plan Update. This proposed Plan Amendment replaces certain defined language in the 1990 Plan Update.

While this Plan Amendment reflects the County Executive's charge to staff and the Act 641 Solid Waste Planning Committee "to recommend corrections to deficiencies noted in the County's 1990 Solid Waste Management Plan Update" as addressed by the Director of the Department of Natural Resources and it reflects the deadlines subsequently imposed by a Stipulation and Order involving the Holly Disposal, Inc v MDNR litigation, this document should not be construed (by its lack of major focus on volume reduction issues) to suggest that the volume reduction strategies and goals outlined in the 1990 Plan Update (source reduction, reuse, composting and recycling) are any less a major, continuing priority to Oakland County.

The Plan Amendment includes updated estimates and projections of the County's Act 641 waste stream. These new values are based upon the 1990 census data as well as upon revised estimates of future population and employment within the County. Additionally, the conversion factors used to project the disposal area volumes required are presented and reviewed in detail. The Plan Amendment presents a current look at disposal capacity in the southeastern Michigan area and the levels at which the many disposal facilities operated in 1992. This allows a broad-based verification of the estimate and projection methods used.

The Plan Amendment contains authorized inter-county flows and an analysis of currently available disposal capacity. Present volume reduction efforts are examined and available future disposal capacity is demonstrated.

The Plan Amendment includes a mechanism to annually update all of the previously described material and requires that an annual analysis and certification or recertification of the principal assumptions and conclusions be conducted.

The Plan Amendment contains an interim siting mechanism based upon specific criteria which guarantees that a disposal area can be sited. The mechanism will be operational only should the County, through its annual certification process, be unable to demonstrate that 5 or more years of disposal capacity is available to Oakland County wastes.

The Plan Amendment finally contains a revised contingency plan.

Adoption of the recommendations contained in this document will insure that Oakland County is well situated to meet the needs of the future while at the same time not being forced to consider additional landfill sitings which would then be exposed to unwanted imports. Sufficient time has been secured because of the new legislation and before more landfill capacity must eventually be sited to achieve appropriate national legislation to allow control of out-of-state and out-of-country imports. Additionally, Michigan's Act 641 needs total revision prior to initiation of the next series of major Plan Updates. The lessons learned by this exercise should be of major value in that required effort.

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List of Exhibits

Chapter 1

UPDATED SOLID WASTE DATABASE

This material provides a fresh look at the amounts of Act 641 wastes generated in the County. The methodology used is precisely the same as that used in the 1990 Plan Update (that material being originally prepared in 1988, principally based on 1980 census data and upon regional forecasts prepared in 1984). However, the revised estimates and projections contained herein are based upon the 1990 U.S. Census Bureau data and upon population and employment data from SEMCOG's Ver '89 Regional Development Forecast as updated to September, 1991. The factors used to convert the waste stream projections into landfill needs are examined and the County's 20 year disposal needs are displayed.

This new material replaces that data contained in the 1990 Plan Update, Chapter 3 and the projections of landfill capacity needs contained in the 1990 Plan Update, Chapter 7.

Each time the Board of Commissioners certifies or demonstrates the sufficiency of available disposal capacity as is required in **Chapter 5** of this Plan Amendment, the data contained in this Chapter will be reviewed and if appropriate, replaced with then current information, data and growth estimates. Such changes will not constitute plan amendments on their face, but will insure that the annual or periodic certifications are current. It is appropriate that the solid waste database be considered a living, breathing document that is subject to constant adjustment and one which continually includes the improvements that technology is bringing to the compaction of wastes in completed landfills. Readers are advised to contact the County to obtain the latest revisions of the data contained herein. (June, 1994.)

List of Chapter 1 Exhibits:

The Basis of Waste stream Estimates:

Throughout the country, waste stream studies have been primarily based on weight of the observed stream. Numerous studies have been conducted for many different classifications of waste generators - be they residential, commercial, institutional, industrial, or special waste generators - where the waste stream has been weighed with some precision. This has resulted in the development of waste generation rates for a variety of generator types. Oakland County's efforts have evolved in a similar fashion and generation rates have been developed for residential wastes and for construction & demolition debris on a per capita basis, and for all other categories, on the basis of the number of people employed in various job classifications, by their place of work. This approach marries nicely with the available population and employment data available through the U.S. Census Bureau and matches the commonly available population and employment projections made by a variety of planning agencies.

Oakland's generation rates as developed for the 1990 Plan Update are briefly summarized below. Employment categories are based upon the SIC (Standard Industrial Classification) codes used by the US Census Bureau. Industrial employees (for Oakland County's waste stream estimating and projection purposes) are those employed in SIC codes 01 to 39 inclusive. All others are grouped into a Commercial employment category including SIC codes 40 to 97.

Waste Stream Category	1990 Generation Rate
Municipal Solid Wastes (MSW)	
Residential Wastes	2.90 pounds per capita per day
Commercial Wastes	5.75 pounds per employee per day
Industrial Wastes	10.61 pounds per employee per day
Construction and Demolition Debris (CDD)	0.70 pounds per capita per day
Industrial Special Wastes (ISW)	Special by Detailed SIC Employment

Exhibits 1.8 and 1.9 show the population history of the County, detailed U.S. Census data for each of the 61 municipalities for 1970, 1980, and 1990 as well as SEMCOG's Ver '89 Population forecast for the Year 2010 (adjusted to account for the 1990 Census). Exhibits 1.10 and 1.11 show employment detail from SEMCOG's Ver '89 forecast by place of work for the years 1990 and 2010. The population and employment data for the Years 1990 and 2010, in combination with the waste generation rates outlined above, form the basis for all Oakland County waste stream estimates and projections.

Oakland County's Act 641 Waste Stream:

Exhibits 1.12 and 1.13 display the resulting estimates and projections on a municipality-by-municipality basis for the Years 1990 and 2010. As may be seen, it is estimated that in 1990, Oakland County generated 5,134.42 tons of Act 641 wastes each day of the year. With generation patterns or habits unchanged into the future, and after allowing for population and employment growth, this waste stream would have grown by the Year 2010 to some 6,116.16 tons per day. The 1990 values, converted to an annual value, amount to 1.874 million tons, or 1.73 tons of waste for each resident.

It is important at this point to make special note of construction and demolition debris (CDD) wastes and industrial special wastes (ISW) as differentiated from municipal solid waste (MSW). Prior solid waste planning documents have been so arranged such that MSW is generally displayed and

discussed separately from the CDD and ISW categories. There is some legitimacy for this practice since CDD and ISW can generally be disposed of in Type III landfills (which may be constructed to a less strict standard than Type II landfills) while MSW is required to be placed into Type II facilities. This is principally because of the differences in the leachates that result (MSW leachates being significantly more potent). At the same time, CDD and ISW wastes can generally be disposed of in Type II facilities, should no Type III facilities be available. [Type I landfills, into which hazardous wastes are placed, are regulated by other legislation, and are not discussed further in this document.] However, these separate displays have tended to cause many to forget about CDD and ISW wastes since the normal focus is on MSW, even though all three categories require Act 641 landfill capacity.

For that reason, the in-county waste generation data on Exhibits 1.12 and 1.13 show both CDD and ISW distributed on a per capita basis without regard for its place of generation. It is recognized that CDD and ISW are actually generated at specific job sites or at certain industrial plants. However, little is accurately known about these wastes on a municipality-by-municipality basis (the place of generation of CDD tends to shift rapidly over time and ISW is related to rather specific standard industrial classification (SIC) codes, which the U.S. Census Bureau holds with some confidentiality at the municipal level. Since these waste stream elements are a function of employment and economic health of the County, each person is estimated to have a "share" of the ultimate wastes disposed of.

MSW, on the other hand, is shown by the municipality of generation.

Quite obviously, use of these waste generation rates produces broad based estimates, and caution has to be taken when examining small geographic areas within the County. The general consensus of those involved in the solid waste planning process is that on a county level, Oakland County's projections fairly well reflect reality. But, at a municipal level, the locally observed waste stream may be dramatically different from that shown here. The estimates contained in the 1990 Plan Update were accepted on that same basis, but thought to be far off target within individual municipalities. This new waste stream estimate, being based upon the latest available population and employment data, is thought to represent a well-rounded picture, even down to fairly small geographic portions of the County.

One final note about the estimates and projections. In the County totals, wastes attributed to the City of Northville are subtracted from the remainder because that municipality, which sits astride the Oakland-Wayne county line, has historically chosen to participate as a whole in the Wayne County solid waste planning effort. This choice is permissible under Act 641 and has received the approval of both units of government.

Components of the Waste Stream:

Just as it is important to understand the magnitude of the waste stream, it is important to examine and understand the individual components of the stream and the sources of generation. Exhibit 1.14 shows the estimated 1990 and projected 2010 daily waste stream and the principal categories of generation. As may be seen, in 1990, MSW comprises 72.9% of the total stream with all residentially generated MSW being the largest component - 30.6%, of which a majority is generated at single family homes. By the Year 2010, MSW will have grown to 75.3% of the total Act 641 stream and commercially generated MSW will have assumed the majority role at 31.9%.

Composition of the Waste Stream:

In 1989 Oakland County commissioned a series of studies on the composition of the waste stream. This work is summarized in Exhibit 1.15. A quick review shows that the principal components of the waste stream are old corrugated cardboard (OCC) and mixed paper. A close examination of this material shows that some commonly held myths simply don't hold up. For example, yard wastes. It is commonly believed by many that yard wastes comprise some 25 to 30% of the solid waste stream. This may well prove true in older, heavily treed urban areas where only single family residential land uses exist, but across the wide spectrum of all generator types, all waste categories, and considering all areas of the County (urban, suburban and rural), yard wastes in total for the year 1990 represented only 9.36% of Oakland's MSW stream or only 6.82% of the County's entire Act 641 stream.

Oakland's Volume Reduction Goals:

Oakland County's 1990 Plan Update contained aggressive volume reduction goals for the County's waste generators which were originally adopted in 1989. This is discussed in more detail in **Chapter 4**, but is important to note here, since the extent to which all categories of waste generators achieve these goals, will have a dramatic impact on future landfill needs (see Exhibit 1.16.). The Table below compares Oakland County's Year 2005 volume reduction goals with those adopted by Michigan's Natural Resources Commission in May of 1988. Oakland County's goals also contained a mid-term target (Year 1995) of 30% volume reduction through source reduction, reuse, composting and recycling.

V. R. Category	MNRC's Year 2005 Goals	Oakland's Year 2005 Goals
Source Reduction & Reuse	15%	10%
Composting	10%	5%
Recycling	25%	35%
Totals	50%	50%

Since adoption of the Oakland County Volume Reduction Goals in 1989, Michigan has enacted legislation calling for the complete ban on all yard wastes from landfill and incinerator facilities by March 28, 1995. As this date passes, this does not mean that all of the County's yard wastes will automatically appear at the several regional compost sites. Much, principally grasses, will be left in-place through the use of "mulching mowers" and a considerable volume of yard wastes will be composted at the original site of generation, "re-used" so to speak. This single example shows that the volume reduction goals have to be considered flexible and will have to be restructured for the future. This is anticipated to occur for the first time during preparation of the next major Solid Waste Management Plan Update.

The County shall continue to promote source reduction, reuse, composting and recycling, with the intent of minimizing the need for future landfill capacity, through co-operation with local municipalities, private industry and citizen participation.

Converting the Estimates and Projections into Landfill Volume:

In a broad-brushed fashion similar to the tonnage estimating techniques, factors must be used when converting the tonnage estimates into gateyards (a gateyard being a compacted cubic yard of wastes contained within the vehicles delivering wastes to the landfill - "coming through the gate") and ultimately into required landfill volume or bankyards (a bankyard is one cubic yard within a completed landfill and contains a mixture of wastes and daily cover). The conversion factors and other considerations are highlighted in Exhibits 1.17 and 1.18. Of particular note is the need to consider process residues.

Details of Future Landfill Needs:

Oakland County's future landfill needs are displayed under a variety of volume reduction scenarios in Exhibits 1.20 and 1.21. Exhibit 1.20 displays annual and accumulated landfill bankyard requirements for five different volume reduction scenarios ranging from unchanged 1990 generation patterns to full achievement of the Year 2005 volume reduction Goals. The accumulations shown on Exhibit 1.20 start from January, 1995 since it is anticipated that this Plan Amendment will be formally approved by the MDNR Director in late 1994 and all demonstrations of available disposal capacity will initially be for 20 years after that approval date. Exhibit 1.21 shows additional details for three of the VR scenarios from Exhibit 1.20. These are 30% Year 2005 VR Achievement Level, 40% and 50% or full Goal achievement. This Exhibit shows the individual components of the waste stream in both tons and gateyards.

Comparing Oakland County's Tonnage Estimates to Other Counties:

In order that everyone may be comfortable with the estimates and projections used for the purpose of making landfill siting decisions, it is important to benchmark Oakland's work with that prepared by others and then to compare the answers with real world observations.

The material contained on Exhibit 1.7 compares Oakland County's planning work with that of nine other southeastern Michigan Counties. This material focuses exclusively on the MSW component of the Act 641 stream inasmuch as not all counties prepare separate estimates on the CDD and ISW components and MDNR does not uniformly require that such separate estimates be prepared. Additionally, the most recent U.S. EPA national updates specifically do not include these waste stream components.

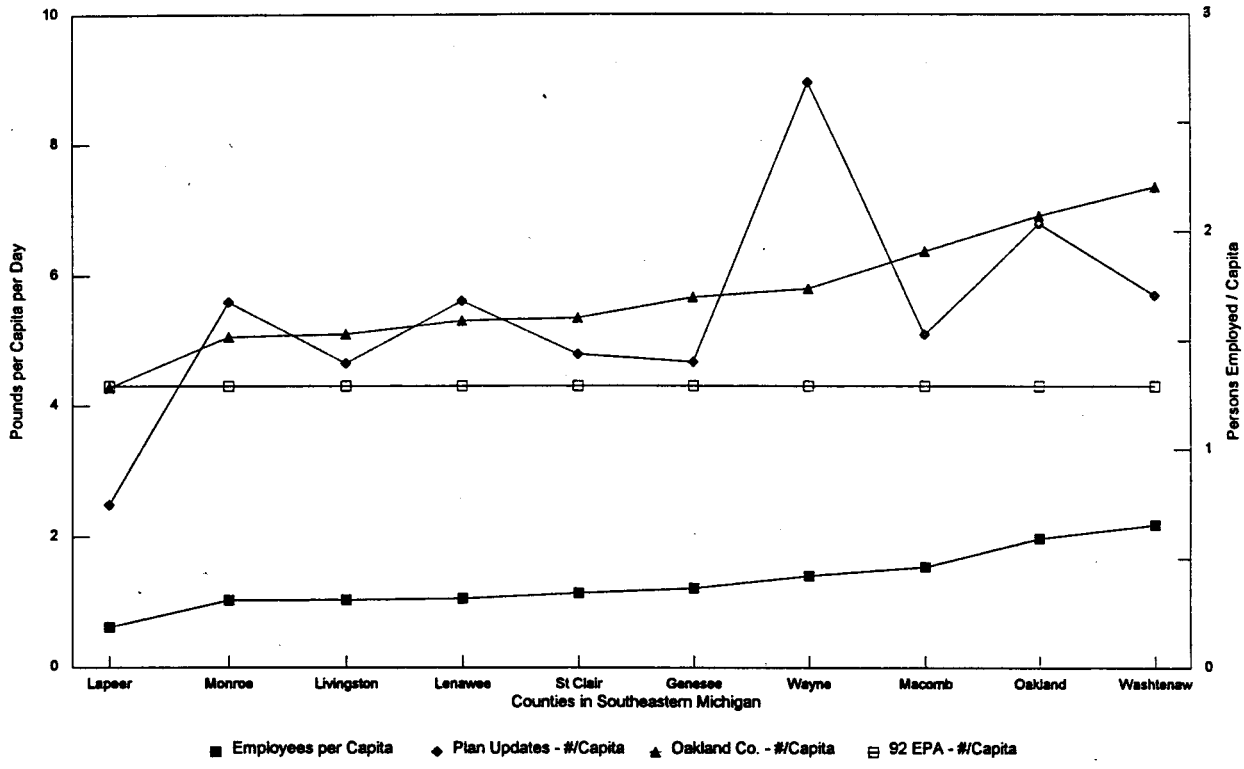
The graphic and tabular listing in Exhibit 1.7 display the overall generation rates used by each county on a per capita basis as were contained in the individual 1990 Plan Updates. Shown also is what would have resulted if the Oakland County estimation techniques had been applied to these same counties (using however the 1990 Census data and the new SEMCOG forecasts as opposed to the databases available at the time each Plan Update was prepared.) It may be quickly seen that fairly close correlation exists.

Other observations may also be drawn from this comparative listing. First, the local waste stream is dramatically higher than is currently projected by the U.S. EPA on a national basis. Second, the size of the locally generated stream is closely correlated to the number of people employed per capita (by place of work). Third, Oakland County's employment per capita is second only to Washtenaw County, which is largely a university setting. Finally, with several counties estimating higher than Oakland, and several estimating lower than Oakland, all on a weight basis, it may be concluded that Oakland County's estimates and projections represent main stream thinking and the current work is in line with the notions of the region's other planning agencies.

Chapter 2 examines the question of verifying the overall gateyard estimates and projections, viewed from the perspective of the larger regional free market area. No single county can be tested or examined in a vacuum, since borders between counties currently remain free from any restrictions and decisions are made daily by the many haulers that may route wastes from a landfill in one county on one day to a facility located elsewhere on the next. It is extremely difficult to get a precise look at the amount of wastes processed at in-county landfills along with a detailed listing of the volumes and sources of those wastes. This lack of uniformly reported data by all landfill operators in all counties is the single largest impediment to fully understanding the magnitude of the locally generated stream.

1990 Waste Stream Estimates

(Expressed in Pounds per Capita per Day)



1990 Act 641 Waste Stream (Without Construction & Demolition Debris & Industrial Special Wastes)

County	1990 Population	1990 Employment by Place of Work	1990 Employment per Capita	1990 Plan Update Projections (tons/day)	Pounds per Capita Per Day	Oakland's New 1990 Projections (tons/day)	Pounds per Capita Per Day
Lapeer	74,768	13,838	0.1851	93	2.49	160	4.28
Monroe	133,600	41,236	0.3087	374	5.60	338	5.06
Livingston	115,645	35,878	0.3102	269	4.65	295	5.10
Lenawee	91,476	29,013	0.3172	257	5.62	243	5.31
St. Clair	145,607	49,684	0.3412	349	4.79	390	5.36
Genesee	430,459	157,084	0.3649	1,005	4.67	1,221	5.67
Wayne	2,111,687	886,701	0.4199	9,445	8.95	6,128	5.80
Macomb	717,400	330,718	0.4610	1,827	5.09	2,283	6.36
Oakland	1,083,592	642,996	0.5934	3,677	6.79	3,742	6.91
Washtenaw	282,937	185,689	0.6563	807	5.70	1,039	7.34
10 County Summary	5,187,171	2,372,837	0.4574	18,103	6.98	15,839	6.11
Without Hi / Low	3,000,716	1,472,298	0.4906	8,565	5.71		
US EPA - Characterization of Municipal Solid Wastes in the US - 1992 Update - 1990 Wastes					4.30		

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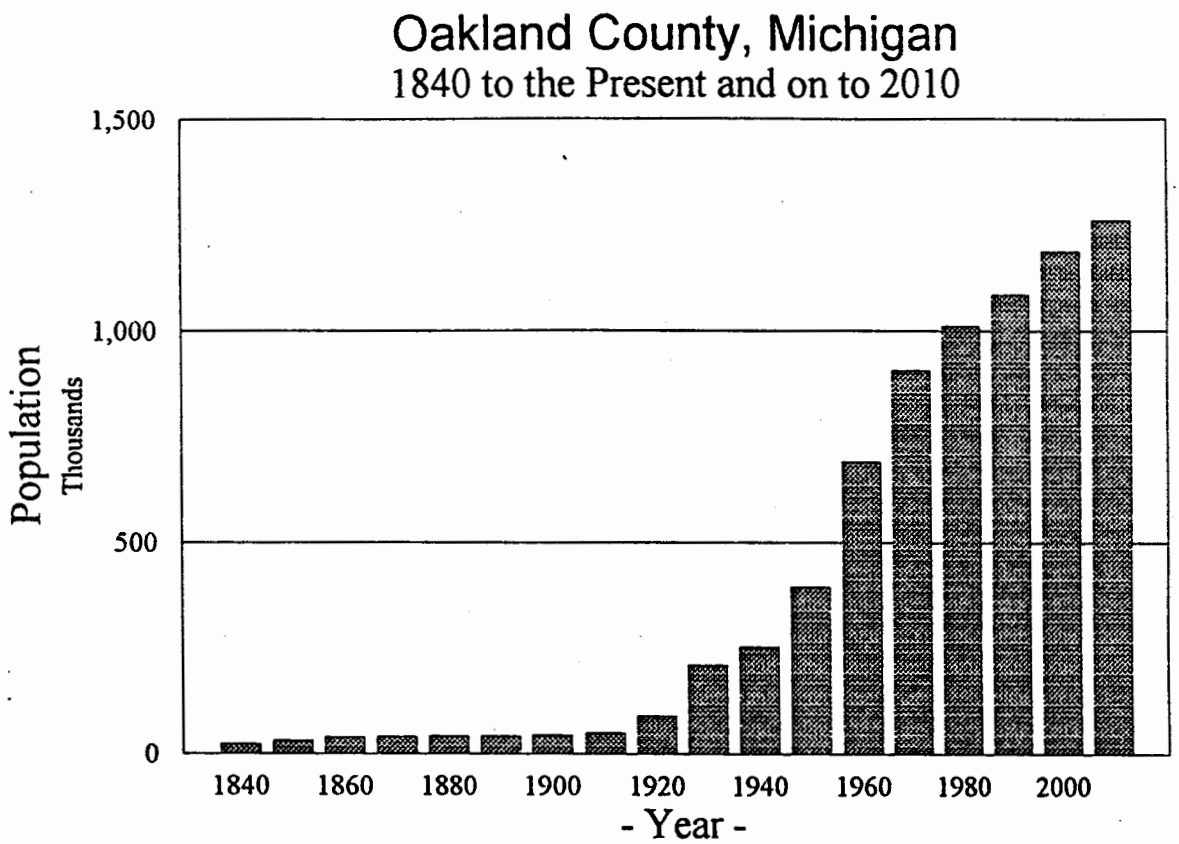


Population History

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	1,185,619	102,027	9.42%
2010	"	1,259,589	73,970	6.24%

Future projections are based upon SEMCOG's Ver '89 Regional Development Forecast dated 9-91 as adjusted to the 1990 census values.

Community	1970 Census Population	% of Total	1980 Census Population	% of Total	1990 Census Population Adjusted as of 7-92	% of Total	2010 SEMCOG Ver '89 Population Adjusted to 90 Census	% of Total
Addison Township	2,431	0.27	4,184	0.41	4,785	0.44	8,062	0.64
Auburn Hills	12,646	1.39	15,388	1.52	17,076	1.58	25,119	1.99
Berkley	21,879	2.41	18,637	1.84	16,960	1.57	15,430	1.23
Beverly Hills	13,598	1.50	11,598	1.15	10,610	0.98	9,604	0.76
Bingham Farms	566	0.06	529	0.05	1,001	0.09	1,444	0.11
Birmingham	26,170	2.88	21,689	2.14	19,997	1.85	18,613	1.48
Bloomfield Hills	3,672	0.40	3,985	0.39	4,288	0.40	4,804	0.38
Bloomfield Township	42,788	4.71	42,876	4.24	42,473	3.92	44,608	3.54
Brandon Township	3,830	0.42	8,336	0.82	10,799	1.00	18,976	1.51
Clarkston	1,034	0.11	968	0.10	1,005	0.09	934	0.07
Clawson	17,617	1.94	15,103	1.49	13,874	1.28	12,903	1.02
Commerce Township	14,556	1.60	18,789	1.86	22,225	2.05	26,968	2.14
Farmington	10,329	1.14	11,022	1.09	10,170	0.94	10,374	0.82
Farmington Hills	48,694	5.36	58,056	5.74	74,614	6.89	94,575	7.51
Ferndale	30,850	3.40	26,227	2.59	25,084	2.31	22,040	1.75
Franklin	3,311	0.36	2,864	0.28	2,626	0.24	2,833	0.22
Groveland Township	2,570	0.28	4,114	0.41	4,705	0.43	7,797	0.62
Hazel Park	23,784	2.62	20,914	2.07	20,051	1.85	17,804	1.41
Highland Township	8,372	0.92	16,958	1.68	17,941	1.66	28,030	2.23
Holly	4,355	0.48	4,874	0.48	5,595	0.52	5,914	0.47
Holly Township	3,041	0.33	3,612	0.36	3,257	0.30	4,329	0.34
Huntington Woods	8,536	0.94	6,937	0.69	6,419	0.59	5,685	0.45
Independence Township	16,327	1.80	20,569	2.03	23,717	2.19	31,130	2.47
Keego Harbor	3,092	0.34	3,083	0.30	2,932	0.27	2,748	0.22
Lake Angelus	573	0.06	397	0.04	328	0.03	297	0.02
Lake Orion	2,921	0.32	2,907	0.29	3,057	0.28	3,172	0.25
Lathrup Village	4,676	0.52	4,639	0.46	4,329	0.40	4,574	0.36
Leonard	378	0.04	423	0.04	357	0.03	341	0.03
Lyon Township	4,500	0.50	7,078	0.70	8,880	0.82	14,532	1.15
Madison Heights	38,599	4.25	35,375	3.50	32,196	2.97	28,557	2.27
Milford	4,699	0.52	5,041	0.50	5,500	0.51	5,344	0.42
Milford Township	2,557	0.28	5,146	0.51	6,624	0.61	10,990	0.87
Northville (part)	2,367	0.26	2,785	0.28	3,367	0.31	3,881	0.31
Novi	9,668	1.06	22,525	2.23	32,998	3.05	62,051	4.93
Novi Township	182	0.02	150	0.01	150	0.01	150	0.01
Oak Park	36,762	4.05	31,537	3.12	30,468	2.81	29,147	2.31
Oakland Township	4,793	0.53	7,628	0.75	8,227	0.76	13,682	1.09
Orchard Lake	1,487	0.16	1,798	0.18	2,286	0.21	2,479	0.20
Orion Township	14,189	1.56	19,566	1.93	21,019	1.94	28,165	2.24
Ortonville	983	0.11	1,190	0.12	1,252	0.12	1,436	0.11
Oxford	2,536	0.28	2,746	0.27	2,929	0.27	2,985	0.24
Oxford Township	5,953	0.66	7,823	0.77	9,004	0.83	13,582	1.08
Pleasant Ridge	3,989	0.44	3,217	0.32	2,775	0.26	2,516	0.20
Pontiac	85,279	9.39	76,715	7.58	71,136	6.56	62,829	4.99
Rochester	7,054	0.78	7,203	0.71	7,130	0.66	7,242	0.57
Rochester Hills	24,513	2.70	40,779	4.03	61,766	5.70	72,854	5.78
Rose Township	2,502	0.28	4,465	0.44	4,926	0.45	7,797	0.62
Royal Oak	86,238	9.50	70,893	7.01	65,410	6.04	59,057	4.69
Royal Oak Township	6,326	0.70	5,784	0.57	5,006	0.46	4,557	0.36
South Lyon	2,675	0.29	5,214	0.52	6,427	0.59	7,319	0.58
Southfield	69,285	7.63	75,568	7.47	75,727	6.99	83,035	6.59
Southfield Township	46	0.01	40	0.00	18	0.00	18	0.00
Springfield Township	4,388	0.48	8,295	0.82	9,927	0.92	17,033	1.35
Sylvan Lake	2,219	0.24	1,949	0.19	1,914	0.18	1,749	0.14
Troy	39,419	4.34	67,102	6.63	72,884	6.73	90,149	7.16
Walled Lake	3,759	0.41	4,748	0.47	6,278	0.58	9,476	0.75
Waterford Township	59,123	6.51	64,250	6.35	66,692	6.15	73,956	5.87
West Bloomfield Township	28,563	3.15	41,962	4.15	54,516	5.03	67,316	5.34
White Lake Township	14,311	1.58	21,870	2.16	22,608	2.09	28,698	2.28
Wixom	2,010	0.22	6,705	0.66	8,550	0.79	12,917	1.03
Wolverine Lake	4,301	0.47	4,968	0.49	4,727	0.44	4,981	0.40
County Totals	907,871	100.00	1,011,793	100.00	1,083,592	100.00	1,259,589	100.00
Less Northville	(2,367)	-0.26	(2,785)	-0.28	(3,367)	-0.31	(3,881)	-0.31
Planning Values	905,504	99.74	1,009,008	99.72	1,080,225	99.69	1,255,709	99.69
Michigan	8,875,083		9,262,078		9,295,297		9,996,073	
Oakland's % of Michigan	10.23%		10.92%		11.66%		12.60%	

9-91 Version '89 SEMCOG Employment Forecast
(Employment by SIC Code & Place of Work)

Community	01-17	37	20-36 38,39	40-49	50,51	52-59	60-67	70-89	91-97	Total	% of Total
Addison Township	101	0	9	0	0	11	0	433	23	577	0.09
Auburn Hills	900	931	2,763	295	611	814	32	4,845	25	11,216	1.74
Berkley	243	186	359	104	339	1,110	127	2,075	99	4,642	0.72
Beverly Hills	193	0	74	8	56	332	71	870	30	1,634	0.25
Bingham Farms	25	0	105	253	24	210	799	1,435	3	2,854	0.44
Birmingham	588	0	1,026	375	551	5,249	1,981	9,142	467	19,379	3.01
Bloomfield Hills	41	0	890	336	431	1,388	116	7,987	31	11,220	1.74
Bloomfield Township	448	3	594	204	364	2,638	983	7,213	311	12,758	1.98
Brandon Township	214	133	98	20	13	170	92	223	79	1,042	0.16
Clarkston	0	0	4	36	36	557	104	1,110	234	2,081	0.32
Clawson	97	54	748	440	240	1,198	425	1,911	55	5,168	0.80
Commerce Township	411	0	2,215	109	352	1,727	206	2,584	61	7,665	1.19
Farmington	463	54	1,146	217	384	2,536	342	2,718	156	8,016	1.25
Farmington Hills	1,153	87	5,462	433	3,040	8,738	4,855	16,990	249	41,007	6.38
Ferndale	389	634	3,992	267	1,120	2,144	313	2,771	204	11,834	1.84
Franklin	21	113	29	0	0	117	103	549	20	952	0.15
Groveland Township	35	0	10	0	0	0	0	9	59	113	0.02
Hazel Park	325	90	853	101	262	1,284	74	1,879	115	4,983	0.77
Highland Township	308	0	488	238	46	743	71	847	74	2,815	0.44
Holly	130	0	269	3	112	574	25	1,287	48	2,448	0.38
Holly Township	168	0	26	6	17	28	0	140	35	420	0.07
Huntington Woods	52	0	8	14	32	107	76	454	74	817	0.13
Independence Township	430	4	58	52	255	628	168	1,842	0	3,437	0.53
Keego Harbor	14	14	33	10	75	343	26	298	15	828	0.13
Lake Angelus	5	3	0	5	0	2	0	2	1	18	0.00
Lake Orion	169	304	36	0	389	904	72	827	100	2,801	0.44
Lathrup Village	25	0	397	101	196	346	316	1,087	55	2,523	0.39
Leonard	34	0	144	3	21	27	5	35	3	272	0.04
Lyon Township	802	0	366	283	189	183	57	388	69	2,337	0.36
Madison Heights	793	175	7,804	257	1,574	3,318	687	6,203	360	21,171	3.29
Milford	130	0	312	47	106	908	240	896	149	2,788	0.43
Milford Township	256	2,801	17	13	64	73	0	1,805	71	5,100	0.79
Northville (part)	36	0	54	18	19	70	18	262	26	503	0.08
Novi	2,077	170	3,111	251	2,476	8,923	639	7,026	397	25,070	3.90
Novi Township										0	0.00
Oak Park	1,045	76	2,885	874	1,623	2,876	955	4,823	463	15,620	2.43
Oakland Township	87	0	205	0	16	307	17	171	13	816	0.13
Orchard Lake	0	0	2	20	11	19	0	218	0	270	0.04
Orion Township	155	6,357	446	36	28	819	110	1,424	159	9,534	1.48
Ortonville	13	0	0	7	18	77	0	887	13	1,015	0.16
Oxford	774	19	99	0	298	329	282	305	37	2,143	0.33
Oxford Township	285	585	803	56	38	164	52	687	5	2,675	0.42
Pleasant Ridge	0	0	182	0	7	122	117	253	13	694	0.11
Pontiac	1,728	15,304	3,985	3,787	2,241	6,337	1,760	17,984	4,170	57,296	8.91
Rochester	496	94	2,244	334	299	3,299	577	5,637	153	13,133	2.04
Rochester Hills	698	80	2,645	338	801	3,862	1,093	10,617	67	20,201	3.14
Rose Township	39	0	0	12	12	35	0	8	19	125	0.02
Royal Oak	647	27	2,664	1,594	906	5,337	1,794	13,276	964	27,209	4.23
Royal Oak Township	52	0	192	43	168	579	272	436	65	1,807	0.28
South Lyon	326	0	71	242	358	530	287	2,817	42	4,673	0.73
Southfield	5,148	4,390	6,956	7,303	8,656	19,136	17,538	49,068	1,563	119,758	18.62
Southfield Township										0	0.00
Springfield Township	175	0	90	91	86	212	9	359	104	1,126	0.18
Sylvan Lake	36	0	23	13	97	117	0	70	14	370	0.06
Troy	4,998	2,807	23,363	3,288	6,292	20,246	11,894	36,111	803	109,802	17.08
Walled Lake	201	0	1,738	85	330	1,463	152	2,209	106	6,284	0.98
Waterford Township	303	95	618	288	326	5,410	527	2,968	229	10,764	1.67
West Bloomfield Township	861	373	261	323	181	2,453	640	4,116	176	9,384	1.46
White Lake Township	310	0	198	69	19	974	161	1,204	145	3,080	0.48
Wixom	516	1,816	1,043	213	167	251	74	530	35	4,645	0.72
Wolverine Lake	0	0	0	0	20	0	0	61	2	83	0.01
County Totals	29,969	37,779	84,213	23,515	36,392	122,354	51,334	244,382	13,058	642,996	100.00
Less Northville	(36)	0	(54)	(18)	(19)	(70)	(18)	(262)	(26)	(503)	-0.08
Planning Values	29,933	37,779	84,159	23,497	36,373	122,284	51,316	244,120	13,032	642,493	99.92

9-91 Version '89 SEMCOG Employment Forecast
(Employment by SIC Code & Place of Work)

Community	01-17	37	20-36 38,39	40-49	50,51	52-59	60-67	70-89	91-97	Total	% of Total
Addison Township	96	0	6	0	0	13	0	797	32	944	0.11
Auburn Hills	1,165	13,049	6,234	602	1,635	4,340	445	10,450	109	38,029	4.46
Berkley	140	42	181	95	334	1,204	142	2,900	99	5,137	0.60
Beverly Hills	148	0	57	9	49	335	73	1,004	29	1,704	0.20
Bingham Farms	25	0	75	247	28	218	934	2,652	5	4,184	0.49
Birmingham	540	0	386	283	415	10,807	1,894	12,922	584	27,831	3.26
Bloomfield Hills	27	0	888	377	345	1,889	216	12,972	37	16,751	1.96
Bloomfield Township	356	2	416	184	294	2,496	905	9,497	339	14,489	1.70
Brandon Township	235	201	63	29	30	281	155	523	123	1,640	0.19
Clarkston	0	0	6	40	43	555	105	1,386	237	2,372	0.28
Clawson	86	18	1,025	441	301	1,196	446	2,265	72	5,850	0.69
Commerce Township	590	0	2,321	136	767	3,929	441	7,248	97	15,529	1.82
Farmington	387	90	1,040	234	350	2,693	343	3,068	150	8,355	0.98
Farmington Hills	1,415	167	7,807	646	5,325	12,270	7,961	32,067	361	68,019	7.97
Ferndale	333	349	3,191	283	1,019	2,452	491	4,776	224	13,118	1.54
Franklin	30	83	54	0	0	174	239	863	25	1,468	0.17
Groveland Township	62	0	21	0	0	0	0	26	116	225	0.03
Hazel Park	234	46	667	94	193	1,373	83	2,765	127	5,582	0.65
Highland Township	308	0	437	323	46	1,028	126	1,802	95	4,165	0.49
Holly	130	0	291	4	125	640	35	2,791	58	4,074	0.48
Holly Township	173	0	24	9	22	36	0	212	48	524	0.06
Huntington Woods	43	0	4	13	29	103	76	524	78	870	0.10
Independence Township	469	9	47	82	367	730	187	3,106	0	4,997	0.59
Keego Harbor	8	6	21	9	84	348	27	471	17	991	0.12
Lake Angelus	7	2	0	2	0	15	0	17	2	45	0.01
Lake Orion	196	252	41	0	726	1,293	109	2,019	159	4,795	0.56
Lathrup Village	26	0	373	137	211	417	391	1,516	72	3,143	0.37
Leonard	20	0	184	2	18	47	12	61	4	348	0.04
Lyon Township	904	0	347	340	288	363	82	825	110	3,259	0.38
Madison Heights	666	73	6,224	294	1,488	3,809	894	9,943	400	23,791	2.79
Milford	153	0	172	40	162	1,531	169	1,772	188	4,187	0.49
Milford Township	399	2,801	17	25	164	211	0	3,457	28	7,102	0.83
Northville (part)	30	0	38	13	17	74	17	313	25	527	0.06
Novi	2,384	204	6,696	313	3,175	14,296	975	15,609	600	44,252	5.19
Novi Township										0	0.00
Oak Park	890	23	2,057	766	1,485	2,881	1,152	7,502	459	17,215	2.02
Oakland Township	120	0	165	0	35	484	32	362	18	1,216	0.14
Orchard Lake	0	0	1	17	11	22	0	379	0	430	0.05
Orion Township	175	6,740	899	44	42	1,008	143	3,623	236	12,910	1.51
Ortonville	15	0	0	8	19	84	0	1,005	16	1,147	0.13
Oxford	829	35	64	0	497	405	355	663	45	2,893	0.34
Oxford Township	352	451	855	82	41	223	80	1,581	7	3,672	0.43
Pleasant Ridge	0	0	96	0	4	102	123	321	13	659	0.08
Pontiac	1,566	8,103	2,988	3,530	3,497	5,597	2,159	22,237	4,047	53,724	6.30
Rochester	487	45	1,981	356	370	3,660	746	7,483	172	15,300	1.79
Rochester Hills	833	200	3,551	499	1,314	5,158	1,925	21,654	113	35,247	4.13
Rose Township	49	0	0	19	15	51	0	13	25	172	0.02
Royal Oak	505	7	1,870	1,721	748	5,620	2,189	17,389	1,001	31,050	3.64
Royal Oak Township	37	0	106	40	122	570	293	633	64	1,865	0.22
South Lyon	252	0	56	201	395	796	327	4,556	54	6,637	0.78
Southfield	4,576	3,002	6,696	7,603	7,953	20,124	21,166	59,515	1,846	132,481	15.52
Southfield Township										0	0.00
Springfield Township	189	0	81	129	105	305	18	825	134	1,786	0.21
Sylvan Lake	28	0	16	15	88	115	0	123	15	400	0.05
Troy	5,293	2,455	23,980	3,622	6,401	23,045	14,349	64,952	1,016	145,113	17.00
Walled Lake	171	0	1,357	17	468	2,201	189	3,891	124	8,418	0.99
Waterford Township	301	50	541	378	334	7,075	824	5,952	296	15,751	1.85
West Bloomfield Township	857	183	353	407	214	3,297	971	8,861	234	15,377	1.80
White Lake Township	329	0	175	94	22	1,463	296	2,734	195	5,308	0.62
Wixom	666	1,662	1,149	245	283	475	134	1,506	44	6,164	0.72
Wolverine Lake	0	0	0	0	31	0	0	119	3	153	0.02
County Totals	30,305	40,350	88,391	25,099	42,544	155,927	65,444	390,498	14,827	853,385	100.00
Less Northville	(30)	0	(38)	(13)	(17)	(74)	(17)	(313)	(25)	(527)	-0.06
Planning Values	30,275	40,350	88,353	25,086	42,527	155,853	65,427	390,185	14,802	852,858	99.94

Using 1990 Act 641 Plan Update Methodology

1990
(Tons per Day)

Community	Municipal Solid Waste (MSW) by Place of Generation: Residential	Commercial	Industrial	Total	Percent of MSW	Proportionate "Share" of: CDD	ISW	Grand Total	Percent of GT
Addison Township	6.94	1.31	0.57	8.82	0.24	1.67	4.47	14.97	0.29
Auburn Hills	24.76	18.63	23.85	67.25	1.80	5.98	15.96	89.19	1.74
Berkley	24.59	10.85	4.09	39.53	1.06	5.94	15.86	61.32	1.19
Beverly Hills	15.38	3.85	1.39	20.62	0.55	3.71	9.92	34.25	0.67
Bingham Farms	1.45	7.67	0.68	9.79	0.26	0.35	0.94	11.08	0.22
Birmingham	29.00	49.99	8.38	87.37	2.33	7.00	18.70	113.06	2.20
Bloomfield Hills	6.22	28.95	4.83	40.01	1.07	1.50	4.01	45.52	0.89
Bloomfield Township	61.59	32.96	5.43	99.97	2.67	14.87	39.71	154.55	3.01
Brandon Township	15.66	1.68	2.31	19.65	0.53	3.78	10.10	33.53	0.65
Clarkston	1.46	5.84	0.02	7.32	0.20	0.35	0.94	8.61	0.17
Clawson	20.12	12.01	4.67	36.80	0.98	4.86	12.97	54.63	1.06
Commerce Township	32.23	14.18	13.64	60.04	1.60	7.78	20.78	88.60	1.73
Farmington	14.75	17.88	8.64	41.26	1.10	3.56	9.51	54.33	1.06
Farmington Hills	108.19	96.54	34.80	239.53	6.40	26.11	69.76	335.40	6.53
Ferndale	36.37	19.19	26.04	81.60	2.18	8.78	23.45	113.83	2.22
Franklin	3.81	2.22	0.85	6.87	0.18	0.92	2.46	10.25	0.20
Groveland Township	6.82	0.19	0.23	7.25	0.19	1.65	4.40	13.29	0.26
Hazel Park	29.07	10.45	6.58	46.11	1.23	7.02	18.75	71.68	1.40
Highland Township	26.01	5.68	4.13	35.83	0.96	6.28	16.77	58.88	1.15
Holly	8.11	5.77	2.07	15.95	0.43	1.96	5.23	23.14	0.45
Holly Township	4.72	0.64	1.01	6.37	0.17	1.14	3.05	10.55	0.21
Huntington Woods	9.31	2.13	0.31	11.75	0.31	2.25	6.00	20.00	0.39
Independence Township	34.39	8.29	2.55	45.23	1.21	8.30	22.17	75.71	1.47
Keego Harbor	4.25	2.16	0.32	6.73	0.18	1.03	2.74	10.49	0.20
Lake Angelus	0.48	0.03	0.04	0.55	0.01	0.11	0.31	0.97	0.02
Lake Orion	4.43	6.45	2.64	13.53	0.36	1.07	2.86	17.45	0.34
Lathrup Village	6.28	5.91	2.19	14.38	0.38	1.52	4.05	19.94	0.39
Leonard	0.52	0.26	0.92	1.71	0.05	0.12	0.33	2.17	0.04
Lyon Township	12.88	3.29	6.06	22.23	0.59	3.11	8.30	33.64	0.66
Madison Heights	46.68	34.89	45.55	127.13	3.40	11.27	30.10	168.49	3.28
Milford	7.98	6.60	2.30	16.87	0.45	1.93	5.14	23.94	0.47
Milford Township	9.60	5.70	15.96	31.27	0.84	2.32	6.19	39.78	0.77
Northville (part)	4.88	1.16	0.47	6.51	0.17	1.18	3.15	10.84	0.21
Novi	47.85	55.47	27.82	131.14	3.50	11.55	30.85	173.54	3.38
Novi Township	0.22	0.00	0.00	0.22	0.01	0.05	0.14	0.41	0.01
Oak Park	44.18	32.68	20.80	97.66	2.61	10.66	28.49	136.81	2.66
Oakland Township	11.93	1.47	1.52	14.92	0.40	2.88	7.69	25.49	0.50
Orchard Lake	3.31	0.75	0.01	4.08	0.11	0.80	2.14	7.02	0.14
Orion Township	30.48	7.25	36.13	73.86	1.97	7.36	19.65	100.86	1.96
Ortonville	1.82	2.82	0.07	4.70	0.13	0.44	1.17	6.31	0.12
Oxford	4.25	3.52	4.63	12.40	0.33	1.03	2.74	16.16	0.31
Oxford Township	13.06	2.82	8.69	24.56	0.66	3.15	8.42	36.13	0.70
Pleasant Ridge	4.02	1.44	0.95	6.41	0.17	0.97	2.59	9.98	0.19
Pontiac	103.15	102.09	109.13	314.37	8.40	24.90	66.51	405.78	7.90
Rochester	10.34	28.98	14.72	54.04	1.44	2.50	6.67	63.20	1.23
Rochester Hills	89.56	47.21	17.77	154.55	4.13	21.62	57.75	233.91	4.56
Rose Township	7.14	0.24	0.20	7.59	0.20	1.72	4.61	13.92	0.27
Royal Oak	94.84	67.17	17.33	179.35	4.79	22.89	61.15	263.40	5.13
Royal Oak Township	7.26	4.40	1.27	12.92	0.35	1.75	4.68	19.36	0.38
South Lyon	9.32	12.03	2.06	23.41	0.63	2.25	6.01	31.67	0.62
Southfield	109.80	290.59	85.65	486.04	12.99	26.50	70.80	583.35	11.36
Southfield Township	0.03	0.00	0.00	0.03	0.00	0.01	0.02	0.05	0.00
Springfield Township	14.39	2.42	1.38	18.19	0.49	3.47	9.28	30.95	0.60
Sylvan Lake	2.78	0.88	0.31	3.96	0.11	0.67	1.79	6.42	0.12
Troy	105.68	221.28	161.84	488.81	13.06	25.51	68.14	582.46	11.34
Walled Lake	9.10	12.23	10.07	31.40	0.84	2.20	5.87	39.47	0.77
Waterford Township	96.70	27.43	5.28	129.41	3.46	23.34	62.35	215.10	4.19
West Bloomfield Township	79.05	22.20	7.76	109.01	2.91	19.08	50.97	179.06	3.49
White Lake Township	32.78	7.24	2.64	42.66	1.14	7.91	21.14	71.71	1.40
Wixom	12.40	3.57	17.52	33.50	0.90	2.99	7.99	44.48	0.87
Wolverine Lake	6.85	0.23	0.00	7.09	0.19	1.65	4.42	13.16	0.26
County Totals	1,571.21	1,381.81	789.07	3,742.09	100.00	379.26	1,013.07	5,134.42	100.00
Less Northville	(4.88)	(1.16)	(0.47)	(6.51)	-0.17	(1.18)	(3.15)	(10.84)	-0.21
Planning Values	1,566.33	1,380.65	788.60	3,735.58	99.83	378.08	1,009.92	5,123.58	99.79
Percent of Grand Total (PVs)	30.57%	26.95%	15.39%	72.91%		7.38%	19.71%	100.00%	
1990 Plan Update Values	1,616.3	1,220.5	840.1	3,676.8		390.15	1,128.93	5,195.68	
This Projection - % of 90 P.U.	96.91%	113.12%	93.87%	101.60%		96.91%	89.46%	98.61%	

Act 641 Waste Category	Generation Rate	
MSW - Residential	2.9	Lbs / Capita / Day
MSW - Commercial	5.75	Lbs / Employee / Day
MSW - Industrial	10.61	Lbs / Employee / Day
CDD	0.7	Lbs / Capita / Day
ISW	Special	See Appendix

Adjust SEMCOG Ver '89 Employment to 1990 Census

0.9788	1990 Commercial Employment
0.9788	1990 Industrial Employment
0.9788	2010 Commercial Employment
0.9788	2010 Industrial Employment

Solid Waste Database
Oakland County, Michigan

Waste Generation Estimates & Projections Revisited

Using 1990 Act 641 Plan Update Methodology

06/16/93
19:46

2010
(Tons per Day)

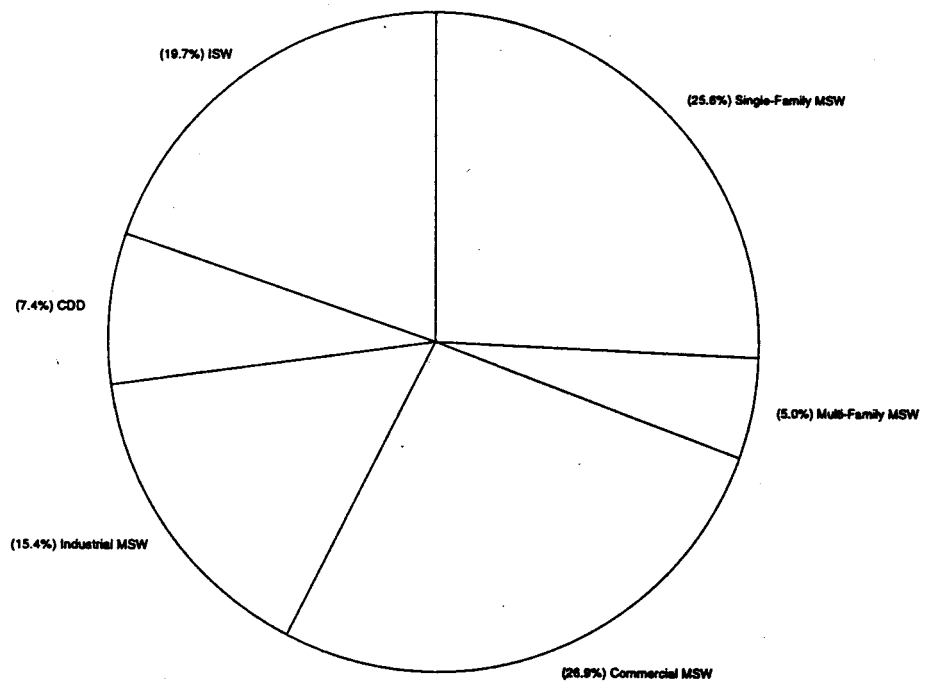
Community	Municipal Solid Waste (MSW) by Place of Generation: Residential	Commercial	Industrial	Total	Percent of MSW	Proportionate "Share" of: CDD	ISW	Grand Total	Percent of GT	Percent Change 1990 to 2010
Addison Township	11.69	2.37	0.53	14.59	0.32	2.82	6.84	24.25	0.40	61.85
Auburn Hills	36.42	49.47	106.18	192.07	4.17	8.79	21.32	222.19	3.63	148.97
Berkley	22.37	13.43	1.88	37.69	0.82	5.40	13.10	56.19	0.92	(8.44)
Beverly Hills	13.93	4.22	1.06	19.21	0.42	3.36	8.15	30.72	0.50	(10.38)
Bingham Farms	2.09	11.49	0.52	14.11	0.31	0.51	1.23	15.84	0.26	42.91
Birmingham	26.99	75.71	4.81	107.51	2.33	6.51	15.80	129.82	2.12	14.77
Bloomfield Hills	6.97	44.56	4.75	56.28	1.22	1.68	4.08	62.04	1.01	36.27
Bloomfield Township	64.68	38.60	4.02	107.30	2.33	15.61	37.86	160.77	2.63	3.94
Brandon Township	27.52	3.21	2.59	33.32	0.72	6.64	16.11	56.07	0.92	67.08
Clarkston	1.35	6.66	0.03	8.04	0.17	0.33	0.79	9.16	0.15	6.34
Clawson	18.71	13.29	5.86	37.86	0.82	4.52	10.95	53.33	0.87	(2.45)
Commerce Township	39.10	35.51	15.12	89.73	1.95	9.44	22.89	122.06	2.00	37.66
Farmington	15.04	19.24	7.88	42.16	0.92	3.63	8.81	54.60	0.89	0.44
Farmington Hills	137.13	164.99	48.75	350.88	7.62	33.10	80.27	464.25	7.59	38.33
Ferndale	31.96	26.02	20.11	78.08	1.70	7.71	18.71	104.51	1.71	(8.25)
Franklin	4.11	3.66	0.87	8.64	0.19	0.99	2.40	12.03	0.20	17.31
Groveland Township	11.31	0.40	0.43	12.14	0.26	2.73	6.62	21.48	0.35	61.46
Hazel Park	25.82	13.04	4.92	43.78	0.95	6.23	15.11	65.12	1.06	(9.48)
Highland Township	40.64	9.62	3.87	54.14	1.18	9.81	23.79	87.74	1.43	48.86
Holly	8.58	10.28	2.19	21.04	0.46	2.07	5.02	28.13	0.46	21.48
Holly Township	6.28	0.92	1.02	8.22	0.18	1.52	3.67	13.41	0.22	26.99
Huntington Woods	8.24	2.32	0.24	10.80	0.23	1.99	4.83	17.62	0.29	(11.98)
Independence Township	45.14	12.58	2.73	60.45	1.31	10.90	26.42	97.77	1.60	29.02
Keego Harbor	3.98	2.69	0.18	6.86	0.15	0.96	2.33	10.15	0.17	(3.35)
Lake Angelus	0.43	0.10	0.05	0.58	0.01	0.10	0.25	0.93	0.02	(3.53)
Lake Orion	4.60	12.12	2.54	19.26	0.42	1.11	2.69	23.06	0.38	32.05
Lathrup Village	6.63	7.72	2.07	16.43	0.36	1.60	3.88	21.91	0.36	9.79
Leonard	0.49	0.41	1.06	1.96	0.04	0.12	0.29	2.37	0.04	9.25
Lyon Township	21.07	5.65	6.50	33.22	0.72	5.09	12.33	50.64	0.83	50.41
Madison Heights	41.41	47.36	36.16	124.92	2.71	10.00	24.24	159.15	2.60	(5.60)
Milford	7.75	10.87	1.69	20.30	0.44	1.87	4.54	26.71	0.44	11.50
Milford Township	15.94	10.93	16.70	43.57	0.95	3.85	9.33	56.75	0.93	42.59
Northville (part)	5.63	1.29	0.35	7.27	0.16	1.36	3.29	11.92	0.19	9.92
Novi	89.97	98.40	48.21	236.58	5.14	21.72	52.67	310.97	5.08	79.09
Novi Township	0.22	0.00	0.00	0.22	0.00	0.05	0.13	0.40	0.01	(3.25)
Oak Park	42.26	40.09	15.42	97.77	2.12	10.20	24.74	132.71	2.17	(3.06)
Oakland Township	19.84	2.62	1.48	23.94	0.52	4.79	11.61	40.34	0.66	58.11
Orchard Lake	3.59	1.21	0.01	4.81	0.10	0.87	2.10	7.78	0.13	10.75
Orion Township	40.84	14.34	40.57	95.75	2.08	9.86	23.91	129.52	2.12	28.33
Ortonville	2.08	3.19	0.08	5.35	0.12	0.50	1.22	7.07	0.12	11.93
Oxford	4.33	5.53	4.82	14.68	0.32	1.04	2.53	18.25	0.30	12.88
Oxford Township	19.69	5.67	8.61	33.97	0.74	4.75	11.53	50.25	0.82	38.93
Pleasant Ridge	3.65	1.58	0.50	5.73	0.12	0.88	2.14	8.75	0.14	(12.38)
Pontiac	91.10	115.57	65.72	272.39	5.91	21.99	53.33	347.71	5.69	(14.35)
Rochester	10.50	35.98	13.05	59.53	1.29	2.53	6.15	68.22	1.12	7.90
Rochester Hills	105.64	86.29	23.80	215.73	4.68	25.50	61.84	303.06	4.96	29.46
Rose Township	11.31	0.35	0.25	11.91	0.26	2.73	6.62	21.25	0.35	52.56
Royal Oak	85.63	80.67	12.37	178.68	3.88	20.67	50.13	249.47	4.08	(5.36)
Royal Oak Township	6.61	4.85	0.74	12.20	0.26	1.60	3.87	17.66	0.29	(8.84)
South Lyon	10.61	17.81	1.60	30.02	0.65	2.56	6.21	38.80	0.63	22.42
Southfield	120.40	332.64	74.12	527.16	11.44	29.06	70.48	626.71	10.25	7.39
Southfield Township	0.03	0.00	0.00	0.03	0.00	0.01	0.02	0.05	0.00	(3.25)
Springfield Township	24.70	4.27	1.40	30.37	0.66	5.96	14.46	50.79	0.83	63.54
Sylvan Lake	2.54	1.00	0.23	3.77	0.08	0.61	1.48	5.86	0.10	(8.58)
Troy	130.72	319.07	164.75	614.54	13.34	31.55	76.52	722.61	11.81	24.02
Walled Lake	13.74	19.39	7.93	41.06	0.89	3.32	8.04	52.42	0.86	32.77
Waterford Township	107.24	41.81	4.63	153.68	3.34	25.88	62.77	242.34	3.96	12.56
West Bloomfield Township	97.61	39.35	7.23	144.19	3.13	23.56	57.14	224.89	3.68	25.48
White Lake Township	41.61	13.52	2.62	57.75	1.25	10.04	24.36	92.15	1.51	28.39
Wixom	18.73	7.56	18.05	44.35	0.96	4.52	10.96	59.83	0.98	34.43
Wolverine Lake	7.22	0.43	0.00	7.65	0.17	1.74	4.23	13.62	0.22	3.40
County Totals	1,826.40	1,953.93	825.86	4,606.19	100.00	440.86	1,069.12	6,116.16	100.00	19.05
Less Northville	(5.63)	(1.29)	(0.35)	(7.27)	-0.16	(1.36)	(3.29)	(11.92)	-0.19	9.92
Planning Values	1,820.78	1,952.63	825.51	4,598.92	99.84	439.50	1,065.82	6,104.24	99.81	19.07
Percent of Grand Total (PVs)	29.83%	31.99%	13.52%	75.34%		7.20%	17.46%	100.00%		
1990 Plan Update Values	1,923.1	1,720.9	946.5	4,590.5		464.20	1,229.67	6,284.37		20.95
This Projection - % of 90 P.U.	94.68%	113.47%	87.22%	100.18%		94.68%	86.68%	97.13%		

Act 641 Waste Category	Generation Rate	
MSW - Residential	2.9	Lbs / Capita / Day
MSW - Commercial	5.75	Lbs / Employee / Day
MSW - Industrial	10.61	Lbs / Employee / Day
CDD	0.7	Lbs / Capita / Day
ISW	Special	See Appendix

Adjust SEMCOG Ver '89 Employment to 1990 Census	
0.9788	1990 Commercial Employment
0.9788	1990 Industrial Employment
0.9788	2010 Commercial Employment
0.9788	2010 Industrial Employment

Sources of Act 641 Wastes - 1990

Oakland County, Michigan



1990 Waste Generation Patterns Unchanged

	1990		2010		20 Years of Growth	
Waste Category	Tons/Day	Percent	Tons/Day	Percent	Tons/Day	Percent
MSW						
Single-Family	1,316.67	25.6%	1,456.92	23.8%	140.25	10.7%
Multi-Family	254.54	5.0%	369.48	6.0%	114.94	45.2%
Commercial	1,381.81	26.9%	1,953.93	31.9%	572.12	41.4%
Industrial	789.07	15.4%	825.86	13.5%	36.79	4.7%
Sub-total, MSW	3,742.09	72.9%	4,606.19	75.3%	864.10	23.1%
CDD	379.26	7.4%	440.86	7.2%	61.60	16.2%
ISW	1,013.07	19.7%	1,069.12	17.5%	56.05	5.5%
Totals	5,134.42	100.0%	6,116.16	100.0%	981.74	19.1%

04/09/94
RJS, PE

Composition of the Oakland County Municipal Solid Waste Stream

1990

Material	Typical Categories of MSW Generators: Single Family Residential Urban	Single Family Residential Rural	General Office	Industrial	All Categories of MSW Generators
Newsprint	12%	10%	20%	1%	8.55%
OCC	5%	5%	15%	55%	25.38%
Office Paper	0%	0%	20%	3%	3.56%
Mixed Paper	25%	25%	20%	9%	16.47%
Plastic	10%	12%	3%	6%	7.84%
Textiles	4%	3%	1%	1%	2.84%
Wood	2%	4%	1%	5%	2.81%
Food Wastes	4%	10%	3%	4%	4.98%
Yard Wastes	20%	4%	1%	2%	9.36%
Other Organic	4%	10%	5%	4%	4.70%
Glass	5%	8%	5%	2%	4.41%
Metals	5%	7%	4%	4%	5.20%
Other Non-Organic	4%	2%	2%	4%	3.90%
Totals	100%	100%	100%	100%	100.00%

OCC = Old Corrugated Cardboard

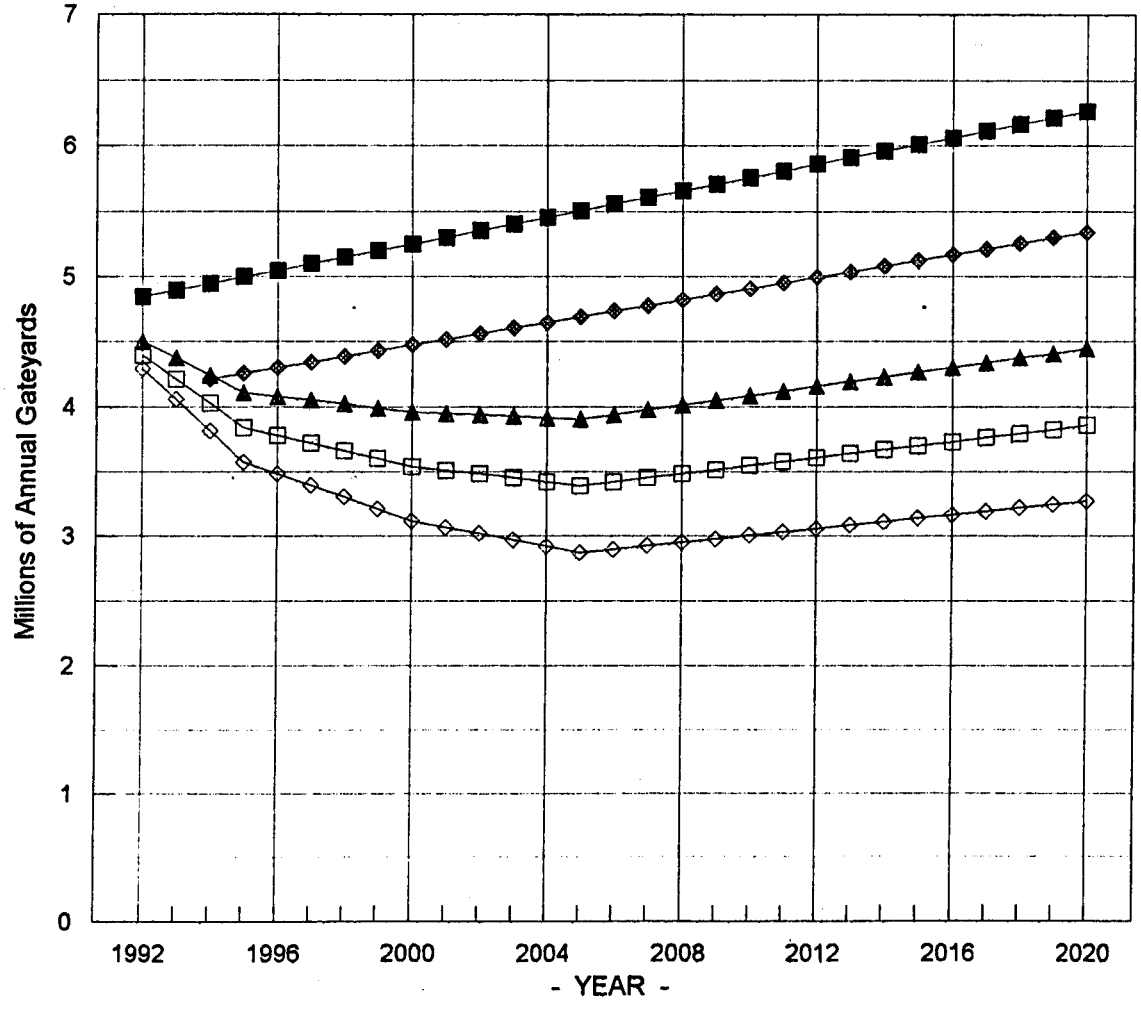
Note: The MSW stream compositions shown above represent material that is disposed of. This data is based upon studies conducted by Resource Recycling Systems, Inc. for the Oakland County Act 641 Solid Waste Planning Committee. Not all categories of MSW generators are individually displayed, but are included in the composite total.

October, 1990
OCDSWM

Percent by Weight
Composition of the MSW Stream
Oakland County

Oakland County's Future Waste Stream

What Effect Do Volume Reduction Goals Have?



LEGEND

Oakland County's Act 641 solid waste stream will, unchecked, continue to grow dramatically because of the County's increasingly larger population and strong economic growth which results in a large employment base.

- Unchanged 1990 Generation Patterns
- Constant % VR Achievement Level
- Year 2005 - 30% VR Achievement Level
- Year 2005 - 40% VR Achievement Level
- Year 2005 50% Volume Reduction Goals

The future landfill needs of the County will be a function of the ability of all categories of solid waste generators to reduce the amount of future wastes generated through source reduction and reuse and to reduce the amount destined for ultimate disposal through composting and recycling.

RJS, PE

04/07/94

Converting the Tonnage Estimates into Landfill Requirements for any Given Future Year

MSW (Municipal Solid Waste)

Original MSW tonnage projection (unchanged 1990 generation patterns)
Less amount not generated through source reduction & reuse
Less amount composted
Less amount recycled
Plus compost residues (2.5% of amount composted)
Plus recycle residues (7.96% of amount recycled)
Less amount incinerated (equal to probable operating capacity of facilities)

Total Direct tonnage of MSW landfilled

x 3 gateyards/ton
+ 2 gateyards/bankyard

MSW Bankyards Required

Tons of MSW incinerated (from above) (amount of MSW incinerated)

x 26.5% (x 3.5 %)

MSW ash to be landfilled (tons) (ferrous material recovered)

x 1

MSW Ash Bankyards Required

CDD (Construction & Demolition Debris)

CDD tonnage projection (unchanged 1990 generation patterns)
less volume reduction at a % equivalent to MSW SR&R + composting & recycling %

CDD direct landfill (tons)

x 1

CDD Bankyards Required

ISW (Industrial Special Wastes)

ISW tonnage projection (unchanged 1990 generation patterns)
less volume reduction at a % equivalent to MSW SR&R + composting & recycling %

ISW direct landfill (tons)

x 2000 # per ton
+ 1750 # per bankyard

ISW Bankyards Required

Converting the Tonnage Estimates into Required Landfill Volume

A typical cubic yard of completed landfill volume (a bankyard) contains discarded wastes and a portion of the required cover material. The 1990 Plan Update assumed that each completed bankyard contained the following amounts of wastes when future landfill needs were calculated.

Waste Category	Pounds of Waste per Completed Bankyard
MSW - Municipal Solid Waste	1,000
CDD - Construction & Demolition Debris	2,000
ISW - Industrial Special Wastes	2,000
WTE Ash	2,000

If all of the wastes generated within Oakland County in 1990, as shown on a previous Exhibit, were placed in landfills, the landfill volume displayed below would have been utilized. No volume reduction through source reduction, reuse, composting or recycling was assumed and only the GM Truck and Coach WTE facility was assumed to be operational.

Waste Category	Tons/Day Generated	Tons/Day Processed	1990 Bankyards Required
MSW	3,736	3,638	2,655,740
CDD	378	378	137,970
ISW	1,010	1,010	368,650
WTE	--	98	9,479*
	5,124	5,124	3,171,839

Since issuance of the 1990 Plan Update, Oakland County staff has had numerous conversations and meetings with MDNR's solid waste staff, other county planning agencies, consultants, landfill operators, and industry representatives. Based upon the insights gained therein and upon literature reviews, the following adjustments in gateyard and bankyard density assumptions were adopted by early 1992.

Waste Category	Gateyards Per Ton	Gateyards Per Bankyard	Pounds Per Bankyard
Municipal Solid Waste			
Original	3/1	1.5/1	1,000#
Revised	3/1	2/1	1,333#
Construction & Demolition Debris			
Original	1/1	1/1	2,000#
Revised	2/1	2/1	2,000#
Industrial Special Wastes			
Original	1/1	1/1	2,000#
Revised	1.14/1	1/1	1,750#
Waste-to-Energy Ash			
Original	1/1	1/1	2,000#
Revised	1/1	1/1	2,000#

* WTE Ash is assumed to be 26.5% by weight of the incoming MSW and only that landfill volume required for the ash is shown.

The adjustments were deemed to be more realistic than the original assumptions although they resulted in higher estimates of gateyards in the CDD and ISW categories, in a requirement for more disposal capacity in the ISW category and less disposal capacity in the MSW category. These revised assumptions formed the basis of Oakland County's July 10, 1992 Clarification Document to MDNR.

Over time, improving placement technology and equipment has allowed landfill operators to increase the compaction of waste material contained in completed landfills. Additionally, because of the decreasing use of daily cover (removable synthetic fabrics are now frequently being used instead), that volume is now occupied with wastes. Finally, as the size of new landfills increases (particularly the height), an increasing amount of ultimate compaction occurs. For example, a greater average density will occur in a large modern "high-rise" landfill than in an older small landfill. These increasing density trends combined with the fact that disposal capacity calculations are for future use, together justify the use of the higher density assumptions.

Applying the revised volume usage assumptions to the same data set as previously outlined, produces the following comparative bankyard usage.

Waste Category	Tons/Day Generated	Tons/Day Processed	1990 Bankyards Required
MSW	3,736	3,638	1,991,805
CDD	378	378	137,970
ISW	1,010	1,010	421,314
WTE	--	98	9,479 *
	5,124	5,124	2,560,568
Percent of Plan Update method			80.73%

At the beginning of 1993, a grand total of 15,926,000 bankyards of landfill capacity existed in the County or was designated in the County's 1990 Plan Update (not including the now closed Waterford Hills Landfill). As may quickly be seen, should the 1990 waste stream shown above continue to be generated unchanged on into the future, only 6.2 years of disposal capacity (or until early 1999) would be available for Oakland County Act 641 wastes.

* WTE Ash is assumed to be 26.5% by weight of the incoming MSW and only that landfill volume required for the ash is shown.

Solid Waste Database
Oakland County, Michigan

Landfill Bankyards Required
Annually and Accumulated

(Without Additional WTE Facilities)

04/09/94
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Oakland County, Michigan

Unchanged 1990 Generation Patterns

Year	Bankyards Required	Bankyards Accumulated	
1994	2,691,578	0	
1995	2,717,526	2,717,526	
1996	2,743,474	5,461,000	
1997	2,769,422	8,230,422	
1998	2,795,370	11,025,792	
1999	2,821,318	13,847,110	
2000	2,847,266	16,694,376	
2001	2,873,214	19,567,590	
2002	2,899,162	22,466,752	
2003	2,925,110	25,391,862	
2004	2,951,058	28,342,920	
2005	2,977,006	31,319,926	
2006	3,002,954	34,322,880	
2007	3,028,902	37,351,782	
2008	3,054,850	40,406,632	
2009	3,080,798	43,487,430	
2010	3,106,746	46,594,176	
2011	3,132,694	49,726,870	
2012	3,158,642	52,885,512	
2013	3,184,590	56,070,102	
2014	3,210,538	59,280,640	<
2015	3,236,485	62,517,125	
2016	3,262,433	65,779,558	
2017	3,288,381	69,067,939	
2018	3,314,329	72,382,268	
2019	3,340,277	75,722,545	
2020	3,366,225	79,088,770	

15% Constant Annual VR

Year	Bankyards Required	Bankyards Accumulated	
1994	2,287,842	0	
1995	2,309,897	2,309,897	
1996	2,331,953	4,641,850	
1997	2,354,009	6,995,859	
1998	2,376,065	9,371,924	
1999	2,398,120	11,770,044	
2000	2,420,176	14,190,220	
2001	2,442,232	16,632,452	
2002	2,464,288	19,096,740	
2003	2,486,343	21,583,083	
2004	2,508,399	24,091,482	
2005	2,530,455	26,621,937	
2006	2,552,511	29,174,448	
2007	2,574,567	31,749,015	
2008	2,596,622	34,345,637	
2009	2,618,678	36,964,315	
2010	2,640,734	39,605,049	
2011	2,662,790	42,267,839	
2012	2,684,845	44,952,684	
2013	2,706,901	47,659,585	
2014	2,728,957	50,388,542	<
2015	2,751,013	53,139,555	
2016	2,773,068	55,912,623	
2017	2,795,124	58,707,747	
2018	2,817,180	61,524,927	
2019	2,839,236	64,364,163	
2020	2,861,291	67,225,454	

30% Year 2005 VR Curve

Year	Bankyards Required	Bankyards Accumulated	
1994	2,308,771	0	
1995	2,234,421	2,234,421	
1996	2,217,684	4,452,105	
1997	2,200,258	6,652,363	
1998	2,182,144	8,834,507	
1999	2,163,341	10,997,848	
2000	2,143,850	13,141,698	
2001	2,137,604	15,279,502	
2002	2,131,295	17,410,797	
2003	2,124,323	19,535,120	
2004	2,116,889	21,652,009	
2005	2,108,993	23,761,002	
2006	2,127,469	25,888,471	
2007	2,145,944	28,034,415	
2008	2,164,420	30,198,835	
2009	2,182,895	32,381,730	
2010	2,201,371	34,583,101	
2011	2,219,846	36,802,947	
2012	2,238,322	39,041,269	
2013	2,256,797	41,298,066	
2014	2,275,273	43,573,339	<
2015	2,293,748	45,867,087	
2016	2,312,224	48,179,311	
2017	2,330,699	50,510,010	
2018	2,349,175	52,859,185	
2019	2,367,651	55,226,836	
2020	2,386,126	57,612,962	

40% Year 2005 VR Curve

Year	Bankyards Required	Bankyards Accumulated	
1994	2,192,518	0	
1995	2,087,731	2,087,731	
1996	2,054,811	4,142,542	
1997	2,020,929	6,163,471	
1998	1,986,082	8,149,553	
1999	1,950,273	10,099,826	
2000	1,913,500	12,013,326	
2001	1,897,644	13,910,970	
2002	1,881,187	15,792,157	
2003	1,864,131	17,656,288	
2004	1,846,475	19,502,763	
2005	1,828,219	21,330,982	
2006	1,844,288	23,175,270	
2007	1,860,357	25,035,627	
2008	1,876,426	26,912,053	
2009	1,892,495	28,804,548	
2010	1,908,564	30,713,112	
2011	1,924,633	32,637,745	
2012	1,940,702	34,578,447	
2013	1,956,771	36,535,218	
2014	1,972,840	38,508,058	<
2015	1,988,909	40,496,967	
2016	2,004,978	42,501,945	
2017	2,021,047	44,522,992	
2018	2,037,116	46,560,108	
2019	2,053,185	48,613,293	
2020	2,069,254	50,682,547	

50% Year 2005 VR Curve

Year	Bankyards Required	Bankyards Accumulated	
1994	2,076,265	0	
1995	1,941,040	1,941,040	
1996	1,891,939	3,832,979	
1997	1,841,599	5,674,578	
1998	1,790,021	7,464,599	
1999	1,737,205	9,201,804	
2000	1,683,150	10,884,954	
2001	1,657,484	12,542,438	
2002	1,631,080	14,173,518	
2003	1,603,939	15,777,457	
2004	1,576,060	17,353,517	
2005	1,547,444	18,900,961	
2006	1,561,107	20,462,068	
2007	1,574,769	22,036,837	
2008	1,588,432	23,625,269	
2009	1,602,094	25,227,363	
2010	1,615,757	26,843,120	
2011	1,629,419	28,472,539	
2012	1,643,082	30,115,621	
2013	1,656,744	31,772,365	
2014	1,670,406	33,442,771	<
2015	1,684,069	35,126,840	
2016	1,697,731	36,824,571	
2017	1,711,394	38,535,965	
2018	1,725,056	40,261,021	
2019	1,738,719	41,999,740	
2020	1,752,381	43,752,121	

[ ] < 20 Year landfill bankyard needs, 1-1-1995 through 12-31-2014.
or
20 Years from the anticipated approval date of this Plan Amendment

Oakland County

30.00% Year 2005 Volume Reduction Achievement Level

07/27/93
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30.00% — Annual Tons of Act 641 Wastes

Year	MSW Total Direct Landfill (Tons)	WTE Ash Total Direct Landfill (Tons)	CDD Total Direct Landfill (Tons)	ISW Total Direct Landfill (Tons)	All Total Direct Landfill (Tons)
1992	1,280,268	4,727	131,031	346,320	1,762,346
1993	1,244,709	4,727	127,216	334,490	1,711,143
1994	1,208,030	4,727	123,324	322,590	1,658,671
1995	1,170,230	4,727	119,356	310,619	1,604,932
1996	1,164,374	4,727	117,798	305,023	1,591,922
1997	1,158,111	4,727	116,203	299,391	1,578,432
1998	1,151,442	4,727	114,568	293,724	1,564,462
1999	1,144,367	4,727	112,895	288,022	1,550,012
2000	1,136,884	4,727	111,184	282,285	1,535,081
2001	1,135,068	4,727	110,727	279,778	1,530,301
2002	1,132,969	4,727	110,250	277,256	1,525,202
2003	1,130,588	4,727	109,754	274,715	1,519,784
2004	1,127,825	4,727	109,239	272,156	1,514,047
2005	1,124,980	4,727	108,704	269,580	1,507,992
2006	1,136,227	4,727	109,491	270,296	1,520,741
2007	1,147,474	4,727	110,278	271,012	1,533,491
2008	1,158,721	4,727	111,065	271,728	1,546,241
2009	1,169,968	4,727	111,852	272,444	1,558,991
2010	1,181,214	4,727	112,639	273,160	1,571,741
2011	1,192,461	4,727	113,426	273,876	1,584,491
2012	1,203,708	4,727	114,213	274,592	1,597,240
2013	1,214,955	4,727	115,000	275,308	1,609,990
2014	1,226,202	4,727	115,786	276,024	1,622,740
2015	1,237,449	4,727	116,573	276,740	1,635,490
2016	1,248,695	4,727	117,360	277,456	1,648,240
2017	1,259,942	4,727	118,147	278,172	1,660,989
2018	1,271,189	4,727	118,934	278,888	1,673,739
2019	1,282,436	4,727	119,721	279,605	1,686,489
2020	1,293,683	4,727	120,508	280,321	1,699,239

Gateyards per Landfill Working Day *

Assumed weight in lbs. per Gateyard

	867	2,000	1,000	1,750	
	MSW	WTE Ash	CDD	ISW	Total
1992	13,429	17	916	1,364	15,746
1993	13,056	17	890	1,337	15,299
1994	12,672	17	862	1,289	14,840
1995	12,275	17	835	1,241	14,368
1996	12,214	17	824	1,219	14,273
1997	12,148	17	813	1,196	14,174
1998	12,078	17	801	1,174	14,068
1999	12,004	17	789	1,151	13,961
2000	11,925	17	778	1,128	13,847
2001	11,906	17	774	1,118	13,815
2002	11,884	17	771	1,108	13,780
2003	11,859	17	768	1,098	13,741
2004	11,831	17	764	1,088	13,699
2005	11,800	17	760	1,077	13,654
2006	11,918	17	766	1,080	13,781
2007	12,036	17	771	1,083	13,907
2008	12,154	17	777	1,086	14,033
2009	12,272	17	782	1,089	14,160
2010	12,390	17	788	1,092	14,286
2011	12,508	17	793	1,094	14,412
2012	12,626	17	799	1,097	14,539
2013	12,744	17	804	1,100	14,665
2014	12,862	17	810	1,103	14,791
2015	12,980	17	815	1,106	14,918
2016	13,098	17	821	1,109	15,044
2017	13,216	17	826	1,112	15,170
2018	13,334	17	832	1,114	15,297
2019	13,452	17	837	1,117	15,423
2020	13,570	17	843	1,120	15,550

Gateyards per Year

	MSW	WTE Ash	CDD	ISW	Total
1992	3,840,803	4,727	262,062	395,795	4,503,387
1993	3,734,127	4,727	254,432	382,274	4,375,562
1994	3,624,090	4,727	246,649	368,674	4,244,140
1995	3,510,690	4,727	238,711	354,993	4,109,122
1996	3,493,122	4,727	235,597	348,597	4,082,043
1997	3,474,334	4,727	232,405	342,161	4,053,626
1998	3,454,327	4,727	229,136	335,685	4,023,875
1999	3,433,100	4,727	225,791	329,168	3,992,786
2000	3,410,653	4,727	222,368	322,612	3,960,360
2001	3,405,203	4,727	221,453	319,748	3,951,132
2002	3,398,907	4,727	220,500	316,864	3,940,998
2003	3,391,764	4,727	219,508	313,960	3,929,959
2004	3,383,776	4,727	218,477	311,036	3,918,016
2005	3,374,940	4,727	217,408	308,091	3,905,167
2006	3,408,681	4,727	218,982	308,910	3,941,300
2007	3,442,422	4,727	220,556	309,728	3,977,433
2008	3,476,162	4,727	222,130	310,546	4,013,566
2009	3,509,903	4,727	223,704	311,365	4,049,698
2010	3,543,643	4,727	225,277	312,183	4,085,831
2011	3,577,384	4,727	226,851	313,001	4,121,964
2012	3,611,124	4,727	228,425	313,820	4,158,097
2013	3,644,865	4,727	229,999	314,638	4,194,229
2014	3,678,605	4,727	231,573	315,456	4,230,362
2015	3,712,346	4,727	233,147	316,275	4,266,495
2016	3,746,086	4,727	234,721	317,093	4,302,627
2017	3,779,827	4,727	236,294	317,911	4,338,760
2018	3,813,567	4,727	237,868	318,730	4,374,893
2019	3,847,308	4,727	239,442	319,548	4,411,026
2020	3,881,049	4,727	241,016	320,366	4,447,158

* 286 Working Days per Year as follows...
(52 weeks * 5.5 days/week) = 286

40.00% Year 2005 Volume Reduction Achievement Level

07/27/93
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40.00% — Annual Tons of Act 641 Wastes

Year	MSW Total Direct Landfill (Tons)	WTE Ash Total Direct Landfill (Tons)	CDD Total Direct Landfill (Tons)	ISW Total Direct Landfill (Tons)	All Total Direct Landfill (Tons)
1992	1,250,869	4,727	127,815	337,822	1,721,234
1993	1,200,114	4,727	122,354	321,707	1,648,902
1994	1,147,908	4,727	116,791	305,499	1,574,923
1995	1,094,245	4,727	111,124	289,197	1,499,294
1996	1,079,878	4,727	108,673	281,394	1,474,673
1997	1,064,939	4,727	106,171	273,544	1,449,381
1998	1,049,427	4,727	103,617	265,648	1,423,419
1999	1,033,343	4,727	101,012	257,704	1,396,786
2000	1,016,687	4,727	98,355	249,714	1,369,483
2001	1,009,578	4,727	97,370	246,032	1,357,707
2002	1,002,104	4,727	96,360	242,326	1,345,517
2003	994,265	4,727	95,324	238,597	1,332,913
2004	986,061	4,727	94,262	234,844	1,319,895
2005	977,492	4,727	93,175	231,069	1,306,463
2006	987,287	4,727	93,949	231,682	1,317,547
2007	997,083	4,727	94,524	232,296	1,328,630
2008	1,006,878	4,727	95,198	232,910	1,339,714
2009	1,016,673	4,727	95,873	233,524	1,350,797
2010	1,026,469	4,727	96,547	234,137	1,361,881
2011	1,036,264	4,727	97,222	234,751	1,372,965
2012	1,046,060	4,727	97,897	235,365	1,384,048
2013	1,055,855	4,727	98,571	235,979	1,395,132
2014	1,065,650	4,727	99,246	236,592	1,406,216
2015	1,075,446	4,727	99,920	237,206	1,417,299
2016	1,085,241	4,727	100,595	237,820	1,428,383
2017	1,095,036	4,727	101,269	238,434	1,439,466
2018	1,104,832	4,727	101,944	239,047	1,450,550
2019	1,114,627	4,727	102,618	239,661	1,461,634
2020	1,124,423	4,727	103,293	240,275	1,472,717

Gateyards per Landfill Working Day *

Assumed weight in lbs. per Gateyard

	867	2,000	1,000	1,750	
	MSW	WTE Ash	CDD	ISW	Total
1992	13,121	17	894	1,350	15,381
1993	12,589	17	856	1,296	14,746
1994	12,041	17	817	1,221	14,095
1995	11,478	17	777	1,156	13,427
1996	11,327	17	760	1,124	13,228
1997	11,171	17	742	1,093	13,023
1998	11,008	17	725	1,062	12,811
1999	10,839	17	706	1,030	12,592
2000	10,665	17	688	998	12,367
2001	10,590	17	681	983	12,271
2002	10,512	17	674	968	12,170
2003	10,429	17	667	953	12,066
2004	10,343	17	659	938	11,957
2005	10,253	17	652	923	11,845
2006	10,356	17	656	926	11,955
2007	10,459	17	661	928	12,065
2008	10,562	17	666	931	12,175
2009	10,664	17	670	933	12,285
2010	10,767	17	675	936	12,394
2011	10,870	17	680	938	12,504
2012	10,973	17	685	941	12,614
2013	11,075	17	689	943	12,724
2014	11,178	17	694	945	12,834
2015	11,281	17	699	948	12,944
2016	11,384	17	703	950	13,054
2017	11,486	17	708	953	13,164
2018	11,589	17	713	955	13,274
2019	11,692	17	719	958	13,384
2020	11,795	17	722	960	13,494

Gateyards per Year

	MSW	WTE Ash	CDD	ISW	Total
1992	3,752,608	4,727	255,631	366,082	4,399,048
1993	3,600,341	4,727	244,709	367,665	4,217,442
1994	3,443,717	4,727	233,581	349,142	4,031,167
1995	3,282,736	4,727	222,248	330,511	3,840,223
1996	3,239,635	4,727	217,346	321,583	3,783,302
1997	3,194,817	4,727	212,341	312,822	3,724,508
1998	3,148,282	4,727	207,234	303,597	3,663,840
1999	3,100,029	4,727	202,023	294,519	3,601,299
2000	3,050,060	4,727	196,710	285,388	3,536,885
2001	3,028,733	4,727	194,741	281,179	3,509,381
2002	3,006,312	4,727	192,720	276,944	3,480,703
2003	2,982,795	4,727	190,648	272,682	3,450,853
2004	2,958,183	4,727	188,525	268,394	3,419,829
2005	2,932,476	4,727	186,350	264,078	3,387,632
2006	2,961,862	4,727	187,899	264,780	3,419,068
2007	2,991,248	4,727	189,048	265,481	3,450,505
2008	3,020,634	4,727	190,397	266,183	3,481,941
2009	3,050,020	4,727	191,746	266,884	3,513,378
2010	3,079,407	4,727	193,095	267,585	3,544,814
2011	3,108,793	4,727	194,444	268,287	3,576,251
2012	3,138,179	4,727	195,793	268,988	3,607,688
2013	3,167,565	4,727	197,142	269,690	3,639,124
2014	3,196,951	4,727	196,491	270,391	3,670,561
2015	3,226,337	4,727	199,840	271,093	3,701,997
2016	3,255,723	4,727	201,189	271,794	3,733,434
2017	3,285,109	4,727	202,538	272,495	3,764,870
2018	3,314,495	4,727	203,887	273,197	3,796,307
2019	3,343,882	4,727	205,236	273,898	3,827,743
2020	3,373,268	4,727	206,585	274,600	3,859,180

* 286 Working Days per Year as follows...
(52 weeks * 5.5 days/week) = 286

50.00% Year 2005 Volume Reduction Achievement Level

07/27/93
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50.00% — Annual Tons of Act 641 Wastes

Year	MSW Total Direct Landfill (Tons)	WTE Ash Total Direct Landfill (Tons)	CDD Total Direct Landfill (Tons)	ISW Total Direct Landfill (Tons)	All Total Direct Landfill (Tons)
1992	1,221,471	4,727	124,600	329,323	1,680,121
1993	1,155,518	4,727	117,493	308,924	1,586,662
1994	1,087,781	4,727	110,257	288,408	1,491,174
1995	1,018,261	4,727	102,893	267,775	1,393,656
1996	995,383	4,727	99,548	257,766	1,357,424
1997	971,767	4,727	96,139	247,697	1,320,330
1998	947,412	4,727	92,665	237,571	1,282,376
1999	922,320	4,727	89,128	227,386	1,243,561
2000	896,489	4,727	85,526	217,143	1,203,885
2001	884,088	4,727	84,014	212,284	1,185,114
2002	871,239	4,727	82,470	207,396	1,165,833
2003	857,942	4,727	80,894	202,479	1,146,043
2004	844,197	4,727	79,286	197,533	1,125,743
2005	830,004	4,727	77,646	192,557	1,104,934
2006	838,348	4,727	78,208	193,069	1,114,352
2007	846,692	4,727	78,770	193,580	1,123,769
2008	855,036	4,727	79,332	194,091	1,133,187
2009	863,379	4,727	79,894	194,603	1,142,604
2010	871,723	4,727	80,456	195,114	1,152,021
2011	880,067	4,727	81,018	195,626	1,161,439
2012	888,411	4,727	81,580	196,137	1,170,856
2013	896,755	4,727	82,143	196,649	1,180,274
2014	905,099	4,727	82,705	197,160	1,189,691
2015	913,443	4,727	83,267	197,672	1,199,109
2016	921,787	4,727	83,829	198,183	1,208,526
2017	930,131	4,727	84,391	198,695	1,217,944
2018	938,474	4,727	84,953	199,206	1,227,361
2019	946,818	4,727	85,515	199,718	1,236,778
2020	955,162	4,727	86,077	200,229	1,246,196

Gateyards per Landfill Working Day *

Assumed weight in lbs. per Gateyard

	867	2,000	1,000	1,750	
	MSW	WTE Ash	CDD	ISW	Total
1992	12,813	17	871	1,316	15,016
1993	12,121	17	822	1,234	14,193
1994	11,410	17	771	1,152	13,350
1995	10,681	17	720	1,070	12,487
1996	10,441	17	696	1,030	12,184
1997	10,193	17	672	990	11,872
1998	9,938	17	648	949	11,552
1999	9,675	17	623	909	11,223
2000	9,404	17	598	868	10,886
2001	9,274	17	588	848	10,726
2002	9,139	17	577	829	10,561
2003	8,999	17	566	809	10,391
2004	8,855	17	554	789	10,218
2005	8,706	17	543	769	10,035
2006	8,794	17	547	772	10,129
2007	8,881	17	551	774	10,222
2008	8,969	17	555	776	10,316
2009	9,056	17	559	778	10,409
2010	9,144	17	563	780	10,503
2011	9,231	17	567	782	10,596
2012	9,319	17	570	784	10,690
2013	9,407	17	574	786	10,783
2014	9,494	17	578	788	10,877
2015	9,582	17	582	790	10,970
2016	9,669	17	586	792	11,064
2017	9,757	17	590	794	11,157
2018	9,844	17	594	796	11,251
2019	9,932	17	598	798	11,344
2020	10,019	17	602	800	11,438

Gateyards per Year

	MSW	WTE Ash	CDD	ISW	Total
1992	3,664,412	4,727	249,200	376,369	4,294,708
1993	3,466,554	4,727	234,985	353,056	4,059,323
1994	3,263,344	4,727	220,514	329,609	3,818,194
1995	3,054,782	4,727	205,785	306,029	3,571,323
1996	2,986,148	4,727	199,096	294,589	3,484,561
1997	2,915,300	4,727	192,278	283,083	3,395,388
1998	2,842,237	4,727	185,331	271,510	3,303,805
1999	2,766,959	4,727	178,256	259,870	3,209,812
2000	2,689,466	4,727	171,052	248,163	3,113,409
2001	2,652,263	4,727	168,029	242,810	3,067,630
2002	2,613,716	4,727	164,941	237,024	3,020,409
2003	2,573,826	4,727	161,789	231,405	2,971,746
2004	2,532,591	4,727	158,572	225,752	2,921,642
2005	2,490,012	4,727	155,292	220,065	2,870,096
2006	2,515,043	4,727	156,416	220,650	2,896,836
2007	2,540,075	4,727	157,540	221,234	2,923,577
2008	2,565,107	4,727	158,664	221,819	2,950,317
2009	2,590,138	4,727	159,788	222,403	2,977,057
2010	2,615,170	4,727	160,912	222,988	3,003,798
2011	2,640,202	4,727	162,037	223,572	3,030,538
2012	2,665,233	4,727	163,161	224,157	3,057,279
2013	2,690,265	4,727	164,285	224,741	3,084,019
2014	2,715,297	4,727	165,409	225,326	3,110,759
2015	2,740,328	4,727	166,533	225,910	3,137,500
2016	2,765,360	4,727	167,658	226,495	3,164,240
2017	2,790,392	4,727	168,782	227,080	3,190,981
2018	2,815,423	4,727	169,906	227,664	3,217,721
2019	2,840,455	4,727	171,030	228,249	3,244,461
2020	2,865,487	4,727	172,154	228,833	3,271,202

* 286 Working Days per Year as follows...
(52 weeks * 5.5 days/week) = 286

Chapter 2

DISPOSAL FACILITY INVENTORY

When determining future disposal capacity that may be available to a county, it is important to operate from a current database. The material contained in this Chapter presents a regional look at disposal facilities and represents data obtained from landfill operators and contiguous county Planning Agencies. The data was collected by Oakland County staff in mid-1993 and displays existing remaining capacity in millions of cubic yards of completed landfill volume (bankyards), designated additional capacity, possible future expansions not designated in the existing Act 641 Plans, and the operating levels observed (expressed in gateyards) for 1992. This information is provided for that part of southeastern Michigan that has recently been operating in an unrestricted free-market mode.

This Chapter also displays and further examines Oakland County's estimate of the area's MSW stream by county (not including construction & demolition debris or industrial special wastes) and provides a verification that the gateyard estimates and projections developed using the Oakland method and conversion factors are reasonable. It should be noted here that each county estimates and projects its waste stream using slightly different techniques and approaches than that used herein and the values shown generally do not precisely match values displayed in the individual county's Act 641 Plans. **Chapter 1** provides some additional insight on this issue.

Each time the Board of Commissioners certifies or demonstrates the sufficiency of available disposal capacity as is required in **Chapter 5** of this Plan Amendment, the data contained in this Chapter will be reviewed and if appropriate, replaced with then current information, data and growth estimates. Such changes will not constitute plan amendments on their face, but will insure that the annual or periodic certifications are current. It is appropriate that the solid waste database be considered a living, breathing document that is subject to constant adjustment and one which continually focuses on the changing regional scene and one which includes the improvements that technology is bringing to the compaction of wastes in completed landfills. Readers are advised to contact the County to obtain the latest revisions of the data contained herein. (June, 1994.)

List of Chapter 2 Exhibits:

Disposal Facility Inventory:

Starting with an inventory of closed and abandoned landfills in Oakland County (Exhibits 2.5 and 2.6), one quickly obtains a feel for how the region has been served over the past four decades. Although the records on closed and

abandoned landfills are sparse at best and we do not precisely know the operating dates of the many landfills involved, the facilities shown on these two Exhibits represent a majority of the landfills operated in the County since World War II. Assume that the region's growth could be observed as through it were a living tree with its center at downtown Detroit. Each new growth ring brought a series of new landfills, each located slightly further from the center of the region.

This analogy even shows today when examining the now existent landfills. Exhibit 2.7 shows these facilities with ten landfills currently operating, all located roughly in a circle around the center of the region. Exhibits 2.9 and 2.10 show details on these current operations, sorted by County and sorted by owner.

The Free Market Area:

In southeastern Michigan, for the past several years, a rather large area has essentially been operating as a free market area where wastes have been handled by the private sector, without regard for governmental boundaries. Oakland staff viewpoints are that this area includes all of Oakland, Macomb, Wayne, Washtenaw, and Livingston Counties and the south one-half of Genesee County. With the exception of small amounts of wastes which have been recently exported from this area (a portion of the CDD and ISW wastes having been exported to Monroe and Jackson Counties), the existing disposal facilities within this geographic area have basically handled all other Act 641 wastes generated within the area. Given this past situation, it becomes necessary to examine this entire area, rather than just looking at what occurs in a single county, when the waste stream is analyzed. This important perspective is necessary to fully understand the Oakland County waste stream.

To aid in this analysis, the Oakland County waste stream estimation and projection methods were used to prepare a waste stream and landfill needs estimate for this entire area. Details of the estimate are shown in Exhibit 2.8. As shown in **Chapter 1** for Oakland County, this Exhibit displays the stream in tons and in gateyards.

Observed Waste Stream - 1992:

A majority of the landfill operators within the free-market area in southeastern Michigan willingly provided remaining capacity data (bankyards) as of January 1, 1993 as well as operating data for 1992. The operating information is reported in terms of gateyards of wastes (a gateyard being a compacted cubic yard of wastes contained within the vehicles delivering wastes to the landfill - "coming through the gate").

As indicated in **Chapter 1**, the waste stream is originally estimated and projected on a tonnage or weight basis. Weight tends to be rather absolute, whereas volumes of wastes can vary widely depending upon many local factors. The problem in verifying the solid wastes estimates and projections becomes one of comparing the weight based estimates to the real world. In southeast Michigan, few facilities other than the incinerator and waste-to-energy facilities weigh the waste stream. The majority of the disposal facilities (landfills) charge a tip fee (that fee paid for tipping the vehicle load into the landfill) that is based upon the volumetric capacity of the delivery vehicle. Thus, the primary economic unit becomes volume based - modified perhaps only by waste type or the delivery vehicle type.

The weight of the average gateyard will vary widely depending upon numerous factors. These range from the amount of moisture contained in the wastes; the type of wastes (whether yard wastes, municipal solid waste (MSW), construction and demolition debris (CDD), or industrial special wastes (ISW)); the type of delivery vehicle (for example, rear loading route packer trucks generally can pack the wastes more densely than side-loaders or top-loaders, large transfer trailers cannot be packed as densely as route packers, and open top boxes are packed only as allowed by the individual load or as may be mechanically packed by the equipment used to place the wastes into the boxes); the age of the vehicles and quality of maintenance performed; and etc.

The exhibits contained in this Chapter indicate that approximately 15 million gateyards of wastes were processed at the region's several landfills in 1992. Assuming five and one-half operating days per week, or 286 working days per year, this yields an average load of 51,980 gateyards per working day across all disposal facilities and across all waste categories. At Type II landfills, the highest observed volume occurred at the Arbor Hills facility in Washtenaw County and the lowest observed volume was at the City of Pontiac's Collier Road landfill.

From a simplistic perspective, after adjusting the data to examine only the MSW stream component, and after deleting the waste stream captured by sole source markets (Pontiac's Collier Road facility), at the beginning of 1993, the nine (9) Type II landfills were averaging 4,591 gateyards of MSW per working day. By contrast, the Arbor Hills facility is allowed to operate at an average maximum level of 3.5 million gateyards per year, or 12,238 gateyards per working day. Thus it could be said that less than four (4) facilities of the size of the Arbor Hills operation could have theoretically handled the region's entire MSW stream in 1992.

If the region is successful in meeting its future volume reduction goals, the future waste stream to be disposed of will be smaller than that now observed, in spite of population and employment growth. Ultimately, and obviously depending upon how well volume reduction goals are met, it is conceivable that only three large facilities of the size of the present Arbor Hills operation would be required to serve this entire market area.

Stated conversely, the several Type II landfills today are not, on average, operating up to their potential daily operating capacity, thus perhaps explaining the extreme competition for the available waste stream throughout the region as is currently reflected in tip fee prices which in early 1994 are 25 to 30% lower than existed in mid-1990.

US Supreme Court Decision of June 1, 1992:

The US Supreme Court overturned the ability of Michigan's counties to bar out-of-state wastes (as an inter-state commerce issue) and subsequent to the June 1, 1992 decision, significant additional amounts of out-of-state and out-of-country wastes began to flow into southeastern Michigan. The increase in these flows (obviously impacted by the removal of legal impediments) may be attributed to two primary factors.

First, southeastern Michigan has more operating capacity available to it than wastes locally generated (thus an over-supply of present day operating capacity). Second, landfill tip fees are quite low because of the competitive pressures brought about by the over-abundant present day operating capacity. Thus economic incentives frequently exist for generators of wastes in remote locations when their locally available disposal capacity is high-priced. Under these circumstances, southeastern Michigan becomes an attractive spot-

market for imported wastes. The regions's landfill operators are reluctant to divulge the actual amounts of out-of-state and out-of-country wastes landfilled, but the total amount served since June 1, 1992, is judged to be significant.

Verification of Oakland's gateyard estimates:

Lacking a mandatory, uniform reporting requirement on the landfill operations (how much of what kinds of wastes from what origins are handled in a given time period at your facility?), it is difficult to pinpoint exactly the amount of locally generated wastes handled at the region's several landfills. However, an estimation can be made.

Oakland County's waste stream computer model (based on the several factors outlined in **Chapter 1**) predicted the annual gateyards outlined below, which are expressed in millions of gateyards, depending upon the volume reduction achievement level selected for analysis.

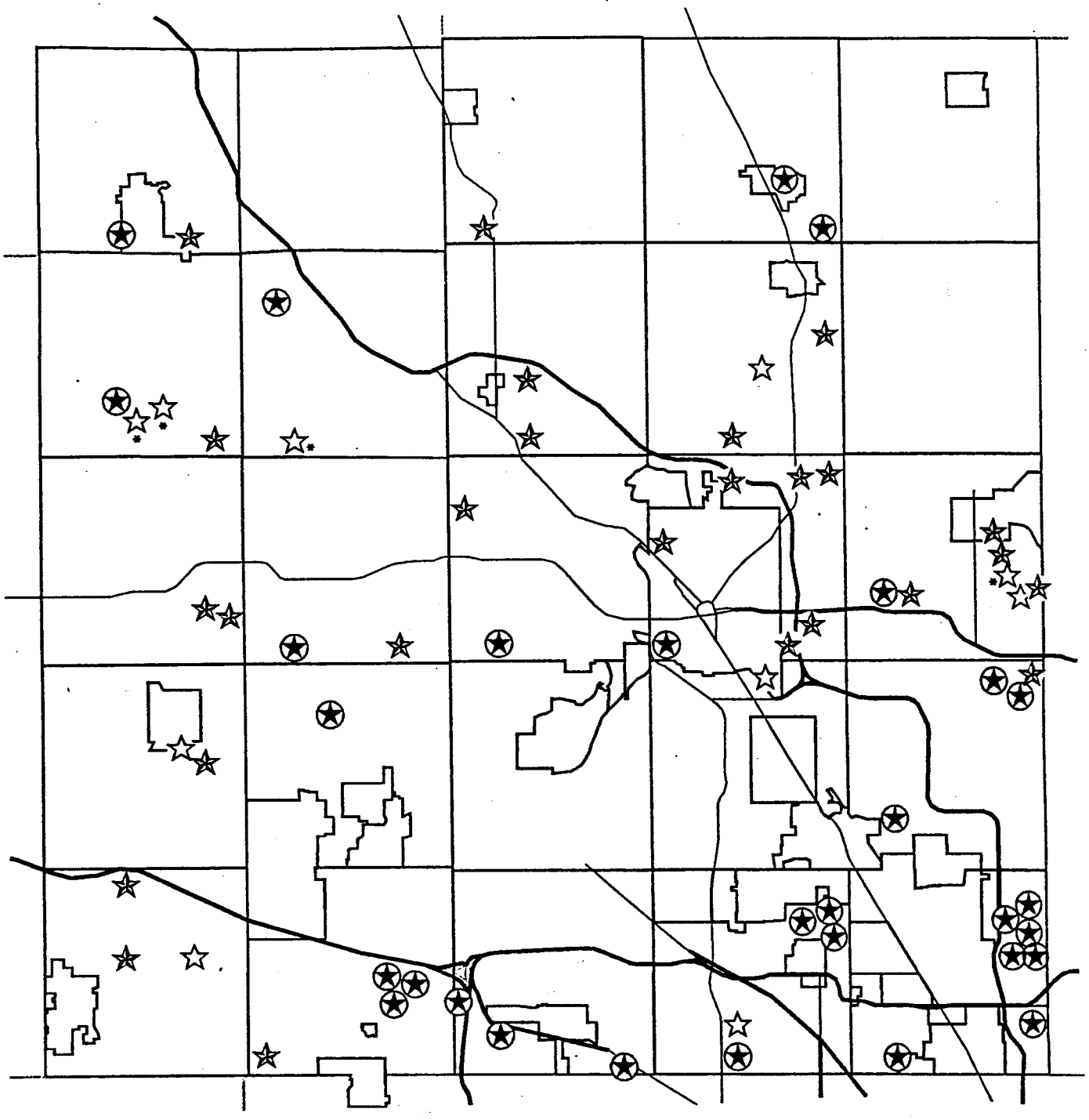
	Oakland County Year 2005 VR Curve		
	30% VR	40% VR	50% VR
1992 VR Achievement Level	7.4%	9.7%	12.0%
1992 Estimated Gateyards	14.32	13.92	13.53
Observed Gateyards	14.87	14.87	14.87
Variance from Observed Value	0.55	0.95	1.34
Oakland's Estimate is ...	3.7% Low	6.4% Low	9.0% Low
	^ | Most Likely Scenario		

The Oakland model predicted gateyards within 3.7% of that observed in 1992. This difference of 0.55 million gateyards, expressed over that seven month period from the June 1, 1992 U.S. Supreme Court decision to year's end, equates to approximately 3,300 gateyards per working day, or 365 gateyards at each of the principal regional landfills. Factoring in out-of-state and out-of-country imports, it can be judged that Oakland County's estimate of gateyards generated throughout southeastern Michigan represents a reasonable approximation of the real world, and if anything, may be estimating the gateyards too high. It all depends upon the precise level of out-of-state imports received during the latter part of 1992 and the volume reduction levels that were then being achieved (see **Chapter 4**).

The estimates made available through this effort also allow some additional observations to be made. The lower half of Exhibit 2.10 shows some details for 1993 and projections for the Year 2010. Although Oakland County is the second largest MSW generating county in 1993 (in the region and in the State), once the impact of current incinerators and waste-to-energy projects is fully analyzed, it quickly becomes apparent that the County has the dubious distinction of being the largest direct landfilling county in the State. Oakland contributes 33.57% of the MSW load going to landfills from the five and one-half county free market area in 1993 and by the Year 2010, this is anticipated to increase to 36.52%.

Closed and Abandoned Landfills
Oakland County, Michigan

October, 1993



☆ Formerly Licensed Landfills - 26

⊛ Pre-Act 87 Landfills and Dumps - 30

☆ Other Fill Sites - 10

* Superfund Locations

Solid Waste Database
Oakland County, Michigan

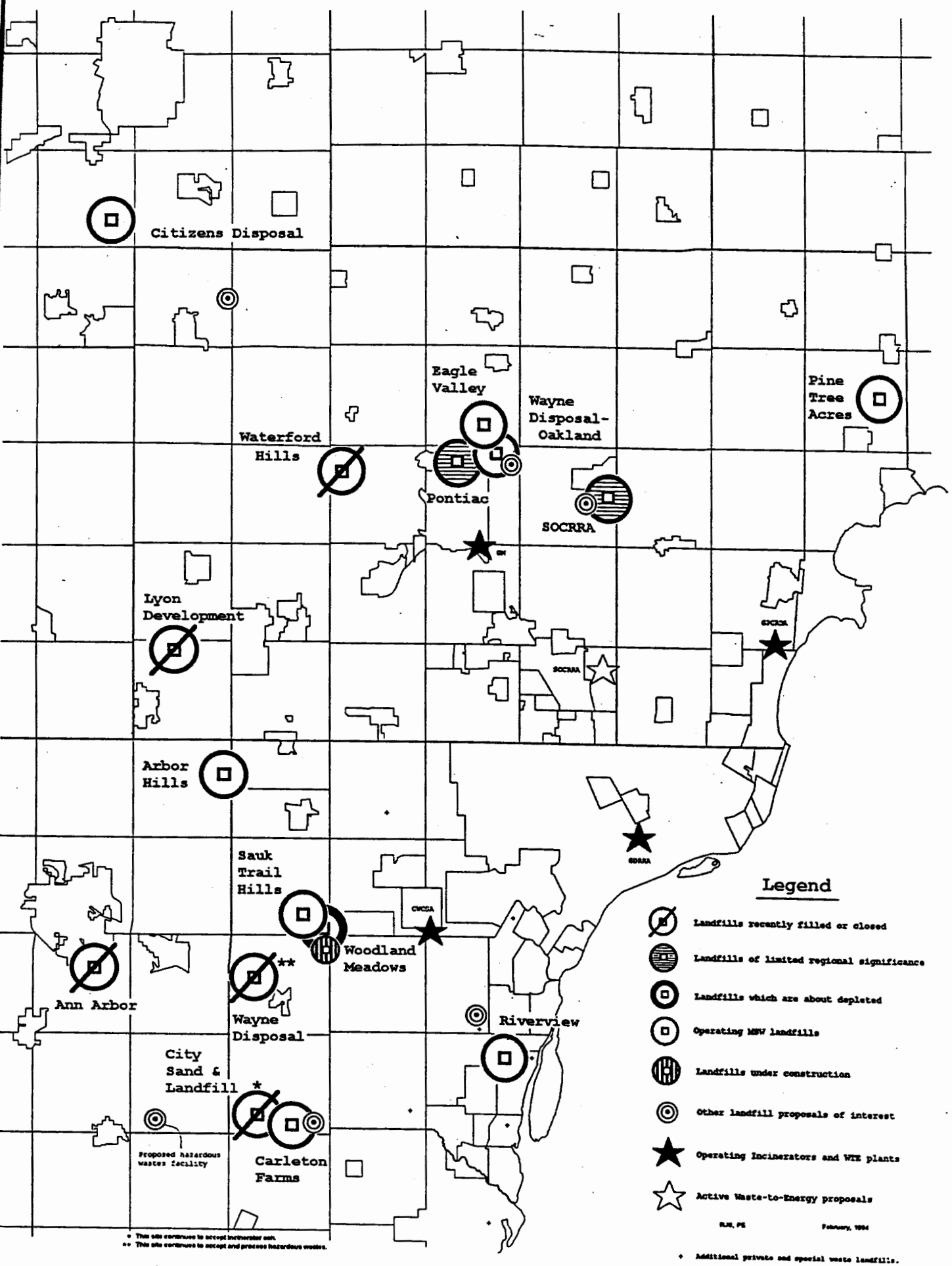
Closed and Abandoned Landfills

12/20/93
18:07

No.	Landfill Name or Operator	Township	Section	Category	Superfund & 307 Group #
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
7	Elias Williams	Rose	28	Pre-87	
8	Ford-Dorsey	Rose	28	Illegal	Superfund
9	Marlowe & Sons	Rose	36	87-641	1
10	Springfield Township L.F.	Springfield	8	Pre-87	
11	Nickson Property	Springfield	32	Illegal	Superfund
12	Powell & Sons	Independence	21	87-641	1
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	1
16	Garvaglia L.F.	Orion	33	87-641	
17	GCW L.F.	Highland	25	87-641	1
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	2
24	SANICEM	Pontiac	2	87-641	1
25	Industrial Serv. of Am.	Pontiac	4	87-641	1
26	Pontiac City L.F.	Pontiac	18	87-641	2
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	2
32	Sandfill 1 & 2	Avon	24	87-641	1 & 2
33	Kingston Development	Avon	24	Other	2
34	Jones & Laughton L.F.	Avon	24	Other	Superfund
35	Christiansen Disposal	Avon	29	Pre-87	1
36	Veterans' Disposal	Avon	29	87-641	1
37	Milford Village L.F.	Milford	14	Other	1
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	2
41	Northeast L.F.	Troy	1	87-641	
42	Fons L.F.	Troy	1	Pre-87	2
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	Munn Contractors	Novi	23	Pre-87	2
49	Munn Contractors	Novi	23	Pre-87	2
50	Munn Contractors	Novi	23	Pre-87	2
51	Anderson L.F.	Novi	31	87-641	2
52	Unknown	Farmington	19	Pre-87	
53	Munn Contractors	Farmington	29	Pre-87	
54	Farentino L.F.	Farmington	36	Pre-87	
55	Aggatis L.F.	Southfield	11	Pre-87	
56	Fons Trailer Park L.F.	Southfield	12	Pre-87	
57	Fons Trailer Park L.F.	Southfield	12	Pre-87	
58	Anderson Barrel L.F.	Southfield	28	Other	2
59	Plum Hollow Golf Course L.F.	Southfield	33	Pre-87	
60	Unknown	Royal Oak	11	Pre-87	
61	Unknown	Royal Oak	12	Pre-87	
62	SOCRRA	Royal Oak	12	Pre-87	
63	Unknown	Royal Oak	13	Pre-87	
64	City of Detroit L.F.	Royal Oak	13	Pre-87	
65	City of Detroit L.F.	Royal Oak	25	Pre-87	
66	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, Analysis & Field Review
Oakland County Planning Division
Health Division - Environmental Health Services
Department of Solid Waste Management


Citizens Disposal
Eagle Valley
Wayne Disposal-Oakland
Pine Tree Acres
Waterford Hills
Pontiac
SOCRRA
Lyon Development
Arbor Hills
Sauk Trail Hills
Woodland Meadows
Ann Arbor
Wayne Disposal
Riverview
City Sand & Landfill
Proposed hazardous wastes facility
Carleton Farms
Legend
Landfills recently filled or closed
Landfills of limited regional significance
Landfills which are about depleted
Operating MSW landfills
Landfills under construction
Other landfill proposals of interest
Operating Incinerators and WTE plants
Active Waste-to-Energy proposals
RJH, PE
February, 1994
* This site continues to accept incinerator ash.
** This site continues to accept and process hazardous wastes.
+ Additional private and special waste landfills.

5 & 1/2 Counties

30.00% Year 2005 Volume Reduction Achievement Level

06/28/93
13:00:31

30.00% — Annual Tons of Act 641 Wastes

Year	MSW Total Direct Landfill (Tons)	WTE Ash Total Direct Landfill (Tons)	CDD Total Direct Landfill (Tons)	ISW Total Direct Landfill (Tons)	All Total Direct Landfill (Tons)
1992	3,783,999	280,768	541,841	1,454,860	6,041,269
1993	3,600,451	280,768	523,165	1,391,725	5,796,109
1994	3,435,236	280,768	504,576	1,329,322	5,549,905
1995	3,288,359	280,768	485,876	1,267,852	5,302,656
1996	3,219,492	280,768	477,145	1,232,758	5,210,164
1997	3,170,020	280,768	468,358	1,198,231	5,117,377
1998	3,118,944	280,768	458,516	1,164,069	5,024,298
1999	3,069,265	280,768	450,617	1,130,274	4,930,924
2000	3,017,981	280,768	441,663	1,096,845	4,837,257
2001	2,987,408	280,768	437,762	1,076,346	4,782,285
2002	2,958,415	280,768	433,834	1,056,031	4,727,049
2003	2,925,003	280,768	429,878	1,035,898	4,671,549
2004	2,893,173	280,768	425,894	1,015,949	4,615,785
2005	2,860,923	280,768	421,882	996,183	4,559,757
2006	2,877,632	280,768	423,022	988,707	4,570,130
2007	2,894,342	280,768	424,162	981,230	4,580,503
2008	2,911,051	280,768	425,302	973,754	4,590,876
2009	2,927,761	280,768	426,443	966,277	4,601,249
2010	2,944,470	280,768	427,583	958,801	4,611,622
2011	2,961,180	280,768	428,723	951,324	4,621,995
2012	2,977,889	280,768	429,863	943,848	4,632,369
2013	2,994,599	280,768	431,003	936,372	4,642,742
2014	3,011,308	280,768	432,143	928,895	4,653,115
2015	3,028,018	280,768	433,283	921,419	4,663,488
2016	3,044,728	280,768	434,423	913,942	4,673,861
2017	3,061,437	280,768	435,563	906,466	4,684,234
2018	3,078,147	280,768	436,703	898,989	4,694,607
2019	3,094,856	280,768	437,843	891,513	4,704,981
2020	3,111,566	280,768	438,983	884,036	4,715,354

Gateyards per Landfill Working Day *

Assumed weight in lbs. per Gateyard

	667	2,000	1,000	1,750	
	MSW	WTE Ash	CDD	ISW	Total
1992	39,483	982	3,786	5,814	50,066
1993	37,787	982	3,658	5,561	47,969
1994	36,034	982	3,529	5,312	45,856
1995	34,283	982	3,398	5,066	43,728
1996	33,771	982	3,337	4,926	43,015
1997	33,252	982	3,275	4,788	42,297
1998	32,727	982	3,213	4,652	41,573
1999	32,195	982	3,151	4,517	40,845
2000	31,657	982	3,089	4,383	40,110
2001	31,336	982	3,061	4,301	39,681
2002	31,011	982	3,034	4,220	39,247
2003	30,682	982	3,006	4,139	38,809
2004	30,348	982	2,978	4,060	38,368
2005	30,010	982	2,950	3,981	37,922
2006	30,185	982	2,958	3,951	38,076
2007	30,360	982	2,966	3,921	38,229
2008	30,536	982	2,974	3,891	38,382
2009	30,711	982	2,982	3,861	38,536
2010	30,886	982	2,990	3,831	38,689
2011	31,061	982	2,998	3,801	38,843
2012	31,237	982	3,006	3,772	38,996
2013	31,412	982	3,014	3,742	39,149
2014	31,587	982	3,022	3,712	39,303
2015	31,762	982	3,030	3,682	39,456
2016	31,936	982	3,038	3,652	39,609
2017	32,113	982	3,046	3,622	39,763
2018	32,288	982	3,054	3,592	39,916
2019	32,464	982	3,062	3,562	40,070
2020	32,639	982	3,070	3,533	40,223

Gateyards per Year

	MSW	WTE Ash	CDD	ISW	Total
1992	11,291,996	280,768	1,083,282	1,662,896	14,318,747
1993	10,801,353	280,768	1,046,329	1,590,543	13,718,993
1994	10,305,713	280,768	1,009,153	1,519,226	13,114,859
1995	9,805,078	280,768	971,753	1,448,745	12,506,345
1996	9,658,475	280,768	954,291	1,408,866	12,302,401
1997	9,510,060	280,768	936,717	1,369,408	12,096,952
1998	9,359,833	280,768	919,031	1,330,365	11,889,998
1999	9,207,794	280,768	901,234	1,291,741	11,681,538
2000	9,053,944	280,768	883,325	1,253,537	11,471,574
2001	8,962,223	280,768	875,525	1,230,110	11,348,626
2002	8,869,246	280,768	867,668	1,206,892	11,224,575
2003	8,775,010	280,768	859,756	1,183,884	11,099,419
2004	8,679,518	280,768	851,788	1,161,085	10,973,160
2005	8,582,768	280,768	843,765	1,138,495	10,845,796
2006	8,632,897	280,768	848,045	1,129,950	10,889,660
2007	8,683,025	280,768	848,325	1,121,406	10,933,525
2008	8,733,154	280,768	850,605	1,112,861	10,977,389
2009	8,783,282	280,768	852,885	1,104,317	11,021,253
2010	8,833,411	280,768	855,165	1,095,772	11,065,117
2011	8,883,540	280,768	857,445	1,087,228	11,108,981
2012	8,933,669	280,768	859,725	1,078,683	11,152,846
2013	8,983,797	280,768	862,006	1,070,139	11,196,710
2014	9,033,925	280,768	864,286	1,061,594	11,240,574
2015	9,084,054	280,768	866,566	1,053,050	11,284,438
2016	9,134,183	280,768	868,846	1,044,505	11,328,302
2017	9,184,311	280,768	871,126	1,035,961	11,372,167
2018	9,234,440	280,768	873,406	1,027,416	11,416,031
2019	9,284,568	280,768	875,686	1,018,872	11,459,895
2020	9,334,697	280,768	877,966	1,010,327	11,503,758

184,377,089

40.00% Year 2005 Volume Reduction Achievement Level

06/28/93
13:08:26

40.00% — Annual Tons of Act 641 Wastes

Year	MSW Total Direct Landfill (Tons)	WTE Ash Total Direct Landfill (Tons)	CDD Total Direct Landfill (Tons)	ISW Total Direct Landfill (Tons)	All Total Direct Landfill (Tons)
1992	3,654,760	280,768	526,349	1,419,158	5,883,036
1993	3,435,853	280,768	503,171	1,338,538	5,558,330
1994	3,214,787	280,768	477,844	1,258,895	5,232,294
1995	2,991,564	280,768	452,368	1,180,228	4,904,926
1996	2,913,662	280,768	440,183	1,137,263	4,771,876
1997	2,834,909	280,768	427,925	1,094,786	4,638,388
1998	2,755,305	280,768	415,591	1,052,798	4,504,463
1999	2,674,851	280,768	403,184	1,011,296	4,370,101
2000	2,593,547	280,768	390,701	970,286	4,235,302
2001	2,546,915	280,768	384,958	948,515	4,159,157
2002	2,499,742	280,768	379,178	922,988	4,082,676
2003	2,452,026	280,768	373,360	899,705	4,005,859
2004	2,403,767	280,768	367,505	876,666	3,928,707
2005	2,354,967	280,768	361,613	853,871	3,851,220
2006	2,369,520	280,768	362,591	847,463	3,860,342
2007	2,384,073	280,768	363,568	841,054	3,869,464
2008	2,398,626	280,768	364,545	834,646	3,878,585
2009	2,413,179	280,768	365,522	828,238	3,887,707
2010	2,427,732	280,768	366,499	821,829	3,896,829
2011	2,442,285	280,768	367,477	815,421	3,905,951
2012	2,456,838	280,768	368,454	809,013	3,915,073
2013	2,471,391	280,768	369,431	802,604	3,924,195
2014	2,485,944	280,768	370,408	796,196	3,933,317
2015	2,500,497	280,768	371,385	789,787	3,942,438
2016	2,515,050	280,768	372,363	783,379	3,951,560
2017	2,529,603	280,768	373,340	776,971	3,960,682
2018	2,544,156	280,768	374,317	770,562	3,969,804
2019	2,558,710	280,768	375,294	764,154	3,978,926
2020	2,573,263	280,768	376,271	757,746	3,988,048

Gateyards per Landfill Working Day *

Assumed weight in lbs. per Gateyard

	667	2,000	1,000	1,750	
	MSW	WTE Ash	CDD	ISW	Total
1992	38,337	982	3,695	5,671	48,684
1993	36,040	982	3,518	5,348	45,890
1994	33,722	982	3,342	5,031	43,075
1995	31,380	982	3,163	4,716	40,241
1996	30,563	982	3,078	4,545	39,167
1997	29,737	982	2,992	4,375	38,086
1998	28,902	982	2,906	4,207	36,997
1999	28,058	982	2,819	4,041	35,900
2000	27,205	982	2,732	3,877	34,796
2001	26,716	982	2,682	3,782	34,172
2002	26,221	982	2,632	3,688	33,543
2003	25,721	982	2,581	3,595	32,908
2004	25,214	982	2,570	3,503	32,269
2005	24,702	982	2,529	3,412	31,625
2006	24,855	982	2,536	3,386	31,759
2007	25,008	982	2,542	3,361	31,893
2008	25,160	982	2,549	3,335	32,027
2009	25,313	982	2,556	3,310	32,161
2010	25,466	982	2,563	3,284	32,294
2011	25,618	982	2,570	3,258	32,428
2012	25,771	982	2,577	3,233	32,562
2013	25,924	982	2,583	3,207	32,696
2014	26,076	982	2,590	3,182	32,830
2015	26,229	982	2,597	3,156	32,964
2016	26,382	982	2,604	3,130	33,098
2017	26,534	982	2,611	3,105	33,232
2018	26,687	982	2,618	3,079	33,365
2019	26,840	982	2,624	3,054	33,499
2020	26,992	982	2,631	3,028	33,633

Gateyards per Year

	MSW	WTE Ash	CDD	ISW	Total
1992	10,964,280	280,768	1,056,699	1,621,895	13,923,643
1993	10,307,558	280,768	1,008,342	1,529,758	13,124,426
1994	9,644,362	280,768	955,686	1,438,737	12,319,555
1995	8,974,683	280,768	904,735	1,348,832	11,508,029
1996	8,740,985	280,768	880,347	1,299,729	11,201,849
1997	8,504,726	280,768	855,849	1,251,184	10,892,526
1998	8,265,915	280,768	831,183	1,203,197	10,581,064
1999	8,024,553	280,768	806,367	1,155,769	10,267,458
2000	7,780,640	280,768	781,403	1,108,896	9,951,709
2001	7,640,746	280,768	768,917	1,081,731	9,773,162
2002	7,499,225	280,768	758,356	1,054,843	9,593,193
2003	7,356,077	280,768	746,721	1,029,234	9,411,800
2004	7,211,302	280,768	735,011	1,001,904	9,228,986
2005	7,064,900	280,768	723,227	975,853	9,044,748
2006	7,108,559	280,768	725,181	968,529	9,083,038
2007	7,152,219	280,768	727,136	961,205	9,121,328
2008	7,195,878	280,768	729,090	953,881	9,159,617
2009	7,239,537	280,768	731,044	946,557	9,197,907
2010	7,283,196	280,768	732,999	939,233	9,236,197
2011	7,326,855	280,768	734,953	931,910	9,274,486
2012	7,370,514	280,768	736,908	924,586	9,312,776
2013	7,414,174	280,768	738,862	917,262	9,351,066
2014	7,457,833	280,768	740,816	909,938	9,389,356
2015	7,501,492	280,768	742,771	902,614	9,427,645
2016	7,545,151	280,768	744,725	895,290	9,465,935
2017	7,588,810	280,768	746,679	887,966	9,504,225
2018	7,632,469	280,768	748,634	880,643	9,542,514
2019	7,676,129	280,768	750,588	873,319	9,580,804
2020	7,719,788	280,768	752,543	865,995	9,619,094

50.00% Year 2005 Volume Reduction Achievement Level

07/27/93
10:50:52

50.00% — Annual Tons of Act 641 Wastes

Year	MSW Total Direct Landfill (Tons)	WTE Ash Total Direct Landfill (Tons)	CDD Total Direct Landfill (Tons)	ISW Total Direct Landfill (Tons)	All Total Direct Landfill (Tons)
1992	3,545,521	280,768	515,057	1,383,456	5,724,803
1993	3,271,254	280,768	483,177	1,285,351	5,320,552
1994	2,994,337	280,768	451,111	1,188,467	4,914,684
1995	2,714,769	280,768	418,859	1,092,803	4,507,200
1996	2,607,832	280,768	403,221	1,041,767	4,333,589
1997	2,499,797	280,768	387,491	991,342	4,159,398
1998	2,390,666	280,768	371,667	941,526	3,984,628
1999	2,280,437	280,768	355,750	892,321	3,809,276
2000	2,169,112	280,768	339,740	843,727	3,633,348
2001	2,106,423	280,768	332,154	816,683	3,536,029
2002	2,043,068	280,768	324,522	789,944	3,438,303
2003	1,979,048	280,768	316,842	763,511	3,340,170
2004	1,914,362	280,768	309,117	737,382	3,241,630
2005	1,849,011	280,768	301,345	711,559	3,142,683
2006	1,861,407	280,768	302,159	706,219	3,150,554
2007	1,873,804	280,768	302,973	700,879	3,158,424
2008	1,886,201	280,768	303,787	695,538	3,166,295
2009	1,898,597	280,768	304,602	690,198	3,174,165
2010	1,910,994	280,768	305,416	684,858	3,182,036
2011	1,923,390	280,768	306,230	679,517	3,189,907
2012	1,935,787	280,768	307,045	674,177	3,197,777
2013	1,948,183	280,768	307,859	668,837	3,205,648
2014	1,960,580	280,768	308,673	663,496	3,213,518
2015	1,972,977	280,768	309,488	658,156	3,221,389
2016	1,985,373	280,768	310,302	652,816	3,229,260
2017	1,997,770	280,768	311,116	647,476	3,237,130
2018	2,010,166	280,768	311,931	642,135	3,245,001
2019	2,022,563	280,768	312,745	636,795	3,252,871
2020	2,034,960	280,768	313,559	631,455	3,260,742

Gateyards per Landfill Working Day *

Assumed weight in lbs. per Gateyard

	667	2,000	1,000	1,750	
	MSW	WTE Ash	CDD	ISW	Total
1992	37,181	982	3,602	5,528	47,303
1993	34,314	982	3,379	5,136	43,811
1994	31,409	982	3,155	4,749	40,295
1995	28,477	982	2,929	4,367	36,754
1996	27,355	982	2,820	4,163	35,319
1997	26,222	982	2,710	3,961	33,874
1998	25,077	982	2,599	3,762	32,420
1999	23,921	982	2,488	3,566	30,958
2000	22,753	982	2,376	3,372	29,482
2001	22,095	982	2,323	3,263	28,663
2002	21,431	982	2,269	3,157	27,838
2003	20,759	982	2,216	3,051	27,008
2004	20,081	982	2,162	2,947	26,171
2005	19,395	982	2,107	2,843	25,328
2006	19,525	982	2,113	2,822	25,442
2007	19,655	982	2,119	2,801	25,556
2008	19,785	982	2,124	2,779	25,671
2009	19,915	982	2,130	2,758	25,785
2010	20,045	982	2,136	2,737	25,900
2011	20,175	982	2,141	2,715	26,014
2012	20,305	982	2,147	2,694	26,128
2013	20,435	982	2,153	2,673	26,243
2014	20,566	982	2,159	2,651	26,357
2015	20,696	982	2,164	2,630	26,472
2016	20,826	982	2,170	2,609	26,586
2017	20,956	982	2,176	2,587	26,700
2018	21,086	982	2,191	2,566	26,815
2019	21,216	982	2,187	2,545	26,929
2020	21,346	982	2,193	2,523	27,043

Gateyards per Year

	MSW	WTE Ash	CDD	ISW	Total
1992	10,636,563	280,768	1,030,115	1,581,093	13,528,539
1993	9,813,763	280,768	966,355	1,468,973	12,529,859
1994	8,983,012	280,768	902,222	1,358,248	11,524,251
1995	8,144,308	280,768	837,718	1,248,918	10,511,713
1996	7,823,495	280,768	806,443	1,190,591	10,101,296
1997	7,499,391	280,768	774,981	1,132,962	9,688,103
1998	7,171,997	280,768	743,334	1,076,030	9,272,130
1999	6,841,312	280,768	711,501	1,019,796	8,853,377
2000	6,507,338	280,768	679,481	964,259	8,431,845
2001	6,319,288	280,768	664,308	933,352	8,197,896
2002	6,129,205	280,768	649,043	902,783	7,961,810
2003	5,937,144	280,768	633,685	872,584	7,724,181
2004	5,743,067	280,768	618,234	842,723	7,484,811
2005	5,547,032	280,768	602,689	813,211	7,243,700
2006	5,584,222	280,768	604,318	807,107	7,276,416
2007	5,621,412	280,768	605,946	801,004	7,309,131
2008	5,658,602	280,768	607,575	794,901	7,341,846
2009	5,695,791	280,768	609,204	788,798	7,374,561
2010	5,732,981	280,768	610,832	782,695	7,407,276
2011	5,770,171	280,768	612,461	776,591	7,439,992
2012	5,807,361	280,768	614,090	770,488	7,472,707
2013	5,844,550	280,768	615,718	764,385	7,505,422
2014	5,881,740	280,768	617,347	758,282	7,538,137
2015	5,918,930	280,768	618,976	752,178	7,570,852
2016	5,956,120	280,768	620,604	746,075	7,603,568
2017	5,993,309	280,768	622,233	739,972	7,636,283
2018	6,030,499	280,768	623,862	733,869	7,668,998
2019	6,067,689	280,768	625,490	727,766	7,701,713
2020	6,104,879	280,768	627,119	721,662	7,734,428

Solid Waste Database
Oakland County, Michigan

Landfill Inventory as of January 1, 1993
(Millions of Cubic Bankyards)

07/26/93
10:45

County and Site		Existing Capacity Remaining At 1-1-1993	Designated Additional Capacity	Total Existing & Designated	Possible Future Expansion	Millions of Cubic Gateyards Processed in 1992
Oakland County						
Wayne Disposal		2.017		2.017	7.000	0.712
Lyon Development	Close 9-93	0.300		0.300	0.000	1.144 Est.
Eagle Valley		8.584		8.584	0.000	0.716
Collier Road		2.100	1.115	3.215	0.000	0.156
SOCRRA		0.060		0.060	0.000	compost only
Waterford Hills	Closed 10-90	0.000		0.000	0.000	
SOCRRA Expansion		0.000	1.750	1.750	0.000	
Sub-Total		13.061	2.865	15.926	7.000	2.728
Macomb County						
Pinetree Acres		10.050	10.600	20.650	0.000	0.832
Wayne County						
Riverview Highlands		18.750		18.750	0.000	1.032
Woodland Meadows	Close late-93	1.320		1.320	0.000	2.574
Woodland Meadows Exp.	To open late-93		23.000	23.000	7.000	
Sauk Trail Hills	To open 7-93		17.000	17.000	0.000	
Carleton Farms	To open mid-93		22.000	22.000	38.000	
City Sand & Landfill	Close mid-93	0.250		0.250	0.000	1.872 Est.
Sub-Total		20.320	62.000	82.320	45.000	5.478
Genesee County						
Citizens Disposal		4.300		4.300	15.600	0.715 Est.
Seymour Rd. Landfill	Close mid-93	0.700		0.700	0.000	
Brent Run	Open mid-93		12.000	12.000	0.000 Possible	
Sub-Total		5.000	12.000	17.000	15.600	0.715
Washtenaw County						
Arbor Hills		12.500	23.400	35.900		2.955
Grand Totals		60.931	110.865	171.796	67.600	12.708 (Gateyards)

Note: The rightmost column displays only Type II landfills operational in 1992 and which are located within the 5.5 county free-market area.

Wayne County Special Purpose Landfills (From 7-16-93 Wayne Co. staff report)					
Sibley Quarry	14.000		14.000		0.400
Huron Quarry	1.167		1.167		0.025
Ford - Allen Park	1.762		1.762		0.200
Levy - Taylor	2.330		2.330		0.400
McLouth Steel	5.010		5.010		0.150
City of Livonia	0.918		0.918		0.020
Sub-totals	25.187		25.187		1.195
Other Counties or Landfills of Interest					
Lenawee County	2.500	(2.381 at 4-13-93)	2.500	Imports allowed @ 4,800 tpw >	0.749 Max.
Lapeer County	4.004		4.004	(if 1,400 gtyds / 286 days = 20 Yrs)	
	5.110		5.110	(if 1,400 gtyds / 365 days = 20 Yrs)	
Monroe County					
Wayne Disposal, Rockwood CDD Landfill	0.250		0.250	10.000 Potential (0.429 total gateyards in 1992)	0.215 Est.
1992 Type II and Type III Gateyards					
5.5 County free-market area with maximum exports to Lenawee County and 50% of Monroe County CDD gateyards.					14.866 (Gateyards)

5-1/2 County Landfills as of 1-1-93
(Millions of cubic bankyards)

Free-Market Landfills		Existing	Designated	Sub-Total	Possible Future	Grand Total
City Management	(3)	10.300	32.600	42.900	38.000	80.900
Waste Management	(3)	9.904	23.000	32.904	7.000	39.904
BFI	(2)	12.800	23.400	36.200	0.000	36.200
Envotech	(2)	2.017	17.000	19.017	7.000	26.017
City of Riverview	(1)	18.750	0.000	18.750	0.000	18.750
Sanifill	(1)	4.300	0.000	4.300	15.600	19.900
Totals, free market	(12)	58.071	96.000	154.071	67.600	221.671
Other Landfills						
City of Pontiac	(1)	2.100	1.115	3.215	0.000	3.215
SOCRRA	(2)	0.060	1.750	1.810	0	1.810
Total Others	(3)	2.160	2.865	5.025	0.000	5.025
Grand Total	(15)*	60.231	98.865	159.096	67.600	226.696

* As of 1-1-93, 11 sites are operational and 4 are proposed (Sauk Trails, SOCRRA Expansion, Woodland Meadows Expansion and Carleton Farms) . During 1993, 3 will close (Lyon Development, City Sand & & Landfill and Woodland Meadows) and 3 will open (Sauk Trails, Carleton Farms and Woodland Meadows Expansion). Of the 11 operational sites, only 9 are of regional importance (deleting Pontiac which serves a small closed market and SOCRRA which has only been used as a compost site).

1993 Estimated Net Direct Landfilling
(With unchanged 1990 generation patterns - Zero Volume Reduction calculated)

County	Total Daily MSW (tpd)	Less WTE @ 85% (tpd)	Net MSW to be Landfilled (tpd)	Percent of 5-1/2 County Area	2010 Percent of 5-1/2 County Area
Oakland	3,871.71	(48.88)	3,822.83	33.57%	36.52%
Wayne	6,095.82	(2,504.44)	3,591.38	31.54%	27.32%
Macomb	2,320.32	(349.44)	1,970.88	17.31%	17.51%
Washtenaw	1,071.66	0.00	1,071.66	9.41%	10.08%
Genesee (1/2)	614.84	0.00	614.84	5.40%	5.11%
Livingston	315.77	0.00	315.77	2.77%	3.46%
	14,290.12	(2,902.75)	11,387.37	100%	100%

WTE Facility	Design Capacity	85% Operating Capacity	Source of MSW to WTE Facilities: Wayne	Macomb	Oakland
GDRRA	2,200	1,870.00	1,870.00		
GPCRDA	600	510.00	185.00	325.00	
CWCSA	500	425.00	425.00		
GMC T & C	115	97.75	24.44	24.44	48.88
Total WTE Capability	3,415	2,902.75	2,504.44	349.44	48.88

Chapter 3

Inter-County Flows of Act 641 Wastes

Oakland County's 1990 Plan Update explicitly authorized inter-county flows to and from the Counties of Wayne, Washtenaw, Genesee, Lapeer, and Macomb (the Adjacent Counties), to and from Livingston County if certain conditions were met, and to Lenawee County.

These provisions were included in the 1990 Plan Update so that then existent contractual arrangements by the municipalities with the private sector could be fulfilled, and so that the remaining private sector landfills in the County would have a certain free market base to operate from until they were filled and ultimately closed. The basic concept of the 1990 Plan Update was that with implementation of the proposed county-wide Solid Waste Management System (SWMS), the County would be entirely self-sufficient, owning or controlling all disposal capacity and facilities and that eventually, all municipalities would be System or SOCRRA members. In hindsight, the concept was bold, especially in light of the US Supreme Court decision. In order to be imposed upon by unwanted out-of-state imports, the landfill operator must willingly accept such wastes. With a County controlled system, wastes from non-system members could simply be refused.

The Plan Update stated that "...as a long-term policy, the County does not intend to become a net importer of solid waste..." (Chapter 8, Page 8-39). There was no compelling reason at the time to specifically quantify inter-county flows, since (1) the proposed ownership of all future disposal capacity allowed control and more than a sufficient amount of capacity was proposed (or provided for) at the large sites envisioned for original acquisition, and (2), the law and administrative rules did not indicate that quantification of flows were required, only that such flows be explicitly authorized.

With formal abandonment of the county-wide SWMS in November, 1993, the situation is now dramatically changed. Oakland County either needs ready access to landfill capacity elsewhere, or additional capacity must be sited in-county to provide for long-term disposal capacity.

This Chapter shows inter-county flows that match or exceed those inter-county flow provisions contained in the approved Plan documents of each county identified in the 1990 Plan Update. Additionally, this amendment generally provides for future inter-county flows with all other Michigan counties should mutually agreeable arrangements be reached with other counties. Where those Plans have yet to be approved or where quantified values were not in the approved documents and that county provided for no inter-county flow restrictions or for a variable amount, an estimate of the inter-county flow level is presented as of January 1, 1994. Finally, this amendment authorizes exports to out-of-state disposal facilities should that serve a useful purpose.

Each time the Board of Commissioners certifies or demonstrates the sufficiency of available disposal capacity as is required in **Chapter 5** of this Plan Amendment, the information contained in this Chapter will be updated with then current information as to the amount of inter-county flows contained in the approved Plans of other counties or to reflect then known out-of-state arrangements. Such changes will not constitute a plan amendment on their face, but will insure that the annual or periodic certifications are based on up to date data. It is appropriate that the solid waste database be a living, breathing document that is subject to constant adjustment. Readers are advised to contact the County to obtain the latest revisions to the data contained herein. (June, 1994.)

List of Chapter 3 Exhibits:

3.7 Estimated Inter-County Flows - 1991

3.8 Estimated Inter-County Flows - 1992

3.9 Michigan's 83 Counties

3.10 Inter-county Flow Authorizations - Summary

Recent Estimates of Inter-County Flows - 1991 and 1992:

Exhibits 3.7 and 3.8 show estimates previously prepared for inter-county flows involving Oakland County for 1991 and 1992. This material was based upon interviews with the operators of the hauling companies and landfills in southeastern Michigan. The material prepared for 1991, in hindsight, was rather bold in its estimates of imports and exports by county of origin. These guesstimates were made based upon the operator's broad estimates of the origin of the material handled. Actual data supporting such conclusions does not exist. For 1992, a more conservative approach was taken and only a broad estimate of net exports was prepared.

However limited the individual year's estimates may be, a fair amount of confidence is held in the overall conclusions. That being that in 1991, all wastes disposed of in the County, net after all imports and all exports, represented only about 73% of the Act 641 wastes generated in the County. By 1992, that value had declined to 61%. During 1993, the Lyon Development landfill in Lyon Township closed (October, 1993) and therefore, a prediction on the net amount of wastes disposed of in-county, net after all imports and exports, in the range of 55% would seem reasonable for the 93 calendar year. This is generally confirmed by the available disposal capacity analysis contained in **Chapter 4**.

Inter-county Flow Authorizations:

This Plan Amendment authorizes the disposal of Act 641 solid wastes generated in Oakland County at disposal facilities located in the counties, states and countries listed below. Imports of Act 641 wastes into Oakland County from other Michigan Counties shall be limited to the maximum annual amounts individually indicated.

Cautionary Note: All generators of Act 641 wastes are cautioned that a listing of authorized imports or exports in this Chapter does not by itself constitute approval of such flows of wastes. Act 641 requires that "...In order for a disposal area to serve the disposal needs of another county, the service, including the disposal of municipal solid waste incinerator ash, must be explicitly authorized in the approved solid waste management plan of the receiving county. With regard to intercounty service within Michigan, the service must also be explicitly authorized in the exporting county's solid waste management plan". MDNR is required to take action to enforce these provisions within 30 days of obtaining knowledge of any violations.

1. **Wayne County:** Up to 2,000,000 gateyards per year of exports of Act 641 wastes from Oakland County to landfills located in Wayne County is herewith authorized. It is estimated that such arrangements could exist for the next 20 years. If the Wayne County Plan is amended, by Wayne County's actions or amended by MDNR mandate, to authorize imports of less Act 641 wastes than indicated herein, exports to Wayne County shall be limited to that smaller amount. A similar and like amount of imports

from Wayne County to Oakland County facilities is herewith authorized. (MDNR staff has indicated that a pending mandated Plan may contain provisions for the import of up to 1,000,000 gateyards per year from Oakland County. However, that document has not been released.)

2. **Washtenaw County:** The currently approved Washtenaw County Plan Update authorizes up to 1,500,000 gateyards per year of imports of Act 641 wastes to the Arbor Hills Landfill in Washtenaw County from Oakland County. Additionally, the Plan Update allows the operator (BFI) to import up to 500,000 gateyards per year to this facility from any or all of Michigan's other 82 counties. Should Oakland County take maximum advantage of that window, total exports of up to 2,000,000 gateyards per year could conceivably occur from Oakland County. All of this exists within the context of an agreement between the County and the operator, which allows the facility to operate at an annual average level of 3.5 million gateyards with a given year peaking at a maximum of 4.5 million gateyards. A universe of all Michigan counties is described in the agreement which totals 7.175 million gateyards (including those potentially involving Oakland County as outlined above) as being eligible for exporting to Washtenaw, after that County's needs are satisfied. These arrangements are estimated to exist to about the year 2015. If the Washtenaw County Plan is amended, by Washtenaw County's actions or amended by MDNR mandate, to authorize imports of less Act 641 wastes than indicated herein, exports to Washtenaw County shall be limited to that smaller amount. Imports of up to 750,000 gateyards per year of Act 641 wastes from Washtenaw County to facilities in Oakland County is herewith authorized.

3. **Livingston County:** Livingston County currently has no operational landfills. However, should the Livingston County Plan be amended to include a new facility, it is anticipated that imports will be allowed from Oakland County inasmuch as Livingston County freely exported a majority of its wastes from the southeastern portion of the County to Oakland County over the past decade. For purposes of this plan amendment, exports to a future Livingston County landfill in an amount of up to 500,000 gateyards per year from Oakland County is authorized. Inasmuch as Livingston County currently has no disposal facilities, the actual amount of exports will remain at zero until some future action by Livingston County.

4. **Genesee County:** The Genesee County Plan Update is generally silent on quantified imports of wastes. However, the Genesee County Plan recognizes the importance of the free-market and authorizes imports from other counties, to the extent that Genesee's needs are not jeopardized. The Genesee County waste stream was analyzed using the Oakland County computer model and the 1990 census data. These volumes were compared to the available disposal capacity and a finding was made that up to 500,000 gateyards of wastes per year could be exported to Genesee County without jeopardizing that County's long-term needs. However, the Genesee County Plan describes a flow of approximately 25,500 gateyards per year into Genesee from Oakland County at the time that County's Plan Update was being prepared. MDNR staff holds that this represents a restriction on inter-county flows to that level. The approved Plan further describes a mechanism by which higher authorized flows can be obtained. Oakland County will work with Genesee County officials on this issue to gain an increase in the authorized export of Oakland County wastes. For the purposes of this plan amendment, exports from Oakland County to facilities in Genesee County in an amount up to 500,000 gateyards per year are authorized. If the Genesee County Plan is amended, by Genesee County's actions through the previously described mechanism, or by amendment or amended by MDNR mandate, to authorize

imports of less Act 641 wastes than indicated herein, exports to Genesee County shall be limited to that smaller amount. A similar and like amount of imports from Genesee County to Oakland County facilities is herewith authorized, the upward limiting amount being matched to that value authorized for exports from Oakland County to Genesee County as contained in the Genesee County approved Plan.

5. **Lapeer County:** Lapeer County's Plan Update contained a mechanism whereby imports could be adjusted from time-to-time. The most recent adjustment permitted Oakland County to import up to 700 gateyards per day, or approximately 255,500 gateyards per year with total imports from all sources peaking at 1,400 gateyards per day or 511,000 per year. Lapeer County's single landfill is authorized to operate only at a maximum level of 1,440 gateyards per working day. The Oakland County export value to Lapeer County could be adjusted if application was made to the County and the request approved. For planning purposes, it is calculated that Oakland County could export as much as 500,000 gateyards per year to existing or future facilities in Lapeer County. If the Lapeer County Plan is amended, by Lapeer County's actions through the previously described mechanism, or by formal amendment or amended by MDNR mandate, to authorize imports of less Act 641 wastes than indicated herein, exports to Lapeer County shall be limited to that smaller amount.

6. **Macomb County:** On February 28, 1994, MDNR issued a mandated Plan Update for Macomb County. This document indicates that Oakland County could import up to 1,391 gateyards per day or 510,000 gateyards per year. The authorization for inter-county flows appears to be limited to 5 years from the date of mandate issuance although no specific limit is actually imposed. Discussions with MDNR officials indicate that by the end of that initial 5 year horizon, new Solid Waste Plans would have been approved and the values reset. For the purposes of this plan amendment, exports in an amount up to 750,000 gateyards per year are authorized. If the Macomb County Plan is amended, by Macomb County's actions or amended by MDNR mandate, to authorize imports of less Act 641 wastes than indicated herein, exports to Macomb County shall be limited to that smaller amount. Imports of up to 750,000 gateyards of Act 641 wastes from Macomb County to facilities in Oakland County is herewith authorized, the upward limiting amount being matched to that value authorized for exports from Oakland County to Macomb County as contained in the Macomb County approved Plan.

7. **Lenawee County:** The Lenawee County Plan as finally approved, authorized imports of up to 6,600 tons of Act 641 wastes per week from a list of eligible counties. Oakland County's authorization was to import up to 4,800 tons per week. Converting this to an annual volume and assuming 3 gateyards per ton, a maximum annual import limit of approximately 748,800 gateyards would exist. Inasmuch as Oakland County is host of a transfer station owned by the operator of the landfill in Lenawee County (Laidlaw) and that Company is an active participant in the daily solid waste scene in Oakland, it is theoretically conceivable that Oakland County could export up to the maximum allowed. For the purposes of this plan amendment, exports in an amount up to 1,000,000 gateyards per year are authorized (assuming a maximum of 4 gateyards per ton in a transfer mode). If the Lenawee County Plan is amended, by Lenawee County's actions or amended by MDNR mandate, to authorize imports of less Act 641 wastes than indicated herein, exports to Lenawee County shall be limited to that smaller amount.

8. **All Other Michigan Counties:** This Plan Amendment specifically and explicitly authorizes the exports of up to 500,000 gateyards per year to each of all other Michigan Counties not previously delineated herein to the extent that future approved Plans may contain such provisions. It is recognized at the beginning that most do not currently recognize imports from Oakland County. If any of these County Plans are amended, by the County's actions or amended by MDNR mandate, to authorize imports of less Act 641 wastes than indicated herein, exports to each county shall be limited to the amount approved by that individual county. See Exhibit 3.9 for a specific listing of the other Michigan Counties involved.

9. **Out-of-State Facilities:** This Plan Amendment specifically and explicitly authorizes the export of all amounts of wastes generated by any generator to out-of-state and out-of-country facilities, and the wastes involved were not previously committed through flow control agreements to another party. As an example of out-of-state export opportunities, Oakland County has conversed with the owners and/or operators of the landfill facilities shown below.

Bigfoot Run	Morrow, Ohio
Bobmeyer Road	Morrow, Ohio
Muskingum	Zanesville, Ohio
Bond Road	Morrow, Ohio
Carbon Limestone	Lowellville, Ohio
County Land Development	Lowellville, Ohio
Glenwillow	Glenwillow, Ohio
Lorain Co.	Oberlin, Ohio
Ottawa County	Port Clinton, Ohio
Willowcreek	Atwater, Ohio
Countywide RDF	East Sparta, Ohio
ELDA RDF	Cincinnati, Ohio
Evergreen RDF	Northwood, Ohio
Herrick Valley RDF	Adena, Ohio
Suburban RDF	Brownsville, Ohio
Stoney Hollow RDF	Dayton, Ohio
Byers RDF	Logansport, Indiana
Danville RDF	Danville, Indiana
LaPort County RDF	Michigan City, Indiana
Prairie View RDF	Wyatt, Indiana
Gallatin National Co.	Fairview, Illinois

Oakland County does not, at the time this Plan Amendment is issued, make any claims to a specific amount of out-of-state or out-of-country disposal capacity in its demonstration of available capacity. Should such future claims be made, they will be contained in future demonstrations of available disposal capacity and proofs or appropriate certifications and/or verifications will be made available at that time. **See Chapter 4.**

Practical Considerations:

As a practical matter, inter-county flows of waste will not occur simply because such are authorized in various planning documents. This does not become a matter of simply adding and subtracting the maximum, up to import and export restricted values. The authorized flows simply represent opportunities within which the free market can operate. A more rational approach must be taken in the analysis of this issue and a careful annual monitoring of the results is appropriate.

Given that Oakland County is currently deficient in long-term disposal capacity, considering the haul distances from other counties (where an excess of capacity generally exists), that landfills owned and operated by several of the same companies exist in the other counties, and considering the export restrictions that exist in some other counties - there seems to be little rationale to support the theory that imports will be received on a large scale from other sources in Michigan. An exception to this may occur as a matter of free market forces, where an operator owns a landfill in Oakland but not in the other county, and that operator is a successful bidder within the other jurisdiction. Examining all of this, one must adopt a "reasonable man theory" on the probability of imports and exports to or from other jurisdictions. Exhibit 3.10 displays the net annual level of imports and exports developed as a result of such an approach and is used to project the availability of long-term disposal capacity. **Chapter 4** examines this subject in depth.

Imports and Exports - 1991

05/04/92
OCDSWM

Act 641 Solid Wastes
Oakland County, Michigan

Category of Waste	Code
Municipal Solid Wastes	MSW
Construction & Demolition Debris	CDD
Industrial Solid Wastes	ISW

All Values Reported in Tons per Calendar Day

	MSW	ISW	CDD	Totals
Generated In-County	3,408.3	1,069.2	371.3	4,848.8
Exported				
Genesee	153.1	0.0	0.0	153.1
Livingston	0.0	0.0	0.0	0.0
Washtenaw	660.9	0.0	0.0	660.9
Wayne	935.1	397.0	219.0	1,551.1
Macomb	8.3	0.0	0.0	8.3
Lapeer	0.0	0.0	0.0	0.0
Lenawee	50.0	0.0	0.0	50.0
Jackson	0.0	0.0	14.0	14.0
Others	8.3	0.0	0.0	8.3
Sub-Total	1,815.7	397.0	233.0	2,445.7
% Exported	53.27%	37.13%	62.75%	50.44%
Remaining In-County	1,592.6	672.2	138.3	2,403.1
Imported				
Genesee	17.3	0.0	0.0	17.3
Livingston	125.0	0.0	0.0	125.0
Washtenaw	8.3	0.0	0.0	8.3
Wayne	892.0	0.0	0.0	892.0
Macomb	100.7	0.0	0.0	100.7
Lapeer	0.0	0.0	0.0	0.0
Lenawee	0.0	0.0	0.0	0.0
Jackson	0.0	0.0	0.0	0.0
Others	16.6	0.0	0.0	16.6
Sub-Total	1,159.8	0.0	0.0	1,159.8
Disposed of In-County	2,752.4	672.2	138.3	3,562.9
Amount Disposed of In-County as a % of Amount Generated In-County	80.75%	62.87%	37.25%	73.48%

NOTE: This material was prepared for the July 10, 1992 Clarification Document as submitted to MDNR. It was based on the assumption that the 1990 Plan Update MSW, CDD & ISW volumes existed and that the VR goals were being achieved. Finally, it was based on interviews with Oakland County landfill operators. All unaccounted for wastes were assumed to be exported.

7-30-93

Net Imports / Exports - 1992
Oakland County, Michigan

Given accurate reported gateyard intake for 1992 for the Oakland County landfills, what was Oakland's net 1992 import/export situation estimated to be? 1991 estimates were that 80.75% of the amount of MSW generated in the County was handled in-county (net after imports and exports), and overall, including CDD & ISW, 73.48% was handled in-county.

1992 MSW	
3,840,803	gateyards of MSW
4,728	gateyards of WTE Ash
3,845,531	Total gateyards
	vs.
2,728,000	Reported gateyards
- 228,800	20% of Lyon Dev. for CDD & ISW
2,499,200	MSW gateyards
2,499,200 / 3,845,531	
↓	
64.99%	of MSW handled in-county or Oakland County is a net Exporter of 35.01% of its MSW.

Considering all Act 641 waste categories, the following overall conclusion could be drawn about wastes handled in-county (net after imports and exports).

1992 Wastes Generated	
3,840,803	MSW
4,727	WTE Ash
262,062	CDD
395,795	ISW
4,503,387	Total gateyards
2,728,000 / 4,503,387	Reported gateyards / All gateyards
↓	
60.58%	of all Act 641 wastes handled in-county, or Oakland County is a net Exporter of 39.42% of all its wastes.

Michigan's 83 Counties

1.	Alcona	22.	Dickinson	43.	Lake	64.	Oceana
2.	Alger	23.	Eaton	44.	Lapeer *	65.	Ogemaw
3.	Allegan	24.	Emmet	45.	Leelanau	66.	Ontonagon
4.	Alpena	25.	Genesee *	46.	Lenawee *	67.	Osceola
5.	Antrim	26.	Gladwin	47.	Livingston *	68.	Oscoda
6.	Arenac	27.	Gogebic	48.	Luce	69.	Otsego
7.	Baraga	28.	Grand Traverse	49.	Mackinac	70.	Ottawa
8.	Barry	29.	Gratiot	50.	Macomb *	71.	Presque Isle
9.	Bay	30.	Hillsdale	51.	Manistee	72.	Roscommon
10.	Benzie	31.	Houghton	52.	Marquette	73.	Saginaw
11.	Berrian	32.	Huron	53.	Mason	74.	St. Clair
12.	Branch	33.	Ingham	54.	Mecosta	75.	St. Joseph
13.	Calhoun	34.	Ionia	55.	Menominee	76.	Sanilac
14.	Cass	35.	Iosco	56.	Midland	77.	Schoolcraft
15.	Charlevoix	36.	Iron	57.	Missaukee	78.	Shiawassee
16.	Cheboygan	37.	Isabella	58.	Monroe	79.	Tuscola
17.	Chippewa	38.	Jackson	59.	Montcalm	80.	Van Buren
18.	Clare	39.	Kalamazoo	60.	Montmorency	81.	Washtenaw *
19.	Clinton	40.	Kalkaska	61.	Muskegon	82.	Wayne *
20.	Crawford	41.	Kent	62.	Newaygo	83.	Wexford
21.	Delta	42.	Keweenaw	63.	Oakland		

* Specific inter-county flow authorizations are contained elsewhere in this Chapter for these Michigan Counties.

Solid Waste Database
Oakland County, Michigan

04/12/94
17:45

Inter-County Flow Authorizations - Summary

County	Maximum Authorized Imports To Oakland	Maximum Authorized Exports From Oakland	Probable Initial Maximum Imports To Oakland	Probable Initial Maximum Exports From Oakland	1995 Estimated Imports To Oakland	1995 Estimated Exports From Oakland	Comments
Wayne	2,000,000	2,000,000	1,000,000	1,000,000	0	1,000,000	Wayne Co. Approved Plan will control both values
Washtenaw							
Primary	750,000	1,500,000	750,000	1,500,000	0	800,000	
Secondary	0	500,000	0	500,000	0	0	
Livingston	0	500,000	0	0	0	0	Possible Future
Genesee	500,000	500,000	25,500	25,500	0	200,000	Application for Increased Limits to be made Genesee Co. Approved Plan will control both values
Lapeer	0	500,000	0	255,500	0	0	
Macomb	750,000	750,000	510,000	510,000	200,000	50,000	Macomb Co. Approved Plan will control both values
Lenawee	0	1,000,000	0	748,800	0	250,000	
75 Other MI Counties	0	500,000	0	0	0	0	Possible Future
Out-of-State	0	Unlimited	0	0	0	0	Possible Future
Gateyards per Year			2,285,500	4,539,800	200,000	2,300,000	
(Net Gateyards)				2,254,300		2,100,000	
Gateyards per Working Day			7,991	15,873	699	8,042	
(Net Gateyards)				7,882		7,343	

1995 Summary

Probable Operating Levels - In-county Landfills	2,158,000	
Probable Net Exports	2,100,000	
Total Disposal Availability	4,258,000	OK! See Chapter 4
1995 Needs - 15% Constant VR	4,260,077	
1995 Needs - Flat Stream	4,216,832	
1995 Needs - 30% VR Curve	4,109,122	

CHAPTER 4

DEMONSTRATION OF AVAILABLE DISPOSAL CAPACITY

The Preface to this document outlined those portions of Act 641 and its Administrative Rules that govern the minimum amount of disposal capacity that must be available to a county at the time of approval of its periodic Plan Updates. Oakland County accepts the reasoning and logic applied by MDNR staff when examining the issue of whether a county has access to at least 5 years of disposal capacity. The principal elements of logic applied are that inter-county flows must be quantified and that only then demonstrated volume reduction achievement levels utilizing then existent processing and disposal facilities (or those that are in active implementation phases) may be assumed in the calculations. Failing the provision of at least 5 years of disposal capacity, MDNR will mandate a siting.

Act 641 and its Administrative Rules previously required that, should disposal capacity not be available for the remainder of the planning period, the Plan shall contain an interim siting mechanism based upon "... specific criteria that guarantee the siting of necessary solid waste disposal areas for the 20-year period subsequent to plan approval." Oakland County could not disagree that an interim siting mechanism must be contained in the Plan, if availability to 20 or more years of disposal capacity was not initially demonstrated. However and principally because of the US Supreme Court decision of June 1, 1992 relating to out-of-state wastes and the resultant import loads that have since been directed to southeastern Michigan's landfills, Oakland County held divergent viewpoints from those of MDNR staff as to how the future needs should be calculated (what future volume reduction achievement levels should be assumed) and as to when the mechanism, if required, should be placed into service. These areas of disagreement ultimately lead Oakland County to sponsor major revisions to Act 641.

This Chapter addresses the subject of available disposal capacity, the validity of future waste stream projections, the selection of reasonable volume reduction assumptions, the adequacy of current efforts to achieve adopted goals, the availability of capacity over time, and recommendations as to when an interim siting mechanism should be used, if required. The Chapter concludes with a current demonstration of available disposal capacity as it may apply under a variety of legislative scenarios.

List of Chapter 4 Exhibits:

Overview and Issues:

Available disposal capacity is defined as disposal capacity contained in facilities which are...

1) under an operating license either in the County or in another county(ies);

2) under a construction permit either in the County or in another county(ies);

3) proposed facilities that are identified as being consistent with the Oakland County Plan or the Plan of the host county(ies); or

4) available through arrangements with existing and/or proposed facilities located elsewhere (out-of-state).

Note: In accordance with the provisions of Act 641, the availability of disposal capacity in other Michigan counties is subject to explicit authorization in both the sending and receiving county solid waste management plans (see **Chapter 3**).

This Plan Amendment provides that disposal capacity available to Oakland County must from time-to-time be demonstrated to determine if shortfalls exist (see **Chapter 5**). Several issues must be examined when such a demonstration is undertaken.

A. The first issue to be examined is the continuing validity of the waste stream estimates and projections contained in the 1990 Plan Update or in the most recent certification documents. Is the material still accurate and valid?

B. A second question in defining available disposal capacity revolves around choosing the future waste stream to be modeled. Certainly it makes no sense to assume that the observed 1990 waste stream (adjusted only for population and employment growth) will continue unabated in scope into the future. Conversely, it takes a great deal of faith to assume that the County's aggressive Year 2005 50% Volume Reduction Goals will be achieved, without the offering of some proofs.

C. The third issue involves the availability of capacity in-county, in consensual counties, and out-of-state - all as measured over time. After all is said and done, capacity availability over time is in fact critical. Having an infinite amount of capacity available in year one and none thereafter (because the remainder was used by others) certainly adds up to more than a simple summation of 20 years of needs - but such an arrangement will provide no disposal capacity at all beyond the first year.

Issue A - Validity of the Waste Stream Estimates and Projections:

Oakland County staff broadly discussed this subject with the industry and the various planning agencies throughout 1993, tested its projection methods against the population and employment projections for all counties in southeast Michigan, and measured the results against the 1992 reported volumes handled at the region's several landfills. The answer to the validity question in terms of the overall waste stream is yes, the models seem to accurately portray the current real world situation (this is reviewed in greater detail in **Chapters 1 and 2**). In terms of the individual components of the stream, say for example the single family residential waste stream, the

answer is no, the generation rates used in the estimates and projections are too low. This is confirmed by repeated samples, is shown by data collected by others in the region, and may be inferred from the data shown in Exhibits 4.27 through 4.29. However, since some degree of comfort exists with the overall totals, some other element(s) of the waste stream must be modeled too high. Since insufficient resources exist to closely examine all waste stream components, it is necessary then to proceed with what is currently available. All of this results in a continuously on-going dialogue on this issue and until a greater level of mandatory reporting by all disposal facilities is in existence, it will be extremely difficult to refine the models further without the expenditure of considerable time and funds to gain a small additional increment of accuracy.

Issue B - Volume Reduction Goals:

Oakland County, following the lead of Michigan's Natural Resources Commission, adopted aggressive volume reduction goals in its 1990 Plan Update. These goals (the impact of which are graphically displayed in **Chapter 1**) were set with the planned implementation of the then proposed county-wide Solid Waste Management System in mind (which contained a significant public information and education component), and although deemed to be on the high side of achievability, were admirable targets to shoot for. In establishing the goals, outside expertise was sought, the waste stream composition examined in detail, detailed programs developed and considerable public debate ensued. Since development of the goal set (formal adoption occurred in early 1989, within one year of the NRC's goal adoption), Michigan has adopted yard waste legislation which will be effective in March of 1995 and which prohibits disposal of these wastes in incinerators or landfills. Thus, portions of the goals will be achieved through these future mandatory acts.

It is perhaps interesting to compare Oakland County's Volume Reduction Goals with those adopted by the NRC. The table below provides that comparison.

	Year 1995		Year 2005	
	NRC*	O.C.	NRC*	O.C.
Source Reduction & Reuse	4%	5%	15%	10%
Composting of Yard Wastes	7%	5%	10%	5%
Recycling	17%	20%	25%	35%
Totals	28%	30%	50%	50%

* From Michigan Solid Waste Policy, Appendix 1, June, 1988.

An examination of the two goal sets shows that Oakland County was a bit more pessimistic than the NRC on Source Reduction and Reuse and on the Composting goals and dramatically more optimistic on recycling. In the case of SR&R, it was felt that this was primarily a national issue that would be driven by all consumers collectively and by the manufacturers of products and in their subsequent packaging of these products. Minimal impact was anticipated from locally directed efforts. Within the Composting category, Oakland calculated that about 75% of the yard wastes would be recovered from the waste stream (composition studies showing that yard wastes represented 9.36% of the MSW stream by weight or 6.82% of the entire Act 641 waste stream including CDD and ISW). Michigan's mandatory legislation on yard wastes will incrementally enhance Oakland's 5% goal.

Issue B Continued - Demonstrating Current Volume Reduction Achievement Levels:

Volume reduction efforts have long been a part of the Oakland County solid waste scene - but from a significance viewpoint, the early efforts produced minimal results when compared to the County's large waste stream. The staff article included in this Chapter presents a look back at the 1970s and 80s. By January, 1993, municipal programs in the County had grown dramatically as described in Exhibits 4.25 and 4.26.

Close examination of the SOCRRA (Southeastern Oakland County Resource Recovery Authority - an authority comprised of 14 municipalities) and the City of Southfield programs provides insight into success levels being currently achieved. Data from these communities are displayed from Exhibits 4.27 through 4.30. Southfield's program is of particular interest since the data set represents the first three years of effort since the program started. This program, which serves approximately 16,475 single family homes, has shown volume reduction growth from a very minimal amount previously received at a recycling drop-off center, to 26.34% by volume or 27.64% by weight in just a short thirty-six months.

Exhibit 4.26 describes the basic solid waste service levels provided by the County's 61 municipalities as of January 1, 1993. Since collection of the data contained in this Exhibit, additional Oakland County municipalities have initiated local services and in general, the collection and hauling industry have enhanced their service levels to residential properties.

As of January 1, 1994, Oakland County leads southeastern Michigan in terms of the number of municipalities involved in volume reduction efforts and those remaining outside the sphere of involved communities are receiving considerable peer pressure to institute programs. A small private sector MRF exists in Springfield township which serves its owner's customer base in the northwest sector of the County as well as serving other independent haulers which operate in this sector. This facility, now owned by Sanifill, has operated successfully since April, 1991. In October of 1992, the 14 SOCRRA municipalities opened their MRF operation on Coolidge Highway in the City of Troy. Some statistics from the early months of this operation are shown on Exhibit 4.27 at the end of this Chapter. This facility, in terms of a database, may be of the most importance in all of Oakland County in terms of demonstrating volume successes in that it is operated by an agency which has aggressively tracked the tonnages of wastes handled from its several customers for a number of years. Over time, compared to the entire waste stream, considerable changes may be anticipated and will be demonstrated. This Authority also has been operating a compost operation for its municipalities at its nearly completed landfill site in Rochester Hills. That operation has received considerable notice from its neighbors which has resulted in the current operations being held as a model for a large compost operation within a suburban setting. Recently, Rochester Hills and SOCRRA have concluded their long disputes and even more effective operations are on the horizon.

The eight RRRASOC municipalities have contracted for the construction and operation of a MRF at 20000 West Eight Mile Road in the City of Southfield. This facility, originally to be solely operated as a source separated recyclable materials MRF, will also operate as a "merchant" MRF for municipalities within its market range, without regard for county boundaries. Such a market arrangement will reduce the operational costs incurred by the project sponsors, while making it easier for all to offer such services, particularly the operator, Waste Management. To enhance future operational opportunities, the Authority is supporting the designation of this operation as a Mixed-waste MRF in a separate Plan Amendment document. This designation will allow consideration of nearly all recycling possibilities as the market area matures. Final operation and control remains contractually with RRRASOC

and with Southfield through its host community agreements with RRRASOC.

The City of Rochester, as another example of a progressive municipality that chooses to wend its own course, reports that since recycling started in 1990, they have reduced the amount of solid waste going to landfills by approximately 16% in 1991, 18% in 1992 and 20% in 1993. This community has now initiated a household hazardous waste program with its first collection day occurring in the fall of 1993. About 10% of the City's single family dwelling units participated, a fairly high percentage for a new effort and this brings the total number of agencies offering such a program to 20.

Additionally, although it has been extremely difficult to obtain quantified data, Oakland County staff has visited with numerous commercial and industrial establishments to view their present waste stream and volume reduction efforts. Many report waste reduction in the 30 to 40% range and one of the County's automobile plants was describing overall volume reductions on the order of 55% from what was being disposed of a short four years ago. Most report being principally motivated by the disposal economics involved and few are willing to provide specific data that can be publicly displayed to substantiate their successes.

However, in industry publications, Ford Motor representatives were recently quoted as having "...reduced its landfill disposal volumes by 70 percent - half due to recycling and half due to compaction." In April of 1994, Ford announced that a single firm, Browning Ferris Industries (BFI), was hired to process trash from its 40 plants in southeast Michigan. BFI reported the agreement included the purchase of Ford's transfer station in Dearborn. All of Ford's waste covered by the contract (about 75% of Ford's waste stream) will be transported to BFI's recycling facilities. In similar breaking news, City Management recently snared a large contract with 28 GM plants in metro Detroit, Pontiac and Toledo. City Management expects to recycle up to 50 percent of GM's waste, sorting out wood, paper, plastic, and especially,, cardboard. City Management representatives report that GM's biggest portion of recycled material is cardboard. The price for this commodity has risen sharply because of a cold winter and a wood shortage. City Management will rely heavily on a mixed-waste MRF proposed for construction in Pontiac (see separate Plan Amendment, Act 641 Facilities, Changes, Additions and Deletions).

The Solid Waste Planning Committee has examined this material (**Chapter 4**) in combination with the waste stream database (see **Chapter 1**), the verification of the County's gateyard estimates contained in **Chapter 2**, and based on its own individual conversations with Oakland County municipalities, business and industries, concludes that at the beginning of 1994, Oakland County has made considerable progress towards reducing the amount of wastes destined to landfills. It is the collective findings of the Committee, that the 1994 waste generation rates are at least 15% or more below the rates estimated in 1990. With the yard waste legislation to be in full effect less that one year away (March 28, 1995), by the end of 1995, the full waste stream can be projected to be nearly 20% below the originally projected waste generation rates.

Findings on Current Volume Reduction Achievement Levels:

In 1994, Oakland County as a whole, across all waste stream categories, currently appears to be operating in the 15% to 20% volume reduction range. This conservative volume reduction level (15%) should be used to calculate whether the county has access to at least 5 years of disposal capacity.

Issue B Continued - Evaluating Achievability of Future Volume Reduction Goals:

When examining future anticipated volume reduction achievement levels, a variety of factors must be examined and assumptions made. These range from a re-examination of the nations's ability to achieve significant source reduction, the probable impact of Michigan's mandatory yard waste legislation, all the way to the ability of all categories of waste generators (residential, commercial, industrial, CDD and ISW) to achieve sustained volume reduction efforts. Additionally, one must examine the purpose to which these results will be applied. Inasmuch as the purpose of this estimate is to delineate long-term landfill needs, it is recommended that an optimistic viewpoint be taken (as opposed to the conservative viewpoint used when determining whether or not a county has access to at least 5 years of disposal capacity). This approach would result in a smaller future landfill need than if a conservative approach were used. This viewpoint also seems to fit best with the basic Act 641 approach wherein every five years, the long-range plan must be viewed with fresh eyes and corrective measures applied, if necessary. Additionally, it best fits the paradox faced which involves a potential excess of locally available disposal capacity; unrestricted imports of out-of-state or out-of-country wastes; and required sitings (under the old legislation) when less than 20 years of disposal capacity can be demonstrated. On this basis, it is anticipated that Year 2005 Volume Reduction efforts as described in the Table following will be readily obtainable.

	NRC's Year 2005 Goals	Oakland's Year 2005 Goals	Year 2005 Probable Minimum Achievement Levels
Source Reduction & Reuse	15%	10%	10%
Composting	10%	5%	6.82% (or all)
Recycling	25%	35%	15%
Totals	50%	50%	31.82% Minimum

Findings on Probable Long Term Volume Reduction Achievement Levels:

At a minimum, Oakland County, even without the institution of a county-wide program, seems to be performing along a volume reduction curve that matches or exceeds the Year 2005 30% curve. Thus it appears that without a single collective effort by all, only about 60% of the adopted Year 2005 Volume Reduction Goals can be anticipated. Exhibit 1.16 in **Chapter 1** displays the dramatic differences between these two achievement levels. Oakland County as a whole must continue to stress the importance of a county-wide approach with basic public information and education efforts if it is ever to see fruition of its original Year 2005 50% Volume Reduction Goal.

Issue B Continued - MDNR's Recent Approach to Future Volume Reduction Levels:

In a February, 1994 mandated Plan Update for Macomb County, MDNR staff used a rather unique method to model the future waste stream while at the same time allowing for future increases in volume reduction efforts and therefore greater achievement levels than are currently observed. In this instance, an

assumption was made that the currently observed waste stream would not increase over time as suggested by population and employment projections. The current waste stream was simply projected flat over all future years. This approach provided a more optimistic viewpoint on future landfill needs rather than the conservative or overstated viewpoint previously discussed for use when calculating 5 year needs. This approach is also being utilized in a current mandated plan effort by MDNR in Wayne County. When demonstrating available future disposal capacity at the end of this Chapter, this new approach by MDNR is shown along with the others for comparison.

Issue C - Availability of Disposal Capacity Over Time:

From Exhibit 3.9 which shows inter-county flows in **Chapter 3**, one could quickly get to the conclusion that a large amount of disposal capacity is available (ie: 4.5 million gateyards per year) for Oakland County wastes. However, when this value is viewed over time, dramatic changes are quickly seen. Additionally, one can come to the wrong conclusions about the long-term availability of disposal capacity by simply comparing long-term needs against the total existing, designated or otherwise available disposal capacity.

A whole series of questions spring from this issue ...

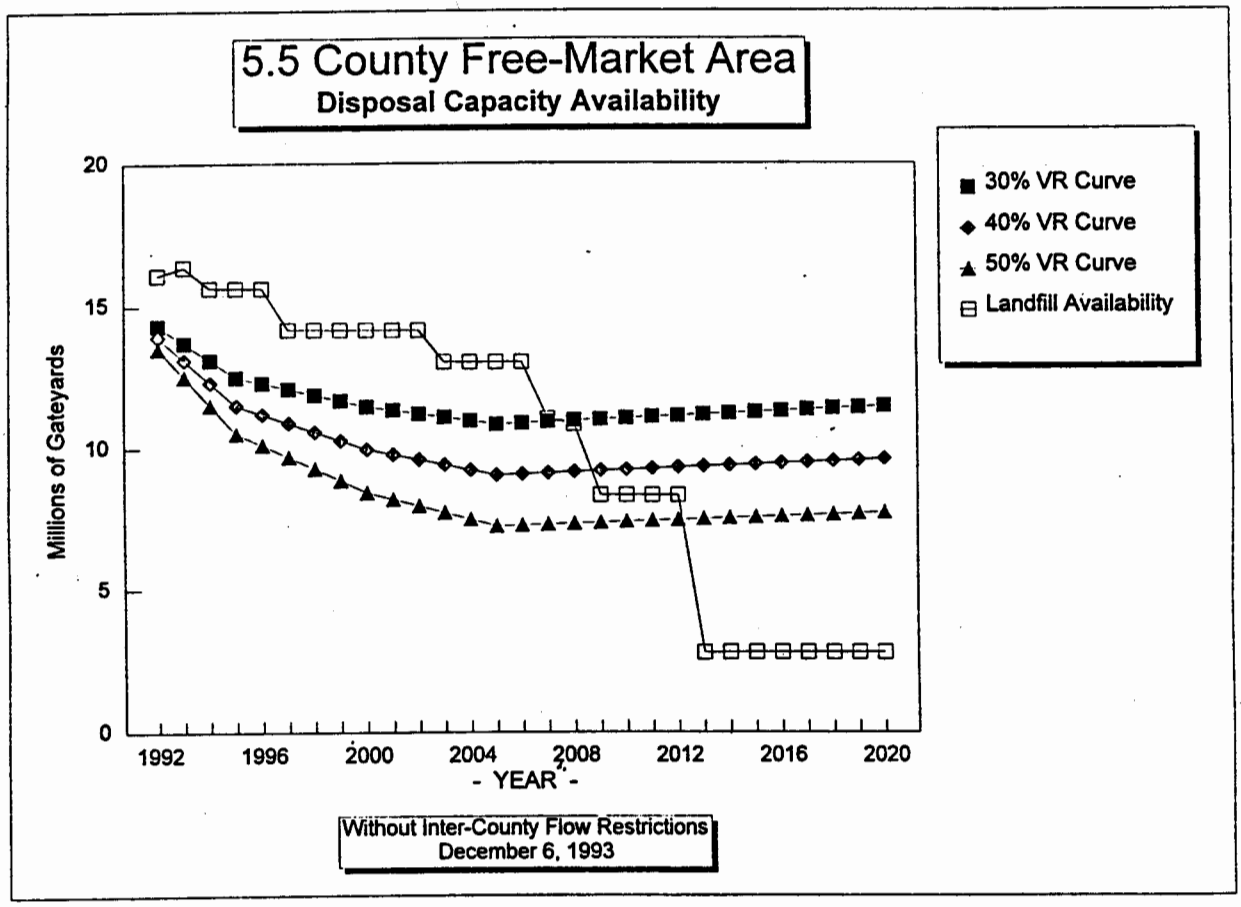
> How is the available disposal capacity to be utilized over the intervening years?
>
> Were a sufficient number of sites available at the proper time?
>
> Or, were too many open at once creating an excess of available operating capacity?
>
> Was this excess operating capacity consumed by unwanted imports from others as has been made possible by the June, 1992 US Supreme Court decision?
>
> Wouldn't perhaps the planning area be better served if the available disposal capacity were staged over time, with the subsequent facilities authorized to come on-line only at some future date so that the available operating capacity closely matched the size of the locally generated waste stream?

The conclusion to be drawn from all of this is that a county must carefully manage, not only the long-term capacity that appears to be available by a simple summation of the total capacities of all the landfills involved, but also manage the number of sites operational at any given point in time.

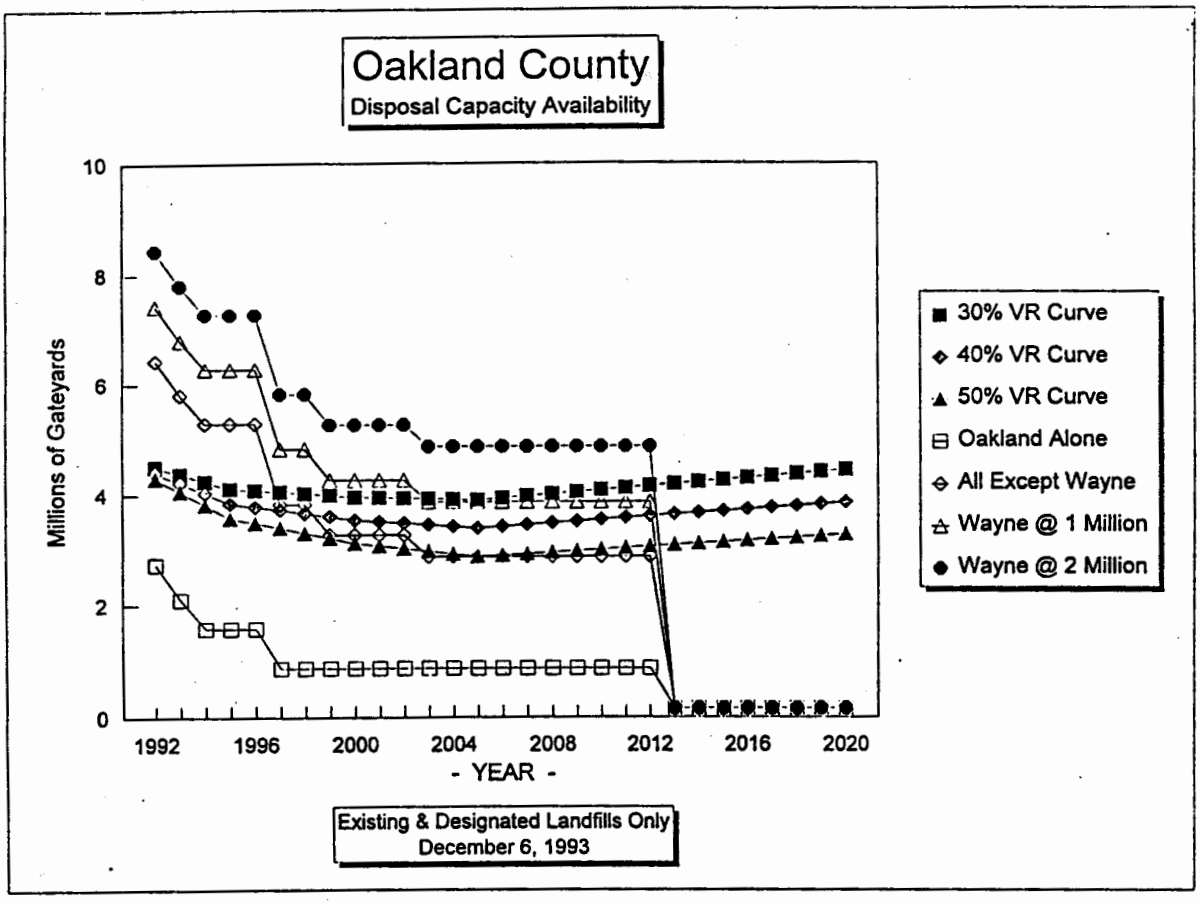
How this approach impacts Oakland County may best be understood by again examining the 5 and one-half county area that has essentially been operating under free market conditions. The graphic on the following page displays the amount of Act 641 wastes generated in this region under three different volume reduction scenarios - Year 2005 volume reduction levels at 30%, 40% and 50%. The graphic also displays available operating capacity in this area on the assumption that each facility continued to receive the same annual gateyards of waste as was received during 1992. (Details of the analysis technique are included in the Appendix.) As the different landfills become depleted, the total available operating capacity drops.

Focus for a moment on the waste stream depicted by the 40% volume reduction curve. Available capacity appears to fall below the waste stream levels mid-way through Year 2009, and thereafter, an insufficient amount of capacity (gradually diminishing) appears to remain. Actually, a different picture

would emerge. Should the excess operating capacity in the early years be utilized by out-of-state or out-of-country wastes, the remaining landfills would (at the time local needs are no longer met with all facilities still operating at the observed 1992 levels) probably increase their daily operating levels and meet the local needs, until all expired or were completely filled. In the 40% curve example, all needs would be met for approximately six additional years to the Year 2015. If the excess operating capacity in the early years was not used by others, it would all remain available for later use and all local needs would be fulfilled through the year 2020.



Next, zero-in on the Oakland County situation. Available capacity is a function of that capacity that exists or is designated in-county and that capacity that is available in other counties as authorized in the respective Plan Updates. Some is quite time limited. Other inter-county flows may well be time limited and should be so assumed. For example, when the remaining capacity in another county dwindles to an amount sufficient only to meet local needs, Oakland County imports will probably be limited. Taking these issues into consideration, capacity availability to Oakland County would appear similar to that shown in the discussion example opposite.



These several points may be worth examining further and are illustrated by the examples shown on Page 11. In the first case, Oakland County's future direct landfilling needs (based upon the assumption that a Year 2005 30% volume reduction curve is realistic) are displayed (topmost graphic on Page 11). Along with the needs curve are several curves showing landfill availability - the lower curve showing in-county capacity and the higher showing total available capacity including in-county capacity and that available through authorized exports to other counties. The latter curve displayed represents a minimalistic view of probable authorized exports. The availability curves are initially drawn on the assumption that 1992 observed daily operational levels at each landfill will continue unchanged until each individual facility reaches its capacity and closes.

At first glance, it appears that a shortfall will occur at about the end of 1997 (see Point A on the graphic). However, upon reflection, when one realizes that as the opportunity for available exports diminishes, the major facilities in Oakland County will increase their daily operating levels to meet demand. The apparent shortfall date is thus extended into the future. In the first case at hand, the maximum extended date would go to early 2005 (see Point B). Again however, upon additional reflection, this maximum extended date is based upon the assumption that all export opportunities will

be taken advantage of during the interim years and that the major in-county facilities would limit their intake. This assumption is probably not reasonable and it also ignores imports from out-of-region. Most likely, some mid-point level of operation will be obtained by the existing in-county private sector facilities (see Point C) and the best that can be said about this example case is that capacity appears to be available to about the Year 2001 (plus or minus) (see Point D), if all disposal facilities continue to remain available.

Because there are so many variables involved in this rather complex system, a strong argument can be made that this entire situation should annually be examined and recertified. Such a reflective review will insure that a "crisis" is not suddenly encountered.

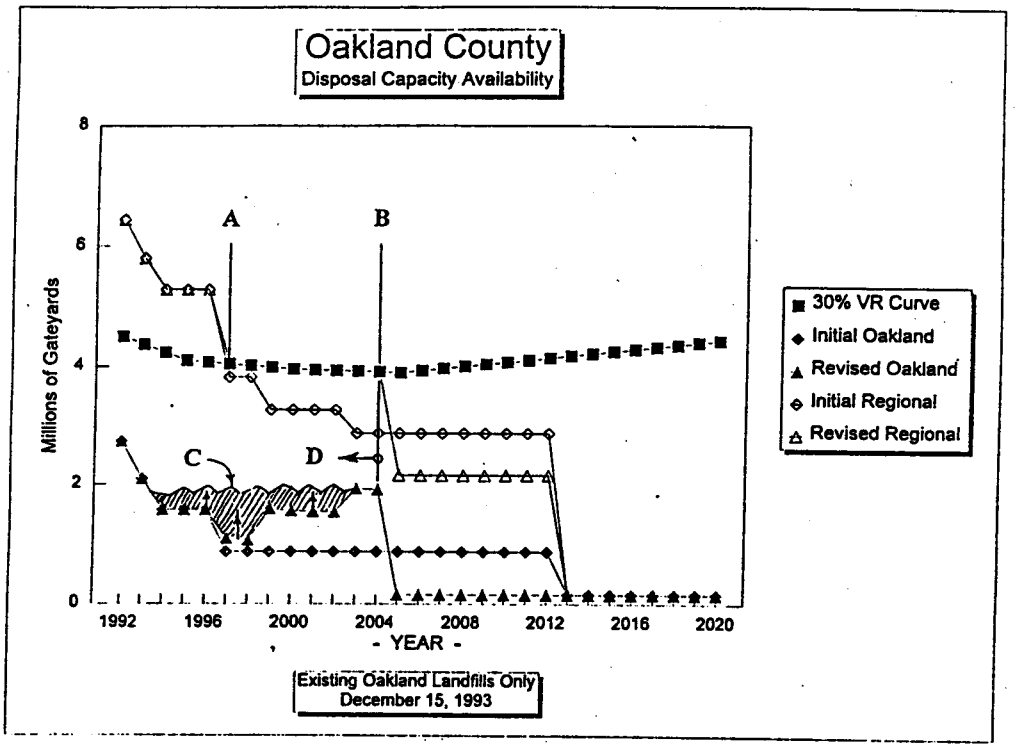
The second example shows the impact of approving the Wayne Disposal - Oakland lateral expansion request. In this case, the apparent shortfall date is near the end of Year 2002 (Point A) and the maximum extended shortfall date is near the end or Year 2010 (Point B). Again however, the in-county facilities can be expected to maximize their daily operating levels by competing within the region and/or accepting out-of-region wastes, where such is legal (Points C). In this instance, the best that can be said is that capacity appears to be available to about the end of Year 2006 (plus or minus), if all disposal facilities continue to remain available (Point D).

Finally, it is important to consider whether or not the region's excess capacity in the early years of these examples will be utilized by others or left for the future use of the present free market area. For instance, Washtenaw County, in exchange for a guarantee of long-term capacity for its needs, has allowed its primary disposal facility to freely market its excess capacity to neighboring counties (including Oakland County) and the U.S. Supreme Court decision has introduced the possibility of legal imports from out-of-state and out-of-country. How this matter turns (particularly with regard to out-of-state imports), in all counties and at all potentially available disposal sites, will impact the Oakland County situation, both in terms of the interim period operating levels of the in-county landfills and in terms of the continuing availability of export possibilities to neighboring counties. As previously noted, should the region's excess operating capacity in the early years not be used by others, inter-county flow agreement opportunities may well be extended beyond those shown, for as much as an additional 5 to 10 years.

Demonstration of Available Disposal Capacity - 5 Year Needs:

As indicated in the preamble to this document, Oakland County concurs with the MDNR staff that when measuring if a county has at least 5 years of disposal capacity available, only that currently demonstratable volume reduction efforts should be assumed in the calculations. This is a realistic approach in determining whether or not MDNR must mandate the siting of additional disposal capacity for the short-term.

From the material following, which is based upon a 15% volume reduction achievement level continued unchanged into the future, it is obvious that the County has access to sufficient capacity for several years (well into the Year 1999), without even considering exports to other counties. This is based solely upon the amount of existing and designated capacity in Oakland County (including the capacity designated for the SOCRRA ash monofill). At the beginning of 1993, the in-county disposal capacity equated to 15.926 million bankyards. The bankyard data is drawn from **Exhibit 1.20 from Chapter 1.**



EXAMPLE ONE

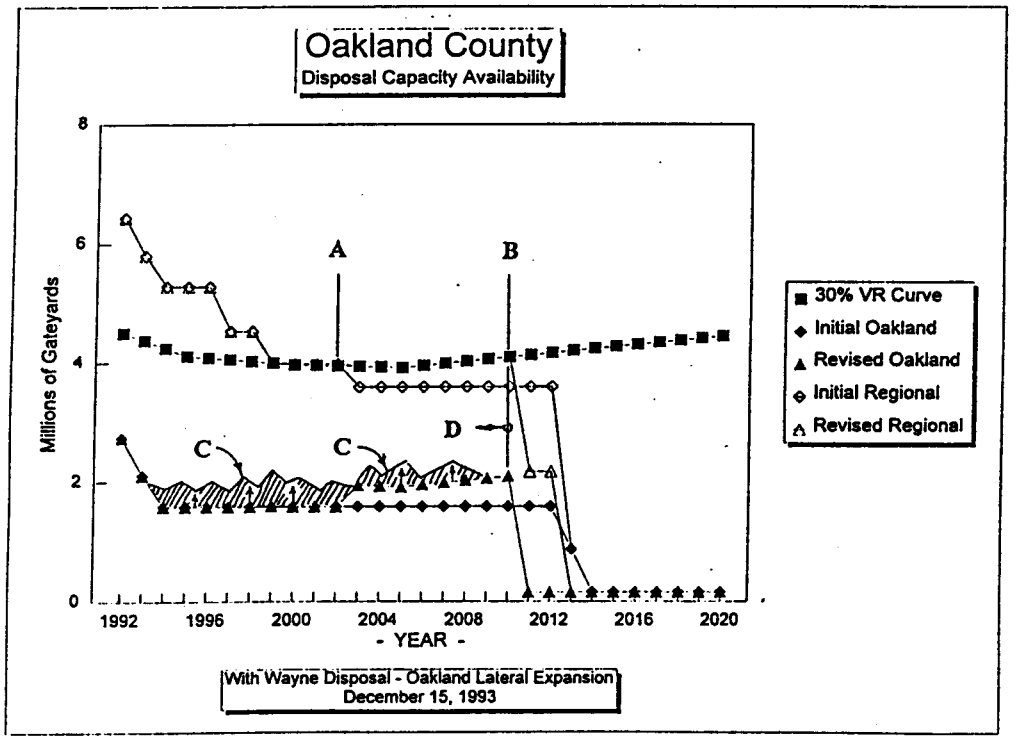
A - Apparent Shortfall Date = Late 1997.

B - Maximum Extended Shortfall Date = Early 2005.

C - Probable Operating Level of In-county Landfills?

D - Actual Shortfall Date Adjusts to an Earlier Point in Time Depending on C Above.

Say 2001



EXAMPLE TWO

A - Apparent Shortfall Date = Late 2002.

B - Maximum Extended Shortfall Date = Early 2010.

C - Probable Operating Level of In-county Landfills?

D - Actual Shortfall Date Adjusts to an Earlier Point in Time Depending on C Above.

Say 2006

Disposal Capacity Requirements at a Constant 15% VR Level

Year	Bankyards Required	Bankyards Accumulated		
1993	2,265,786	2,265,786		
1994	2,287,842	4,553,627		
1995	2,309.897	6,863,525		
1996	2,331,953	9,195,478		
1997	2,354,009	11,549,487		With ex. landfills
1998	2,376,065	13,925,551		
1999	2,398,120	16,323,672	<--	15,926,000
2000	2,420,176	18,743,848		
2001	2,442,232	21,186,080		
2002	2,464,288	23,650,367	<--	22,926,000 With WD-O Expansion

Findings on Required 5 Year Disposal Capacity Availability:

Assuming approval of this Plan Amendment before the end of 1994, and with the addition of the Wayne Disposal - Oakland lateral expansion, in-county capacity (at a constant 15% volume reduction level) would be available well into the Year 2002, without considering an improving volume reduction ethic and effort and without considering the opportunity for exports.

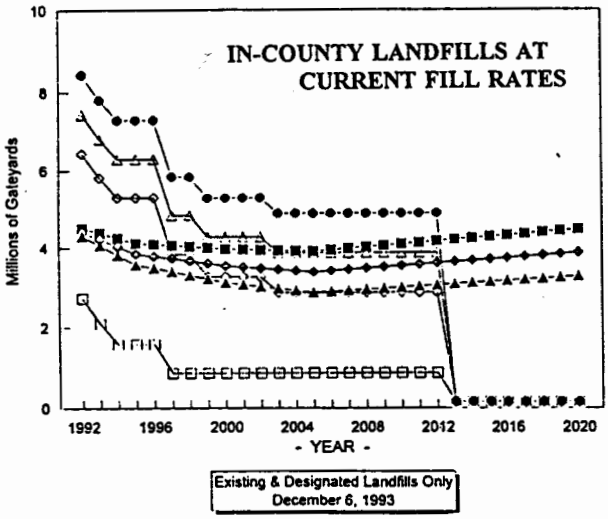
Recommendations: No Action Required on 5 Year Issues.

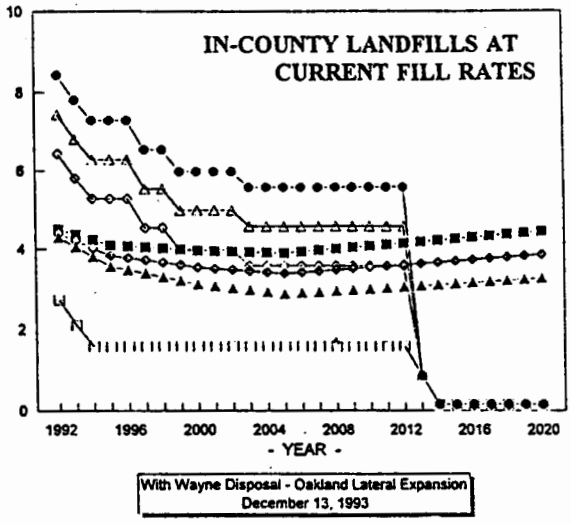
Generalized Demonstration of Available Disposal Capacity - Long Term Needs:

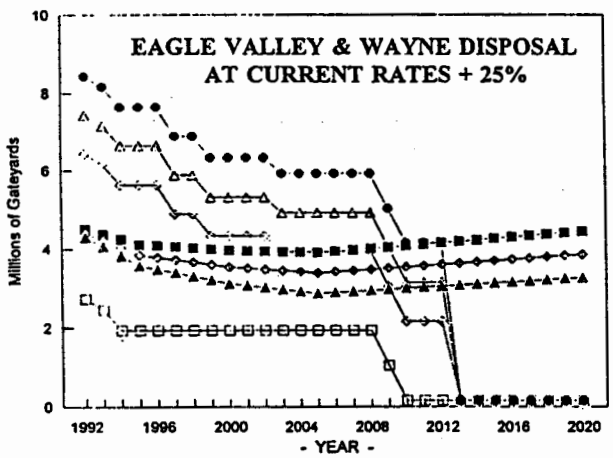
Note: The analysis following is based upon use of the Year 2005 30% volume reduction curve. The analysis ignores the previously proposed System and SOCRRA waste-to-energy facilities as well as the SOCRRA ash monofill expansion and assumes that they will never become operational.

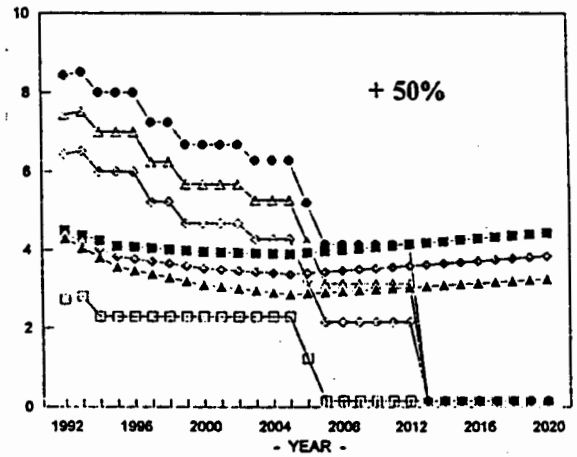
Ignoring out-of-state and out-of-country imports for the moment, the graphics on page 13 depict the change in disposal capacity availability, after considering example export opportunities and they display the effects of changing assumptions as to the operating levels of the in-county landfills. This material is presented storyboard in style so that the impacts can be quickly visualized.

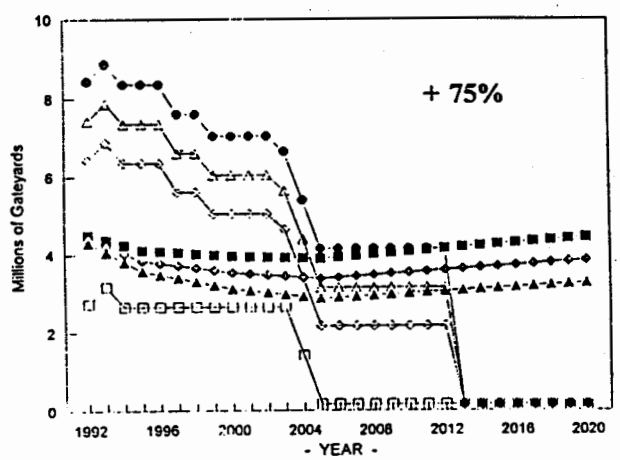
The first graphic (in the upper left) is a replication of the graphic shown on Page 9 of this Chapter. The second (in the upper right) shows the impact of adding the Wayne Disposal - Oakland lateral expansion. In this case, it is assumed that all in-county facilities and the expanded Wayne Disposal - Oakland operation will continue to receive an annual gateyard load similar to that observed in 1992. The graphics following show the impact of ever increasing daily operating levels of the two major in-county facilities (Eagle Valley and Wayne Disposal), first increased by 25% over 1992 observed levels, then by 50%, 75% and finally by 100%. Conversely, this also shows what happens if more operating facilities are added to the current regional matrix in the early years. Simply put, more excess operating capacity is brought to bear in the free market area. If that excess is used by out-of-state or out-of-country wastes, less capacity is available for the future use by regionally generated wastes. The primary point to be made is that adding capacity at existing facilities increases long-term capacity as long as operational levels stay close to current levels - but, new facilities should not be brought on-line to add to the competitive mix, until the total available more closely

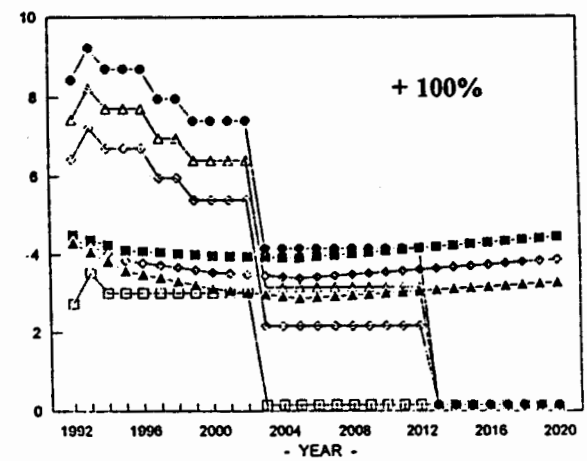

IN-COUNTY LANDFILLS AT
CURRENT FILL RATES
Millions of Gateyards
0
2
4
6
8
10
1992
1996
2000
2004
2008
2012
2016
2020
- YEAR -
Existing & Designated Landfills Only
December 6, 1993


IN-COUNTY LANDFILLS AT
CURRENT FILL RATES
0
2
4
6
8
10
1992
1996
2000
2004
2008
2012
2016
2020
- YEAR -
With Wayne Disposal - Oakland Lateral Expansion
December 13, 1993


EAGLE VALLEY & WAYNE DISPOSAL
AT CURRENT RATES + 25%
Millions of Gateyards
0
2
4
6
8
10
1992
1996
2000
2004
2008
2012
2016
2020
- YEAR -


+ 50%
0
2
4
6
8
10
1992
1996
2000
2004
2008
2012
2016
2020
- YEAR -


+ 75%
Millions of Gateyards
0
2
4
6
8
10
1992
1996
2000
2004
2008
2012
2016
2020
- YEAR -


+ 100%
0
2
4
6
8
10
1992
1996
2000
2004
2008
2012
2016
2020
- YEAR -

matches locally generated needs. Otherwise, additional excess daily operating capacity is instantly added, imports are invited and/or marginal operations could be anticipated as an insufficient amount of locally generated wastes would exist to sustain reasonably profitable operating levels.

Findings on Generalized Long Term Disposal Capacity Availability:

Oakland County does not currently appear to have access to 20 years of disposal capacity as was previously required by Act 641, even with the addition of the Wayne Disposal - Oakland lateral expansion. In the most optimistic case with regard to maximized inter-county flows to all potential destinations, it appears that in these examples, a shortfall in available operating capacity will occur in about the beginning of Year 2013, regardless of the volume reduction curve used in the calculation (30%, 40% or 50%).

In the most pessimistic case, with no authorized inter-county flows to Wayne County, the shortfall appears to occur in about the beginning of Year 2003. Because the Oakland County landfills would expand their daily operating levels to a level beyond that observed for 1992 to meet the demand then occurring, the actual shortfall date will be some years later, at about the Year 2006.

However, should a mid-point in authorized exports be achieved, and the region's early excess capacity not be entirely used by out-of-state and/or out-of-country wastes thus allowing neighboring counties to extend the level of authorized imports, more than 20 years of capacity availability could then be demonstrated.

Recommendations:

What ever the 20 year demonstration of available capacity shows, as long as an excess of available daily operating capacity exists, new sites offering more competition for the existing, locally generated waste stream should not be forced to be sited! Until the unauthorized out-of-state and out-of-country import issue is settled or made manageable, the day-to-day management of the number of competing sites must be carefully controlled. Otherwise, imports will use-up the available capacity causing a need to site more facilities, perhaps quickly getting into a circular, never ending paradox. See the following section.

Proposed Future Use of Interim Siting Mechanisms:

Act 641 and its Administrative Rules require that a county have access to at least 5 years of disposal capacity. If not, the MDNR will mandate a landfill siting or otherwise mandate access. The previous rules further required that if access was not available for the remainder of the 20 year planning window, that the plan shall include an interim siting mechanism that guarantees "...the siting of necessary solid waste disposal areas for the 20 year period subsequent to plan approval."

Nothing in Act 641 or its Rules specifically identified when the interim siting mechanism **must** be used!

MDNR staff interpreted Act 641 and its Rules so that if an interim siting mechanism was required, that the mechanism must be used whenever an application is received and the county could not at that point in time demonstrate that it then has access to at least 20 years of disposal capacity. Theoretically, this could occur when a county had access to only 19.9 years of disposal capacity.

Given the uncertainties associated with unauthorized out-of-state and out-of-country waste imports, perhaps the most critical solid waste management issue becomes management of the amount of operating capacity allowed to exist at any given time. Operating capacity should meet or exceed the needs of the locally generated waste stream but not exceed that amount so excessively as to invite marginal operations or to force operators to seek unauthorized imports - thus unnecessarily using the resource.

Findings on the Future Use of Interim Siting Mechanisms:

Forced landfill sitings should not be required in an environment where excess operating capacity is thus created.

Recommendation:

In the spirit of Act 641's principal requirement, that the County always have access to at least 5 years of disposal capacity, it is recommended that mandatory use of the required interim siting mechanism should occur whenever existing, designated and/or otherwise available disposal capacity is projected to drop below 5 years of needs sometime during the next calendar year after review of all available data (see Chapter 5 - Part A). That is, if the available capacity is projected to fall below 5 years during that next calendar year, Requests for Consistency would be received on or after the insufficient capacity date certified. Additionally, the County should be able to invoke the mechanism at any other time of its choosing, perhaps in a competitive bidding mode prior to the mandatory usage of the mechanism where exposure would exist to the first application received.

Oakland County has independently pursued legislative remedies to correct the interpretive problems encountered. It is anticipated that these remedies will become effective by mid-1994. When the new legislation becomes effective, use of the interim siting mechanism will be in compliance with that legislation.

Specific Demonstration of Available Disposal Capacity:
June 9, 1994

On May 23, 1994, Oakland County staff conferred with MDNR staff on inter-county flow issues and was able to obtain concurrence on maximum initial authorized inter-county flow levels (see **Chapter 3 - Exhibit 3.9**) as well as on the probable availability of such flows over time (see Exhibit 4.18). Additionally, it was confirmed that the initial demonstration of available disposal capacity must be measured from the MDNR Director's approval date of this Plan Amendment, even though the overall Plan Update was conditionally approved in November of 1991. This occurs simply because the demonstration of available disposal capacity was one of the items not originally approved.

With the legislation changing because of Oakland County's recent initiatives, it was determined that for the purposes of this plan amendment, that availability of disposal capacity should be shown for all legislation scenarios. Following is an overview of this effort. Exhibits 4.19 through 4.24 graphically display the same findings.

Each of the analysis made the following assumptions. The Wayne Disposal - Oakland lateral expansion is approved (see **Chapter 7**), neither of the two previously proposed waste-to-energy projects (the SOCRRA and County facilities) was assumed to be ever operational, and no disposal capacity credit was claimed for the SOCRRA ash monofill lateral expansion.

Under Legislation Existing as on June 1, 1994:

Depending upon the volume reduction scenario utilized in the analysis, and depending upon the assumption made as to how much of the in-county landfill capacity will be used by permissible imports from other Michigan counties, Oakland County is short of having access to 20 years of disposal capacity by differing amounts. This ranges from a minimum of 2.601 million bankyards in a best case scenario where the existing waste stream is projected flat over the entire 20 year period, to a maximum of 12.291 million bankyards in a worst case scenario where the demonstrated existing 15% volume reduction efforts are continued at a constant future percentage. This is shown in the table on page 4.22 and as graphically displayed in Exhibit 4.23.

Findings on Access to 20 Years of Disposal Capacity:

Oakland County does not have access to 20 years of disposal capacity and an interim siting mechanism would be required under the legislation that existed at the beginning of 1994.

Under the New Legislation:

If it were assumed that full achievement of the County's Volume Reduction Goals were possible, the County would have access to more than 10 years of disposal capacity, no matter what assumptions were made with regard to the percentage of in-county landfill capacity used by permissible imports from other Michigan counties.

However, since the County formally abandoned its proposals to implement a county-wide Solid Waste Management System in November of 1993, it is not realistic to assume that this will occur. As discussed earlier in this Chapter, see page 6, it appears that volume reduction levels in the 30 to 40% range might be ultimately achievable - more than currently demonstrated, but substantially below the County's adopted 50% Volume Reduction Goal level. Selecting the Year 2005 30% volume reduction curve as a reasonable scenario, and depending upon the assumption made as to how much of the in-county landfill capacity might be utilized by permissible imports from other Michigan counties, the shortage ranges from zero bankyards in a best case scenario to a maximum of 2.047 million bankyards in a worst case scenario. Again, this is shown in the table on page 4.22 and as graphically displayed in Exhibit 4.23.

Findings on Access to 10 Years of Disposal Capacity:

Should an optimistic view be taken on all assumptions in the analysis, Oakland County could be shown to have access to more than 10 years of disposal capacity.

However, operating on the assumption that others would take a worst case viewpoint on the amount of in-county capacity utilized by other Michigan counties, a 10 year shortage of 2.047 million bankyards would exist.

Therefore, to avoid taking the position that the County has access to more than 10 years of disposal capacity and not

including an interim siting mechanism in the plan, only to have MDNR rule otherwise and find the plan amendment deficient, it is recommended that the plan amendment contain an interim siting mechanism.

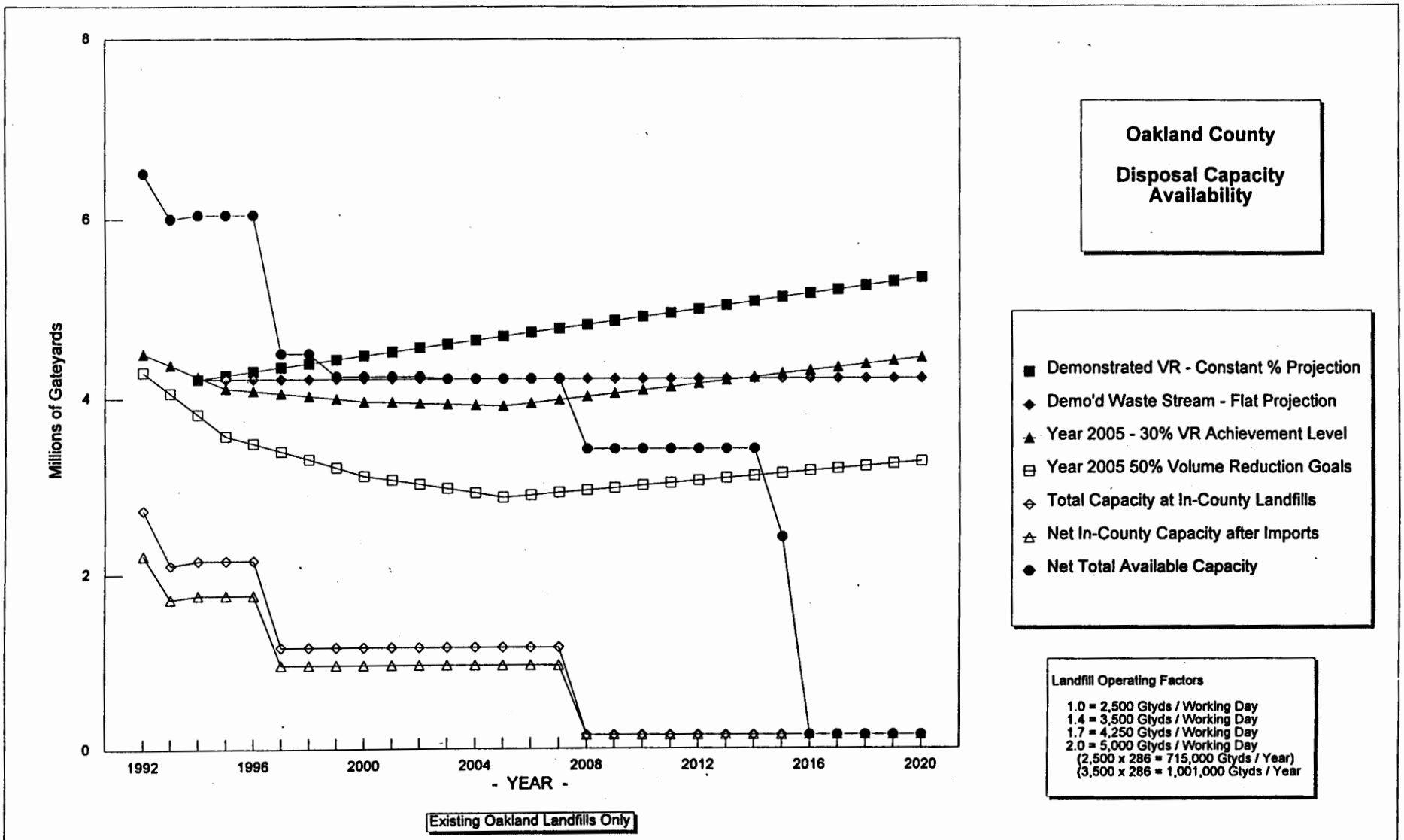
Use of the Interim Siting Mechanism under the New Legislation:

It initially appears that the interim siting mechanism will not be called into play until about the Year 2003, when access to available disposal capacity will have fallen to about a five year reserve. This projection will be confirmed or modified with each annual certification as provided in the new legislation and as is outlined in **Chapter 5**. See the details for several of the potential volume reduction scenarios under a 20% import assumption from other Michigan counties on Exhibit 4.24. Readers are cautioned that many variables beyond the control of Oakland County are involved in this finding and all should carefully monitor the annual certifications of available disposal capacity to stay current on this projection. (June, 1994.)

Solid Waste Database
Oakland County, Michigan

Oakland County's Available Disposal Capacity Opportunities

Year	Oakland In-County Capacity	Livingston	Lapeer	Lenawee	Macomb	Genesee	Washtenaw Primary	Washtenaw Secondary	Wayne	Export Opportunities	Maximum Available	Less Total Imports at 20% of Oakland Available Capacity	Oakland Gtyd Capacity Used by Permissable Imports	Net Avail. Oakland In-County Capacity	Maximum Available / 2
			0.256	0.749		0.025		0.250	1.000 5.000			A			
1992	2.728	0.000	0.256	0.749	0.510	0.025	1.500	0.250	1.000	4.290	7.018	6.504	0.514	2.214	2.1450
1993	2.103	0.000	0.256	0.749	0.510	0.025	1.500	0.250	1.000	4.290	6.393	6.003	0.389	1.713	2.1450
1994	2.158	0.000	0.256	0.749	0.510	0.025	1.500	0.250	1.000	4.290	6.448	6.048	0.400	1.758	2.1450
1995	2.158	0.000	0.256	0.749	0.510	0.025	1.500	0.250	1.000	4.290	6.448	6.048	0.400	1.758	2.1450
1996	2.158	0.000	0.256	0.749	0.510	0.025	1.500	0.250	1.000	4.290	6.448	6.048	0.400	1.758	2.1450
1997	2.158	0.000	0.256	0.000	0.510	0.025	1.500	0.250	1.000	3.541	5.699	5.299	0.400	1.758	1.7705
1998	2.158	0.000	0.256	0.000	0.510	0.025	1.500	0.250	1.000	3.541	5.699	5.299	0.400	1.758	1.7705
1999	2.158	0.000	0	0.000	0.510	0.025	1.500	0.250	1.000	3.285	5.443	5.043	0.400	1.758	1.6425
2000	2.158	0.000	0	0.000	0.510	0.025	1.500	0.250	1.000	3.285	5.443	5.043	0.400	1.758	1.6425
2001	2.158	0.000	0	0.000	0.510	0.025	1.500	0.250	1.000	3.285	5.443	5.043	0.400	1.758	1.6425
2002	2.158	0.000	0	0.000	0.510	0.025	1.500	0.250	1.000	3.285	5.443	5.043	0.400	1.758	1.6425
2003	2.158	0.000	0	0.000	0.510	0.000	1.500	0.250	1.000	3.260	5.418	5.018	0.400	1.758	1.6300
2004	2.158	0.000	0	0.000	0.510	0.000	1.500	0.250	1.000	3.260	5.418	5.018	0.400	1.758	1.6300
2005	2.158	0.000	0	0.000	0.510	0.000	1.500	0.250	1.000	3.260	5.418	5.018	0.400	1.758	1.6300
2006	2.158	0.000	0	0.000	0.510	0.000	1.500	0.250	1.000	3.260	5.418	5.018	0.400	1.758	1.6300
2007	2.158	0.000	0	0.000	0.510	0.000	1.500	0.250	1.000	3.260	5.418	5.018	0.400	1.758	1.6300
2008	1.157	0.000	0	0.000	0.510	0.000	1.500	0.250	1.000	3.260	4.417	4.217	0.200	0.957	1.6300
2009	0.156	0.000	0	0.000	0.510	0.000	1.500	0.250	1.000	3.260	3.416	3.416	0.000	0.156	1.6300
2010	0.156	0.000	0	0.000	0.510	0.000	1.500	0.250	1.000	3.260	3.416	3.416	0.000	0.156	1.6300
2011	0.156	0.000	0	0.000	0.510	0.000	1.500	0.250	1.000	3.260	3.416	3.416	0.000	0.156	1.6300
2012	0.156	0.000	0	0.000	0.510	0.000	1.500	0.250	1.000	3.260	3.416	3.416	0.000	0.156	1.6300
2013	0.156	0.000	0	0.000	0.510	0.000	1.500	0.250	1.000	3.260	3.416	3.416	0.000	0.156	1.6300
2014	0.156	0.000	0	0.000	0.510	0.000	1.500	0.250	1.000	3.260	3.416	3.416	0.000	0.156	1.6300
2015	0.156	0.000	0	0.000	0.510	0.000	1.500	0.250	0.000	2.260	2.416	2.416	0.000	0.156	1.1300
2016	0.156	0.000	0	0.000	0	0.000	0.000	0.000	0.000	0.000	0.156	0.156	0.000	0.156	0.0000
2017	0.156	0.000	0	0.000	0	0.000	0.000	0.000	0.000	0.000	0.156	0.156	0.000	0.156	0.0000
2018	0.156	0.000	0	0.000	0	0.000	0.000	0.000	0.000	0.000	0.156	0.156	0.000	0.156	0.0000
2019	0.156	0.000	0	0.000	0	0.000	0.000	0.000	0.000	0.000	0.156	0.156	0.000	0.156	0.0000
2020	0.156	0.000	0	0.000	0	0.000	0.000	0.000	0.000	0.000	0.156	0.156	0.000	0.156	0.0000



Principal Variables

Wayne-Oakland Expansion?	Wayne-Oakland Factor	Eagle Valley Factor	Genesee Co Exports @ 0.5?	Arbor Hills Secondary?	Demonstrated Vol. Reduction	Export Scenario
No	1.40	1.40	No	Yes	15%	A
Imports as a % of available in-county capacity —>			20%			

Gateyard Shortage - 1995 thru the end of 2014				
	Demo'd VR	Flat Stream	30% VR Curve	50% VR Goals
Year in which shortage first occurs —>	1999	2008	2008	2015
Year in which theoretical coverage ends —>	2005	2007	2008	2015
- Additional Shortage over next 4 Years —>	(17.875)	(13.983)	(14.399)	(9.826)
Total Shortage thru the end of 2018 —>	(32.030)	(19.589)	(19.341)	(9.826)

New Capacity?	No
Bankyard Size	0
Factor	0.00
Year Open	----

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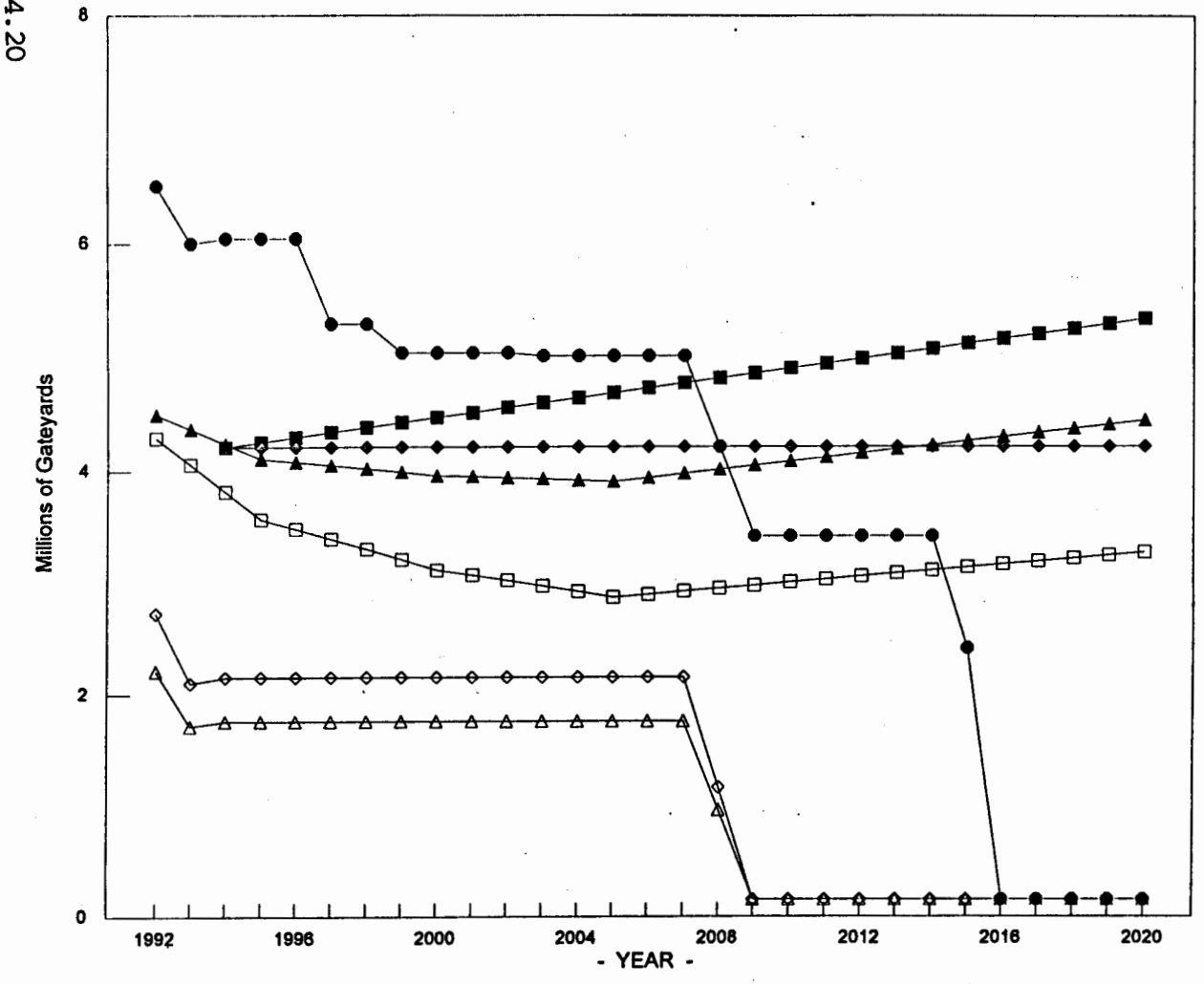
06/12/94

4.20



Oakland County

Disposal Capacity Availability

- Demonstrated VR - Constant % Projection
- Demo'd Waste Stream - Flat Projection
- Year 2005 - 30% VR Achievement Level
- Year 2005 50% Volume Reduction Goals
- Total Capacity at In-County Landfills
- Net In-County Capacity after Imports
- Net Total Available Capacity

Landfill Operating Factors

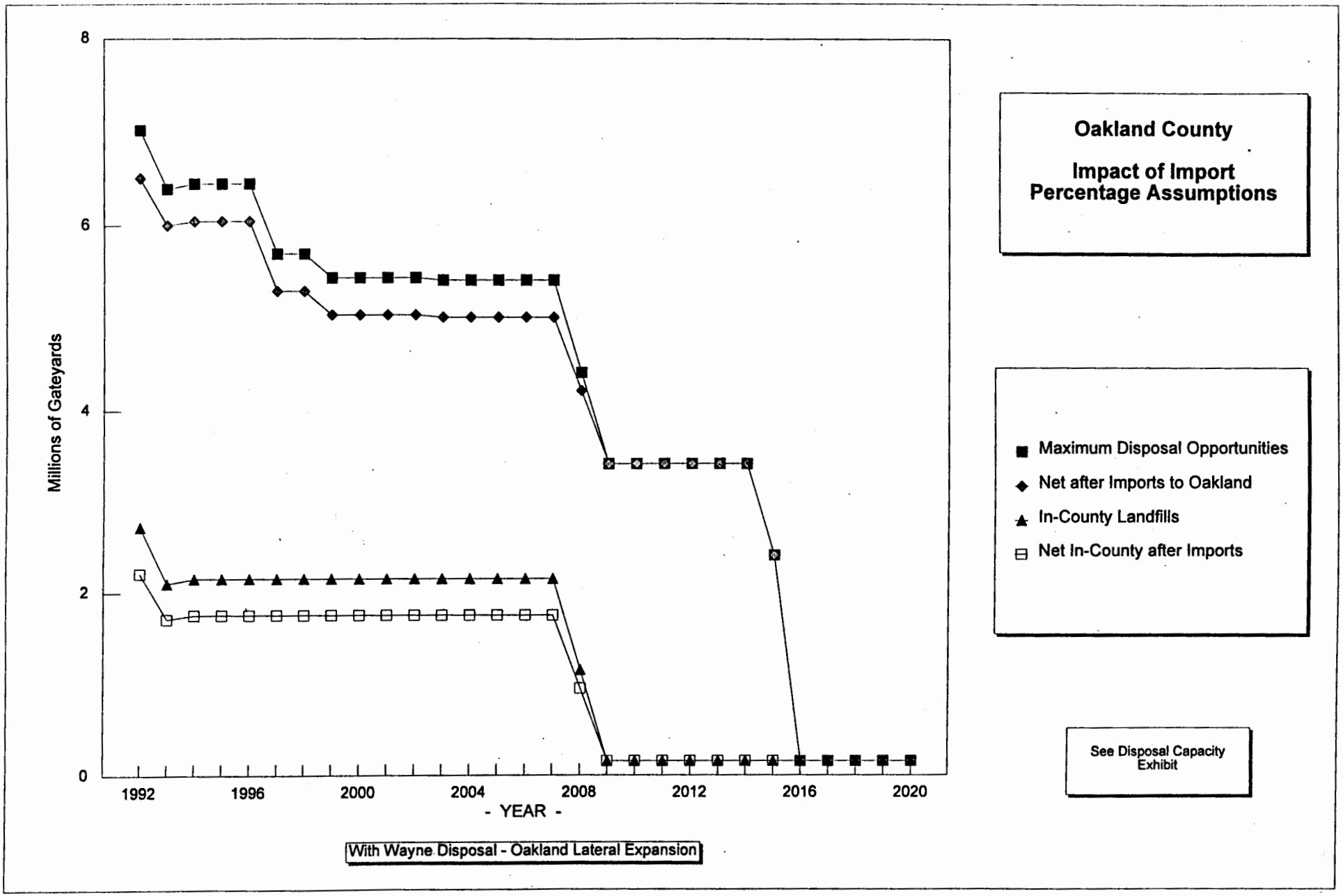
1.0 = 2,500 Glyds / Working Day
1.4 = 3,500 Glyds / Working Day
1.7 = 4,250 Glyds / Working Day
2.0 = 5,000 Glyds / Working Day
(2,500 x 286 = 715,000 Glyds / Year)
(3,500 x 286 = 1,001,000 Glyds / Year

With Wayne Disposal - Oakland Lateral Expansion

Principal Variables

Wayne-Oakland Expansion?	Wayne-Oakland Factor	Eagle Valley Factor	Genesee Co Exports @ 0.5?	Arbor Hills Secondary?	Demonstrated Vol. Reduction	Export Scenario	Gateyard Shortage - 1995 thru the end of 2014				New Capacity?	No
							Demo'd VR	Flat Stream	30% VR Curve	50% VR Goals	Bankyard Size	0
Yes	1.40	1.40	No	Yes	15%	A	(9.951)	(4.805)	(4.344)	0.000	Factor	0.00
Imports as a % of available in-county capacity --->			20%	Year in which shortage first occurs --->			2008	2009	2009	2015	Year Open	----
				Year in which theoretical coverage ends --->			2008	2009	2009	2015		
				Additional Shortage over next 4 Years --->			(17.875)	(13.983)	(14.399)	(9.826)		21:09
				Total Shortage thru the end of 2018 --->			(27.826)	(18.788)	(18.743)	(9.826)		06/12/94

RJS, PE


Oakland County
Impact of Import Percentage Assumptions
Maximum Disposal Opportunities
Net after Imports to Oakland
In-County Landfills
Net In-County after Imports
See Disposal Capacity Exhibit
Millions of Gateyards
8
6
4
2
0
1992
1996
2000
2004
2008
2012
2016
2020
- YEAR -
With Wayne Disposal - Oakland Lateral Expansion

Solid Waste Database
Oakland County, Michigan

06/12/94
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RJS, PE

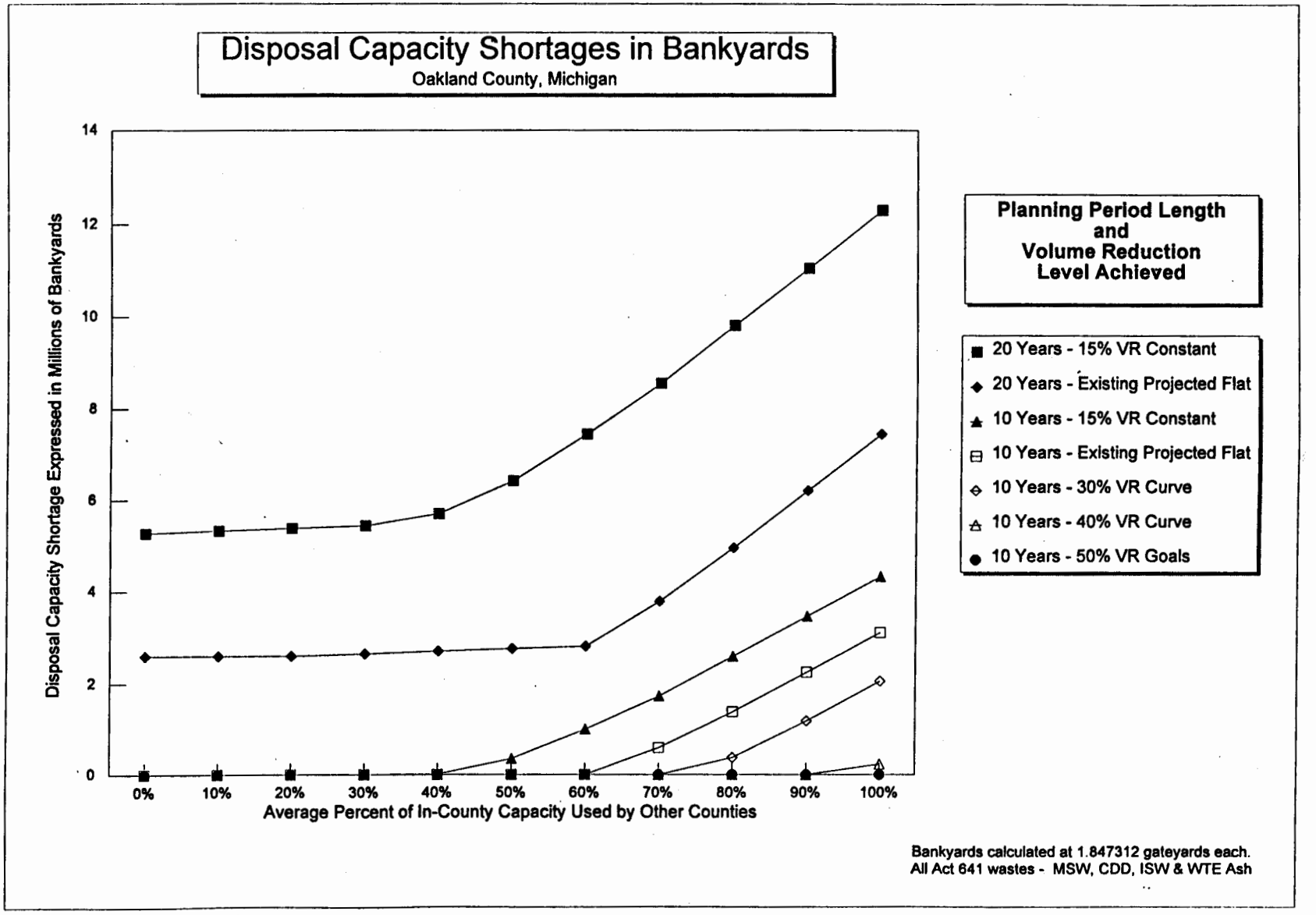
Principal Assumptions:

Given inter-county flows as described in Exhibit 3.9 and as verified with MDNR on May 23, 1994 and as outlined in the MDNR letter of May 24, 1994, the following shortages in available disposal capacity may be projected, depending upon the level of imports back into Oakland County.

Shortages in Available Disposal Capacity

1.847 Gateyards per Bankyard (Oakland County - 30% VR including MSW, CDD, ISW & WTE Ash)

Percent of In-County Capacity used by Other Counties	20 Years, 1-95 thru 12-2014				10 Years, 1-95 thru 12-2004										Percent of In-County Capacity used by Other Counties
	15% VR Constant		15% Flat		15% VR Constant		15% Flat		30% VR Curve		40% VR Curve		50% VR Goals		
	Gtyds	Bnkyds	Gtyds	Bnkyds	Gtyds	Bnkyds	Gtyds	Bnkyds	Gtyds	Bnkyds	Gtyds	Bnkyds	Gtyds	Bnkyds	
Entire Range															**Entire Range**
0%	9.751	5.278	4.805	2.601	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0%
10%	9.851	5.333	4.805	2.601	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	10%
20%	9.951	5.387	4.805	2.601	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	20%
30%	10.051	5.441	4.905	2.655	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	30%
40%	10.539	5.705	5.005	2.709	0.032	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	40%
50%	11.862	6.421	5.105	2.763	0.654	0.354	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	50%
60%	13.755	7.446	5.206	2.818	1.846	0.999	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	60%
70%	15.798	8.552	7.008	3.794	3.189	1.726	1.101	0.596	0.000	0.000	0.000	0.000	0.000	0.000	70%
80%	18.100	9.798	9.148	4.952	4.790	2.593	2.541	1.376	0.695	0.376	0.000	0.000	0.000	0.000	80%
90%	20.402	11.044	11.451	6.199	6.392	3.460	4.143	2.243	2.179	1.180	0.000	0.000	0.000	0.000	90%
100%	22.705	12.291	13.753	7.445	7.993	4.327	5.745	3.110	3.781	2.047	0.430	0.233	0.000	0.000	100%
Probable Range of Reasonableness															**Probable Range of Reasonableness**
20%	9.951	5.387	4.805	2.601	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	20%
25%	10.001	5.414	4.855	2.628	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	25%
30%	10.051	5.441	4.905	2.655	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	30%
33%	10.103	5.469	4.935	2.671	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	33%
40%	10.539	5.705	5.005	2.709	0.032	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	40%


Disposal Capacity Shortages in Bankyards
Oakland County, Michigan
Disposal Capacity Shortage Expressed in Millions of Bankyards
14
12
10
8
6
4
2
0
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Average Percent of In-County Capacity Used by Other Counties
Planning Period Length and Volume Reduction Level Achieved
20 Years - 15% VR Constant
20 Years - Existing Projected Flat
10 Years - 15% VR Constant
10 Years - Existing Projected Flat
10 Years - 30% VR Curve
10 Years - 40% VR Curve
10 Years - 50% VR Goals
Bankyards calculated at 1.847312 gateyards each.
All Act 641 wastes - MSW, CDD, ISW & WTE Ash

Solid Waste Database
Oakland County, Michigan

06/13/94
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RJS, PE

20% Imports as a % of available in-county capacity from other Counties

Oakland County's Gateyards at ...

Year	Zero Volume Reduction			Demonstrated Volume Reduction Percentage Unchanged					Demonstrated Stream Projected Flat					30% Volume Reduction Curve (60% of Goal Curve)					Year
	Gateyards/Yr	In Millions	Percent Covered	Gateyards/Yr	In Millions	Percent Covered	Shortage	% Local Exports Used	Gateyards/Yr	In Millions	Percent Covered	Shortage	% Local Exports Used	Gateyards/Yr	In Millions	Percent Covered	Shortage	% Local Exports Used	
1992	4,844,977	4.845												4,503,387	4.503				1992
1993	4,895,704	4.896												4,375,562	4.376				1993
1994	4,946,431	4.946	122.26%	4,216,832	4.217	143.42%	0.000	52.93%	4,216,832	4.217	143.42%	0.000	52.93%	4,244,140	4.244	142.49%	0.000	53.63%	1994
1995	4,997,157	4.997	121.02%	4,260,077	4.260	141.96%	0.000	54.04%	4,216,832	4.217	143.42%	0.000	52.93%	4,109,122	4.109	147.17%	0.000	50.16%	1995
1996	5,047,884	5.048	119.80%	4,303,321	4.303	140.53%	0.000	55.16%	4,216,832	4.217	143.42%	0.000	52.93%	4,082,043	4.082	148.15%	0.000	49.47%	1996
1997	5,098,611	5.099	103.92%	4,346,566	4.347	121.90%	0.000	69.69%	4,216,832	4.217	125.65%	0.000	65.56%	4,053,628	4.054	130.71%	0.000	60.36%	1997
1998	5,149,338	5.149	102.90%	4,389,811	4.390	120.70%	0.000	71.06%	4,216,832	4.217	125.65%	0.000	65.56%	4,023,875	4.024	131.68%	0.000	59.41%	1998
1999	5,200,065	5.200	96.97%	4,433,055	4.433	113.75%	0.000	78.87%	4,216,832	4.217	119.58%	0.000	71.37%	3,992,786	3.993	126.29%	0.000	63.61%	1999
2000	5,250,792	5.251	96.04%	4,476,300	4.476	112.65%	0.000	80.37%	4,216,832	4.217	119.58%	0.000	71.37%	3,960,360	3.960	127.33%	0.000	62.48%	2000
2001	5,301,519	5.302	95.12%	4,519,545	4.520	111.57%	0.000	81.87%	4,216,832	4.217	119.58%	0.000	71.37%	3,951,132	3.951	127.62%	0.000	62.16%	2001
2002	5,352,246	5.352	94.21%	4,562,789	4.563	110.52%	0.000	83.37%	4,216,832	4.217	119.58%	0.000	71.37%	3,940,998	3.941	127.95%	0.000	61.81%	2002
2003	5,402,973	5.403	92.87%	4,606,034	4.606	108.94%	0.000	85.61%	4,216,832	4.217	118.99%	0.000	72.00%	3,929,959	3.930	127.68%	0.000	61.97%	2003
2004	5,453,699	5.454	92.00%	4,649,279	4.649	107.92%	0.000	87.12%	4,216,832	4.217	118.99%	0.000	72.00%	3,918,016	3.918	128.06%	0.000	61.55%	2004
2005	5,504,426	5.504	91.16%	4,692,523	4.693	106.93%	0.000	88.63%	4,216,832	4.217	118.99%	0.000	72.00%	3,905,167	3.905	128.49%	0.000	61.10%	2005
2006	5,555,153	5.555	90.32%	4,735,768	4.736	105.95%	0.000	90.14%	4,216,832	4.217	118.99%	0.000	72.00%	3,941,300	3.941	127.31%	0.000	62.36%	2006
2007	5,605,880	5.606	89.51%	4,779,013	4.779	104.99%	0.000	91.66%	4,216,832	4.217	118.99%	0.000	72.00%	3,977,433	3.977	126.15%	0.000	63.63%	2007
2008	5,656,607	5.657	74.55%	4,822,257	4.822	87.44%	(0.605)	100.00%	4,216,832	4.217	100.00%	(0.000)	100.00%	4,013,566	4.014	105.06%	0.000	93.36%	2008
2009	5,707,334	5.707	59.85%	4,865,502	4.866	70.21%	(1.450)	100.00%	4,216,832	4.217	81.01%	(0.801)	100.00%	4,049,698	4.050	84.35%	(0.634)	100.00%	2009
2010	5,758,061	5.758	59.33%	4,908,747	4.909	69.59%	(1.493)	100.00%	4,216,832	4.217	81.01%	(0.801)	100.00%	4,085,831	4.086	83.61%	(0.670)	100.00%	2010
2011	5,808,788	5.809	58.81%	4,951,991	4.952	68.98%	(1.536)	100.00%	4,216,832	4.217	81.01%	(0.801)	100.00%	4,121,964	4.122	82.87%	(0.706)	100.00%	2011
2012	5,859,514	5.860	58.30%	4,995,236	4.995	68.39%	(1.579)	100.00%	4,216,832	4.217	81.01%	(0.801)	100.00%	4,158,097	4.158	82.15%	(0.742)	100.00%	2012
2013	5,910,241	5.910	57.80%	5,038,481	5.038	67.80%	(1.622)	100.00%	4,216,832	4.217	81.01%	(0.801)	100.00%	4,194,229	4.194	81.45%	(0.778)	100.00%	2013
2014	5,960,968	5.961	57.31%	5,081,725	5.082	67.22%	(1.666)	100.00%	4,216,832	4.217	81.01%	(0.801)	100.00%	4,230,362	4.230	80.75%	(0.814)	100.00%	2014
2015	6,011,695	6.012	40.19%	5,124,970	5.125	47.14%	(2.709)	100.00%	4,216,832	4.217	57.29%	(1.801)	100.00%	4,266,495	4.266	56.63%	(1.850)	100.00%	2015
2016	6,062,422	6.062	2.57%	5,168,215	5.168	3.02%	(5.012)	100.00%	4,216,832	4.217	3.70%	(4.061)	100.00%	4,302,627	4.303	3.63%	(4.147)	100.00%	2016
2017	6,113,149	6.113	2.55%	5,211,459	5.211	2.99%	(5.055)	100.00%	4,216,832	4.217	3.70%	(4.061)	100.00%	4,338,760	4.339	3.60%	(4.183)	100.00%	2017
2018	6,163,876	6.164	2.53%	5,254,704	5.255	2.97%	(5.099)	100.00%	4,216,832	4.217	3.70%	(4.061)	100.00%	4,374,893	4.375	3.57%	(4.219)	100.00%	2018
2019	6,214,603	6.215	2.51%	5,297,949	5.298	2.94%	(5.142)	100.00%	4,216,832	4.217	3.70%	(4.061)	100.00%	4,411,026	4.411	3.54%	(4.255)	100.00%	2019
2020	6,265,329	6.265	2.49%	5,341,193	5.341	2.92%	(5.185)	100.00%	4,216,832	4.217	3.70%	(4.061)	100.00%	4,447,158	4.447	3.51%	(4.291)	100.00%	2020

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 the 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 or 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 either recyclables or 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 the 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

Solid Waste Database
Oakland County, Michigan

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

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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.

SOCRRA Municipalities and the City of Southfield
Municipal Solid Waste Collections in Tons

July, 1992 thru June, 1993

Municipality	Mixed Wastes	Yard Wastes	% Compost	Recyclables: News	Glass	Plastics	Metal	Total Recycled Tons	% Recycled	All Tons	Total Percent Reduction
Berkley	8,302.00	2,690.82	22.32%	705.60	200.07	38.29	121.07	1,065.03	8.83%	12,057.85	31.15%
Beverly Hills	4,870.66	1,812.73	24.38%	528.85	122.05	16.50	83.79	751.19	10.10%	7,434.58	34.49%
Birmingham	13,028.61	5,387.25	26.82%	1,115.49	359.31	55.49	137.81	1,668.10	8.31%	20,083.96	35.13%
Clawson	6,368.45	2,375.72	24.89%	492.25	147.80	27.94	133.73	801.72	8.40%	9,545.89	33.29%
Ferndale	13,272.22	3,250.19	18.23%	719.14	219.82	38.85	333.28	1,311.09	7.35%	17,833.50	25.58%
Hazel Park	12,278.56	1,830.18	12.81%	48.64	0.00	108.80	21.87	179.31	1.25%	14,288.03	14.06%
Huntington Woods	4,159.34	1,910.00	28.94%	384.85	97.65	11.20	35.75	529.45	8.02%	6,598.79	36.97%
Lathrup Village	2,323.80	923.02	27.03%	122.41	12.62	5.06	28.30	168.39	4.93%	3,415.21	31.96%
Madison Heights	14,258.50	4,061.64	20.47%	917.29	251.94	64.46	283.38	1,517.07	7.65%	19,837.21	28.12%
Oak Park	13,900.45	3,363.20	18.42%	665.48	166.73	17.67	147.89	997.77	5.46%	18,261.42	23.88%
Pleasant Ridge	1,499.94	755.36	30.05%	201.02	11.16	40.39	5.75	258.32	10.28%	2,513.62	40.33%
Royal Oak	32,335.85	12,745.35	25.49%	3,445.58	726.24	166.82	579.88	4,918.52	9.84%	49,999.72	35.33%
Royal Oak Township	1,076.15	0.00	0.00%	0.00	0.00	0.00	2.82	2.82	0.26%	1,078.97	0.26%
Troy	32,831.85	6,254.10	14.24%	2,814.96	777.61	594.96	633.96	4,821.49	10.98%	43,907.44	25.22%
SOCRRA Totals	160,506.38	47,359.54	20.88%	12,161.56	3,093.00	1,186.43	2,549.28	18,990.27	8.37%	226,856.19	29.25%
Percent	70.75%	20.88%		5.36%	1.36%	0.52%	1.12%	8.37%		100.00%	
Southfield	25,424.72	7,360.99	20.69%	2,095.16	464.68	96.12	136.87	2,792.83	7.85%	35,578.54	28.54%
Percent	71.46%	20.69%		5.89%	1.31%	0.27%	0.38%	7.85%		100.00%	
Grand Totals	185,931.10	54,720.53	20.85%	14,256.72	3,557.68	1,282.55	2,686.15	21,783.10	8.30%	262,434.73	29.15%
Percent	70.85%	20.85%		5.43%	1.36%	0.49%	1.02%	8.30%		100.00%	

Data presented includes all municipal services and drop-off recycling center data.
Southfield's mixed-waste and yard waste data represents calculated weights derived from gateyard and sample weight records.
Note: Values and Percentages may not sum due to rounding.

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Southfield Single Family Municipal Solid Waste Collection Data

Volume Reduction Program - First Three Years

	Mixed Wastes	Spring Cleanup	Yard Wastes	* Recycling	Totals	Total Volume Reduction
Year One Totals						
Gateyards	58,325	7,106	4,226	8,264	77,921	
%	74.85%	9.12%	5.42%	10.61%		16.03%
Tonnage	25,357	1,599	2,143	2,630	31,729	
%	79.92%	5.04%	6.76%	8.29%		15.04%
Lbs. / Gateyard	869.51	450.00	1,014.40	636.45	814.40	
Year Two Totals						
Gateyards	54,256	8,598	9,481	7,438	79,774	
%	68.01%	10.78%	11.88%	9.32%		21.21%
Tonnage	23,588	1,935	4,809	2,369	32,700	
%	72.13%	5.92%	14.71%	7.24%		21.95%
Lbs. / Gateyard	869.50	450.00	1,014.40	637.00	819.83	
Year Three Totals						
Gateyards	55,379	5,993	14,513	7,435	83,320	
%	66.47%	7.19%	17.42%	8.92%		26.34%
Tonnage	24,076	1,348	7,361	2,349	35,135	
%	68.52%	3.84%	20.95%	6.69%		27.64%
Lbs. / Gateyard	869.51	450.00	1,014.40	631.99	843.38	

* Does not include Drop-off Center recyclables.

Southfield's mixed-waste and yard waste tonnage displays represent calculated weights derived from gateyard and sample weight records.

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Southfield Single Family Municipal Solid Waste Collection Data

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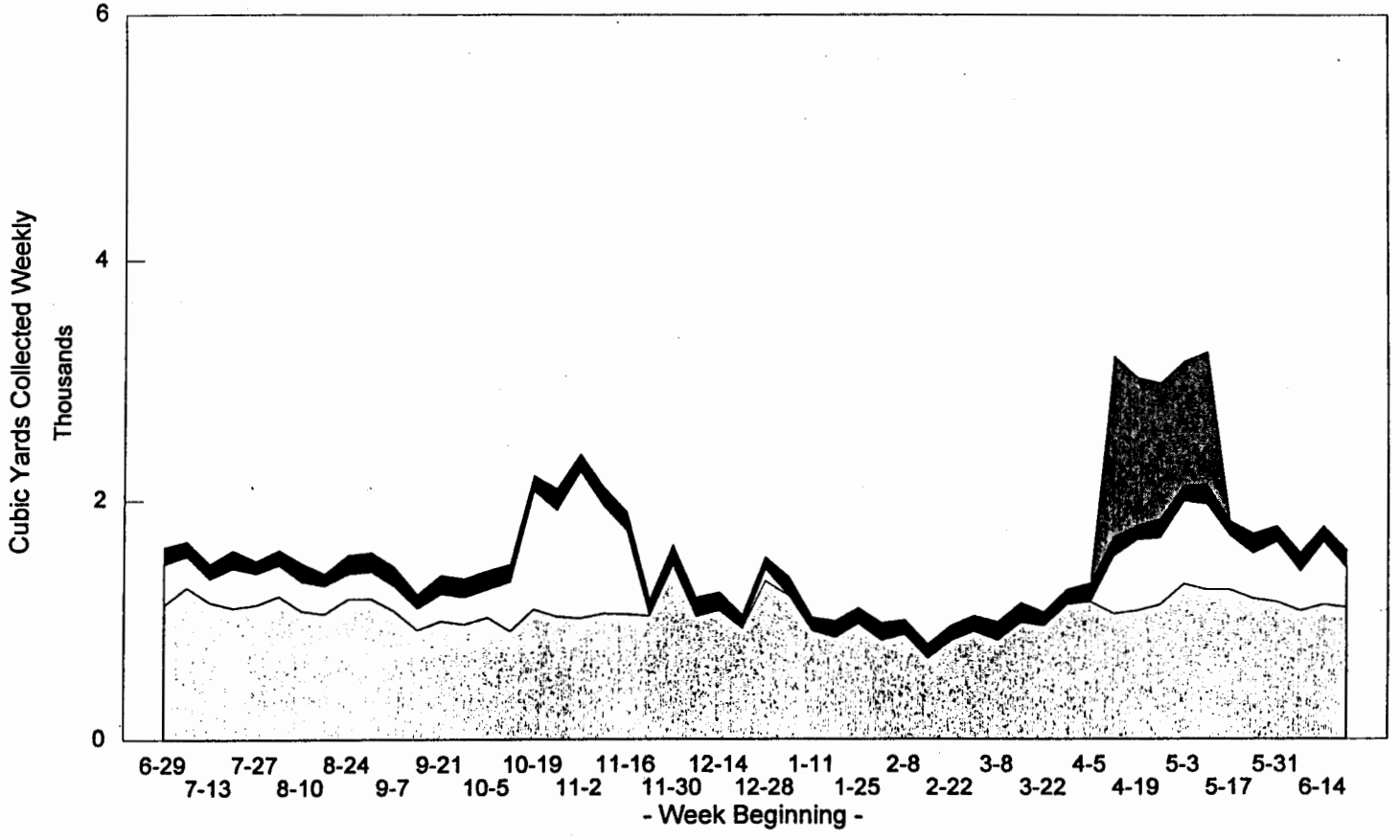
Volume Reduction Program - Year Three (7-1-92 thru 6-30-93)

Contract Week No.	Week Beginning	VR Week No.	Cubic Yards: Mixed Wastes	Spring Cleanup	Yard Wastes	* Recycling	Totals	Percentages: Yard Wastes	* Recycling	Actual Recycle Tons **
126	6-29***	105	750		216	87	1,053	20.51%	8.27%	27.541
127		106	1,275		259	127	1,661	15.60%	7.62%	39.999
128	7-13	107	1,150		194	131	1,475	13.15%	8.87%	41.354
129		108	1,100		330	155	1,585	20.82%	9.78%	48.994
130	7-27	109	1,125		263	111	1,499	17.55%	7.37%	34.928
131		110	1,200		260	128	1,588	16.37%	8.06%	40.362
132	8-10	111	1,075		242	159	1,476	16.39%	10.79%	50.226
133		112	1,050		235	105	1,390	16.91%	7.55%	33.058
134	8-24	113	1,175		210	160	1,545	13.59%	10.38%	50.556
135		114	1,175		228	166	1,569	14.53%	10.56%	52.242
136	9-7	115	1,075		206	164	1,445	14.25%	11.38%	51.861
137		116	916		177	122	1,215	14.57%	10.04%	38.472
138	9-21	117	991		223	160	1,374	16.23%	11.67%	50.598
139		118	963		224	159	1,346	16.64%	11.83%	50.203
140	10-5	119	1,020		232	163	1,415	16.40%	11.49%	51.199
141		120	905		410	153	1,468	27.93%	10.43%	48.234
142	10-19	121	1,087		993	129	2,209	44.95%	5.85%	40.704
143		122	1,030		887	184	2,101	42.22%	8.74%	57.867
144	11-2	123	1,013		1,233	143	2,389	51.60%	6.00%	45.070
145		124	1,051		905	157	2,113	42.84%	7.41%	49.237
146	11-16	125	1,046		701	161	1,908	36.75%	8.42%	50.496
147		126	1,034			137	1,171		11.73%	43.201
148	11-30	127	1,460			166	1,626		10.22%	52.396
149		128	1,025			166	1,191		13.92%	52.275
150	12-14	129	1,075			157	1,232		12.71%	49.366
151		130	925			115	1,040		11.05%	36.247
152	12-28	131	1,325		98	102	1,525	6.43%	6.70%	32.268
153		132	1,200			160	1,360		11.76%	50.636
154	1-11-93	133	905			113	1,018		11.07%	35.685
155		134	850			138	988		13.96%	43.684
156	1-25	135	965			133	1,098		12.09%	42.022
157		136	825			149	974		15.31%	46.949
158	2-8	137	875			123	998		12.31%	38.653
159		138	675			122	797		15.26%	38.256
160	2-22	139	823			128	951		13.47%	40.313
161		140	900			134	1,034		12.94%	42.199
162	3-8	141	825			155	980		15.83%	48.922
163		142	975			168	1,143		14.66%	52.841
164	3-22	143	945			119	1,064		11.15%	37.417
165		144	1,125			129	1,254		10.26%	40.731
166	4-5	145	1,150			158	1,308		12.08%	50.315
167		146	1,050	1,503	483	160	3,196	15.11%	5.01%	51.042
168	4-19	147	1,075	1,230	589	125	3,019	19.51%	4.14%	39.816
169		148	1,125	1,132	558	161	2,976	18.75%	5.42%	51.343
170	5-3	149	1,300	1,030	693	133	3,156	21.96%	4.22%	42.137
171		150	1,250	1,098	714	171	3,233	22.09%	5.29%	54.073
172	5-17	151	1,250		450	126	1,826	24.64%	6.92%	40.014
173		152	1,175		375	171	1,721	21.79%	9.94%	54.159
174	5-31	153	1,150		500	132	1,782	28.06%	7.41%	42.105
175		154	1,075		325	158	1,558	20.86%	10.16%	50.495
176	6-14	155	1,125		525	130	1,780	29.49%	7.33%	41.592
177		156	1,100		325	155	1,580	20.57%	9.82%	49.480
178	6-28***	157	650		250	18	918	27.24%	1.93%	5.653
Year Three Totals			55,379	5,993	14,513	7,435	83,320			2,349.485
Percent by Category			66.47%	7.19%	17.42%	8.92%	100.00%	17.42%	8.92%	
Lbs. / Cu. Yd. Factor			869.51	450	1,014.4	631.99	843.38			
Estimated Tonnage			24,076	1,348	7,361	2,349	35,135			

Notes:
* Recycling yardage estimated from actual weights. Drop-off tonnages not included.
** Tonnages displayed have been adjusted for "shrinkage."
*** Partial week, not shown in graphic displays.

Southfield's Volume Reduction Program

Year Three - July, 1992 thru June, 1993



Tot. Vol. = 83,320 cu. yds. Yard Wastes = 17.42% Recyclables = 8.92%

Chapter 5

Interim Siting Mechanisms

INTRODUCTION

Act 641's original Administrative Rules, as filed with the Secretary of State on December 21, 1981, R 299.4711 (e) (iii), require that if a County's Solid Waste Management Plan does not contain access to disposal capacity for the 20 year period subsequent to the time of Plan approval, that Plan must contain an interim siting mechanism that guarantees siting of necessary disposal capacity for the 20 year period subsequent to plan approval. Oakland County's 1990 Solid Waste Management Plan Update received the conditional approval of the MDNR Director on November 8, 1991. The Director's approval indicated that lacking quantified inter-county flows, the Department could not determine whether or not the Oakland County plan contained the required 20 years of access to disposal capacity. Quantified inter-county flow information was requested and failing the demonstration of access to 20 years of disposal capacity, a new interim siting mechanism would have to be adopted since the first was judged not to guarantee disposal capacity siting. The subject of quantified flows to other non-Oakland County disposal areas is covered elsewhere in this document (see **Chapters 3 and 4**).

Pending Legislation and Administrative Interpretations: At the time of preparation of this document, many changes are being contemplated to Act 641 and its related Administrative Rules. It is the expressed intent of this amendment that should new legislation be adopted during or after approval of this amendment document by the Oakland County Board of Commissioners, which may shorten the length of the planning period (ie: from 20 years to 10 years) or which may specifically identify the time that sitings of additional disposal capacity must occur (ie: changing from current interpretations that if requested by an applicant that meets specific criteria, whenever the County cannot demonstrate access to available disposal capacity for the subsequent 20 years to some shorter period of time such as whenever the County cannot show that access to 5 years of available disposal capacity exists), that the newly adopted time periods identified either in legislation or by rule making shall be automatically substituted in this amendment.

It is further Oakland County's belief that the current law and administrative rules do not speak to the issue of when forced sitings of necessary capacity must occur. The law and 1981 rules are interpreted by MDNR staff so as to cause the interim siting mechanism to be operative immediately upon approval by the MDNR Director. Oakland County's stance is that forced sitings of additional disposal capacity should only occur when available disposal capacity diminishes to five years. The US Supreme Court decision of June 1, 1992 has dramatically altered the dynamics of the waste disposal scene, particularly in areas that currently have, or may have as a result of forced sitings, excess landfill operating capacity. Long-standing interpretations of the 1981 Administrative Rules no longer seem to remain valid. Therefore, should MDNR issue a new administrative interpretation that changes when forced sitings must occur, that these time periods shall also be automatically substituted in this amendment.

All parties involved in the approval process for this document in Oakland County (the Solid Waste Planning Committee, the Board of Commissioners, and each municipality), explicitly acknowledge by their approval of this document that such shorter periods of time are an important element in managing available disposal capacity for use by approved waste sources and when new capacity is brought on-line. ***The impacted segments of this document are indicated in bold italics, the same text face used in this sentence.***

Interim Siting Mechanisms: Under Michigan's Act 641 and its Administrative Rules as currently interpreted, to the extent that access to disposal capacity is demonstrated in Chapters 3 and 4 for the ***20 year period subsequent to approval of this Plan Amendment***, those portions of this chapter pertaining to landfills could be declared null and void. However, MDNR entered into a Stipulation and Order with a third party which has resulted in an opinion by the Attorney General's office that Oakland County's Plan Update must contain an interim siting mechanism in any event. Should that opinion be reversed, and demonstration of 20 years of disposal capacity be accomplished, it is Oakland County's position that the landfill portions herein be declared null and void.

The mechanism that follows in this Chapter will be employed when certified by the Board of Commissioners, as otherwise provided in this plan (see **Chapter 4 & Chapter 5 - Part A, Section II and Section III**), or by law.

It is an objective of the Oakland County Solid Waste Plan to provide for proper disposal of all solid waste generated in Oakland County. New facilities, expansions of existing facilities or significant changes in use of facilities must be evaluated for consistency with the Solid Waste Plan. Facilities subject to the facility evaluation process include: landfills, transfer stations, and recyclable materials processing centers that may handle some level of mixed-wastes. This Chapter presents criteria and a process for evaluating these types of proposed solid waste management facilities for their consistency with the Plan. Incineration facilities, waste-to-energy facilities, mixed waste composting facilities and new and/or experimental technologies which may result in new solid waste disposal, processing or reduction facilities will not be considered for consistency with the Plan under the interim siting mechanism contained herein. Consistency for such facilities will be considered on an individual basis as part of a 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 Board of Commissioners.

Landfills: If Oakland County is able to demonstrate that access to disposal capacity is available for all wastes generated in the County for that period starting with receipt of an application for consistency through ***and concluding 20 years hence***, no proposed solid waste landfill must be sited (found consistent) with this Plan. However, should an insufficient amount of disposal capacity remain, solid waste landfill proposals which meet minimum objective criteria for landfills contained in this Chapter must be sited until once again, the future is insured. Requests for determinations of consistency (ie: designation in the approved Plan), if such Requests are currently being received, must be submitted to the County for review by a Solid Waste Management Committee (SWMC) and ultimately for a determination of consistency by the County Board of Commissioners. It should be noted that a finding of sufficient disposal capacity by the County such that Requests are not currently being received may be reviewed by the Director of the DNR if requested by the proposer. The DNR shall review the final determination of consistency or inconsistency made by the County to determine that the criteria contained in this Chapter have been appropriately applied and the review procedure properly adhered to, after a full review of the Request by the County.

Other Act 641 Facilities: Other Act 641 facilities (transfer stations and material recovery facilities) may be found consistent with the Plan should they meet a second set of minimum objective criteria. Requests for determinations of consistency for these facilities must also be submitted to the County for review by a Solid Waste Management Committee and ultimately for a determination of consistency by the County Board of Commissioners.

OVERVIEW

A Solid Waste Management Committee (SWMC), appointed by the County Board of Commissioners, will evaluate the project for its compliance with the criteria established in the Plan, if the request is determined to be administratively complete by the Designated Planning Agency staff. The SWMC shall evaluate the proposal for consistency or inconsistency with the Plan and forward their findings and recommendations to the County Board of Commissioners.

The County Board of Commissioners is responsible for verifying that the SWMC reviewed the proposal(s) in accordance with the siting mechanism contained in the Plan. The County Board of Commissioners is responsible for making a determination of consistency or inconsistency in accordance with the siting mechanism contained in the Plan. A final determination of consistency is made by the Director of the Department of Natural Resources. Proposals found consistent are thereby included within the Plan. Inconsistent projects are not included within the Plan.

The Facility Evaluation Process applies to all proposals generated by the public sector, private sector, or by not-for-profit groups. **Chapter 5, Part A** defines the procedures for review of proposals by the Solid Waste Management Committee and the County Board of Commissioners. **Chapter 5, Part B** lists the information required for an administratively complete proposal and **Chapter 5, Part C1 - Landfills** contains the criteria which all landfill proposals shall meet as a minimum, and against which the proposals will be reviewed. In the event that competing, simultaneous landfill proposals are being reviewed by the County, and not all are required to be sited to fulfill the disposal capacity needs of the County, **Chapter 5, Part D** contains supplemental criteria for landfills which may be used by the County to select between the multiple proposals which meet all of the criteria listed in **Chapter 5, Part C - Landfills**. Proposers of other Act 641 facilities shall follow the same procedures but shall meet as a minimum, the criteria contained in **Chapter 5, Part C2 - Other Act 641 Facilities.**

At the time a proposal is submitted for review, all documents needed to demonstrate compliance with the informational requirements and the siting criteria detailed in **Chapter 5, Parts B and C**, must be submitted. The proposer of a landfill may also wish to submit information outlined in **Chapter 5, Part D**, inasmuch as should competing proposals be nearly simultaneously received, the proposals will be rank ordered based upon their compliance with these supplemental criteria.

Contents of Chapter 5:

Chapter 5 - Part A

REVIEW PROCEDURES: FACILITY EVALUATION PROCESS

This Part of Chapter 5, establishes the procedure that must be followed by the County Board of Commissioners and a Solid Waste Management Committee (which is appointed by the Board) during the review of proposals submitted for a determination of consistency with the Oakland County Solid Waste Management Plan.

SECTION I: INTRODUCTION

It is the responsibility of the Solid Waste Management Committee (SWMC) to review requests for a determination of consistency with the County's Solid Waste Management Plan. The SWMC then forwards its recommendations to the County Board of Commissioners for a determination of consistency. Final determinations of consistency are made by the Director of the Department of Natural Resources in accordance with the provisions of Act 641. If the project is found consistent with the Plan, it is automatically included within the Plan.

SECTION II: ORGANIZATION AND DEMONSTRATION OF AVAILABLE DISPOSAL CAPACITY

Legend:		
	BoC	Board of Commissioners
	SWMC	Solid Waste Management Committee
	Request	Request for a Determination of Consistency

Board of Commissioners

I. The Board of Commissioners (BoC), in concert with Act 641, from time-to-time, appoints a 14 member Solid Waste Planning Committee (SWPC), membership qualifications being defined by law. All appointments to the SWPC are for two year terms. Re-appointments are made as necessary to fill vacancies or to allow the originally seated SWPC to conclude its business. The 14 voting members of the SWPC, shall at the time this Plan Amendment is initially approved, be simultaneously be seated as voting members of a Solid Waste Management Committee (SWMC).

   A. The initially seated SWMC members will remain seated, even though the original SWPC appointments may have expired, until the BoC appoints or re-appoints members to the SWPC, at which time the newly appointed SWPC member(s) will assume the SWMC member position.

II. The BoC shall by resolution, from time-to-time, establish application fees.

   A. Should the BoC have failed to establish new fees by the time a Request is received, the initial application fee for all landfill Requests will be $10,000 and for all other Requests will be $5,000.

   B. No new fees may be applied retroactively.

   C. Any portion of the fee charged and not used, will be returned. The fees will be used to reimburse the County for expenses such as, but not limited to...

1. Conducting required public meeting and related services.

2. Publication and mailing of notices and printing of documents.

3. Consultant fees for specialized services relating to a review of the project being reviewed, as may determined by the County Executive.

III. The BoC shall annually certify and demonstrate remaining available disposal capacity.

A. Certification of available disposal capacity shall be made annually, by June 30 of each year. ***If a sufficient amount of disposal capacity is available such that during the entire next calendar year the County's disposal capacity will not fall below that minimum reserve required by Amended Act 641 or MDNR, landfill Requests shall not be considered, commencing with the certification date and continuing on through December 31 of the year following.***

If the amount of available disposal capacity is expected to become insufficient such that during the next calendar year the County's disposal capacity will fall below that minimum reserve required by Amended Act 641 or MDNR, landfill Requests will be received by staff during the next calendar year beginning on the insufficient capacity date certified.

B. The certification process shall include either the recertification of the data contained in **Chapters 1, 2, 3 and 4** of this Plan Amendment or the preparation of updated replacement data and information. It is understood that such certifications do not constitute a plan amendment but will allow each certification to rely on up to date data.

C. Certification may be made at any other time as is deemed appropriate by the BoC. Such certifications shall supersede all previous certifications, shall become effective 30 days after adoption, and will remain in effect until the next mid-term or annual certification. Such mid-term certifications, upon the date they become effective, shall not impact upon landfill Requests which have been previously received by the County Executive and which were properly and timely submitted as provided in III. A. above.

D. Should additional disposal capacity be found consistent with the plan, the certified available disposal capacity values shall be automatically adjusted to account for the newly designated capacity on the date such capacity is found consistent. No official action by the Board of Commissioners is necessary for this adjustment to take effect.

County Executive

I. On a temporary project-by-project basis, the membership of the SWMC will be expanded, for the purposes of reviewing individual applications, by the addition of a non-voting representative(s) from each facility host community(ies) involved. These

appointment(s) will be made by the County Executive, the Chairman of the BoC and the Chairman of the BoC's Planning and Building Committee. Host Community representatives shall be selected from a list of names recommended by the Host Community. Names of recommended appointees shall be submitted to the Executive by the Host Community within seven (7) days of notification per Section IV. Additional temporary appointments may be made to the SWMC from another municipality (not containing a portion of the site under consideration) should that community be judged to be potentially and severely impacted by the Request under consideration. The need for such additional non-voting appointments shall be determined by the County Executive, the Chairman of the BoC and the Chairman of the BoC's Planning and Building Committee.

II. If a SWMC member temporarily steps aside for the duration of the process in which a particular Request is being considered (see SWMC Item IV - Structure and Support, following), the County Executive, the Chairman of the BoC, and the Chairman of the BoC's Planning and Building Committee shall temporarily appoint a new SWMC member (using the same Act 641 membership definitions as originally applied to the member temporarily stepping aside) for the purpose of considering that particular Request only.

III. The County Executive will provide support staff for the SWMC.

IV. Should additional disposal capacity be found consistent with the plan, the County Executive will cause the issuance of a revised certification of available disposal capacity (See Step III.D. under the Board of Commissioners.

Solid Waste Management Committee - Structure and Support

I. SWMC shall adopt its own by-laws and establish its own Chair.

II. Host community(ies) representatives (or representatives of other potentially impacted municipalities) appointed by the County Executive, the Chairman of the BoC, and the Chairman of the BoC's Planning and Building Committee on a project-by-project basis, will be allowed a full voice in all SWMC proceedings and access to all materials available to other SWMC members on the appropriate project, but will not be permitted to vote on matters before the SWMC.

III. SWMC support staff will be provided by the County Executive.

IV. If a project Request is received from the company for whom one of the SWMC members works or for which that member's company contracts with, that SWMC member shall temporarily step aside for the duration of the process in which that particular Request is being considered. The County Executive, the Chairman of the BoC and the Chairman of the BoC's Planning and Building Committee shall temporarily appoint a new SWMC member (using the same Act 641 membership definitions as originally applied to the member temporarily stepping aside) for the purpose of considering that particular Request only.

SECTION III: RECEIPT OF REQUESTS FOR CONSISTENCY

I. If a sufficient amount of disposal capacity is available as identified in the certification process (see **Section II**), landfill Requests shall not be considered or received by the County Executive and staff.

II. If an insufficient amount of disposal capacity is available as identified in the certification process (see **Section II**), landfill Requests will be received by the County Executive and staff during the next calendar year beginning on the insufficient capacity date certified.

III. Requests for Other Act 641 facilities will be received at any time.

SECTION IV: PROCESS TO DETERMINE ADMINISTRATIVE COMPLETENESS

Determination of Administrative Completeness (Length of process - 1 to 47 days)

I. The County Executive and staff receive a Request for Consistency.

II. Staff shall immediately notify, by written communication, the SWMC, the BoC Chairperson, the Planning & Building Committee Chairperson, and the host community's chief elected official.

III. Staff shall notify the host community(ies) and all municipalities contiguous thereto within 7 calendar days from receipt of Request.

IV. The County Executive, the Chairman of the BoC and the Chairman of the BoC's Planning and Building Committee shall identify and provisionally appoint (pending commencement of the Review Process) the host community(ies) representative(s) within 21 calendar days from receipt of Request (also see Section II above).

V. Staff shall rule on the administrative completeness of the Request.

A. If complete, Review Process starts upon notification to the proposer.

B. If not complete...

1. Staff notifies proposer, host and contiguous municipalities of missing information.

2. Proposer has 10 calendar days to provide missing information.

a. If missing information is not received, request is rejected.

3. Upon receipt of missing information...

a. Within 7 calendar days, staff rules on completeness.

1. If not complete, request is rejected. Proposer must re-start from the beginning of the process.

2. If complete, Review Process starts.

3. If staff makes no response within 7 days, the Request is considered administratively complete and the Review Process starts.

C. If staff makes no response within 30 days, the Request is considered administratively complete and the Review Process starts.

1. Proposer shall not be penalized for missing information.

2. If and when requested, during remainder of process...

a. Proposer has 10 calendar days to provide missing information. If missing information is not received, request is rejected.

b. Proposer has no obligation to provide missing information if the request from staff is not made within 10 calendar days following the informational meeting. (See Consistency Review Process, Item V.)

SECTION V: CONSISTENCY REVIEW PROCESS

Consistency Review Process (Length of process - 30 to 60 days)

I. Review Process starts.

A. From this time forward in the process and in the interest of maintaining full disclosure to the public and the municipalities, the project proposal may not be amended or altered. Should such occur, the Request must be withdrawn, all unused application fee remainders will be returned, and the Request must be resubmitted from the beginning of the process.

B. The SWMC may continue to request additional information on items relating to the Request, through the support staff, up to 10 calendar days following the informational meeting.

II. Within 7 calendar days of start of Review Process, staff shall notify the following parties...

A. SWMC members and the host community(ies) representative(s).

B. BoC.

C. Host Community(ies) and municipalities contiguous thereto.

III. Staff and the SWMC Chair schedule an informational meeting within 14 calendar days from the start of the Review Process.

IV. Informational meeting must be held within 30 calendar days from the start of the Review Process. The purpose of the meeting is to present the proposal as submitted and to orient citizens and participants to the process.

A. Staff must notify the 61 municipalities at least 10 calendar days prior to the meeting.

B. Staff must publish meeting notice at least 10 calendar days prior to the meeting.

C. Staff must attempt to notify (by first class mail and by publication in an area newspaper) the following parties, based upon the names and addresses contained in the local assessment rolls, at least 7 calendar days prior to the meeting.

1. The property owners within 300 feet of proposer's site.

2. The building occupants within 300 feet of proposer's site.

D. An opportunity for public comment will be provided at the end of the informational meeting.

V. If the SWMC is reviewing a Request for a facility other than a landfill, the SWMC will review the Need Statement (see **Chapter 5 - Part C2**) submitted by the proposer in support of the project and all information and data submitted by staff. The SWMC will forward its findings to the BoC together with the recommendation in paragraph VI.

VI. SWMC will forward their recommendation on Consistency to the BoC within 30 days from the Informational meeting.

VII. Staff will notify the proposer, the host community(ies) and contiguous municipalities of the SWMC's recommendation within 7 calendar days following issuance of the SWMC recommendation.

Finding of Consistency

(Length of process - 20 to 90+ days, see Item II below)

I. If the SWMC fails to make a recommendation on consistency within 30 days of the informational meeting, the BoC will immediately assume control of the process in accordance with the schedule below. (See Item III.)

II. If the SWMC fails to execute other responsibilities or fails to meet other deadlines, the BoC will assume control of the process. In this event, to complete the remaining steps and procedures in an orderly fashion, the BoC will have up to a 30 calendar day pause in the process to establish procedures and set schedules necessary to complete the process.

III. Planning and Building Committee

A. Upon receipt of the recommendation of the SWMC, the Request and the SWMC recommendations will be placed on the next available Planning and Building Committee agenda. If such a meeting is not scheduled within 30 calendar days from receipt of the SWMC recommendations, a special committee meeting will be called at a date not more than 45 days from receipt of the SWMC recommendations. (The length of time involved in this sub-process may be increased should Item II. above be invoked.)

IV. Board of Commissioners

A. Upon receipt of the recommendation of the Planning and Building Committee, the Request and the Planning and Building Committee recommendation will be placed on the next available BoC agenda. If such a meeting is not scheduled within 30 calendar days from receipt of the Planning and Building Committee recommendations, a special BoC meeting will be called. Within 90 days of original receipt of the SWMC recommendations, the BoC will find the Request consistent or inconsistent with the Plan in accordance with the siting criteria and procedures. In its deliberations, the BoC will be guided by the then current certification / demonstration of available disposal capacity. (See Board of Commissioners, item III.) (See Sections I, II, & III for default time lines.)

B. Should the BoC not act within 90 days from receipt of the SWMC recommendations, the Request shall be considered to be consistent with the Plan.

V. Staff will notify the MDNR, the 61 municipalities and the Proposer within 7 calendar days following the Boc finding.

SECTION VI: MISCELLANEOUS

Multiple Proposals (Length of process - indeterminate depending on number of Requests)

I. In the event that multiple Requests are received (the next Request received within 30 days of receipt of the last), and both (or all) are not required to fulfill the disposal capacity shortfall identified in the BoC's most recent certification / demonstration of available disposal capacity (see Board of Commissioners, Item III.), the review processes shall be combined into one process with new deadlines established for all Requests as if they had been received on the same date as the last Request. The individual Request resulting in the longest length of time shall prevail for all Requests.

II. The review process will be amended to include the supplemental criteria contained in **Chapter 5, Part D** of this document if both (all) of the proposals are found to be administratively complete. The competing proposal(s), which is(are) found to meet the criteria and which receive the most points on the supplemental criteria, on a rank-ordered basis, will be found consistent with the Plan, until the disposal capacity deficiency is eliminated. Beyond meeting that requirement, additional sites are not required

to be found consistent with the Plan - but may be, at the discretion of the BoC.

Note: Multiple requests may have to be found consistent should a single proposal not yield sufficient disposal capacity.

Chapter 5 - Part B

ADMINISTRATIVE COMPLETENESS REQUIREMENTS

At the time a proposer submits a proposal for review, all documentation needed to demonstrate compliance with the informational requirements and the siting criteria detailed in **Chapter 5, Parts B and C**, must be submitted.

All proposals submitted to the County Executive shall contain, at a minimum, the following information, certifications, stipulations and agreements. This data is for informational purposes only. Proposers must submit this information for the proposal to be considered administratively complete. Evaluation of a proposal for consistency with the Oakland County Solid Waste Management Plan will be based on the criteria in **Chapter 5, Part C**, and in the case of multiple proposals, the additional optional criteria in **Chapter 5, Part D**. The decision making bodies will reach their decision based solely on the applicant's compliance with the criteria.

The intent of this section is to require the submission of that information that a responsible waste company would normally examine during the course of selecting and formally proposing a site, particularly a landfill site. Additionally, this section includes items that Oakland County believes should be known and understood by a proposer prior to the submission of a Request for Consistency. Although some of this information may not appear to be directly necessary to determine if the criteria contained in Chapter 5 - Part C1 and C2 are met in the application, it is necessary to identify the intentions of the proposer and to secure the proposer's commitment to certain standards. Finally, the amount of information required of proposals other than landfills, will be limited to a sub-set of this complete listing (see Chapter 5 - Part C2).

A. Name, Address, Ownership Information and Telephone Number for...

1. Applicant (including specific ownership interest in the site),
2. Property owner of the site,
3. Consulting Engineers, and
4. Designated project contact person.

B. Site Location and Orientation:

1. Legal Description of Project Area.
2. Site Location Map showing all roadways and principal land features within 2 mile of the perimeter of the site.
3. Topographic Maps - with contour intervals no greater than 10 feet, at a 1 inch = 200 feet scale for the operational area of the site and a 1 inch = 400 feet scale for maps of the entire site.

4. Access Roads:

   a. Location.

   b. Surface condition and material.

   c. Proposed access point to facility.

   d. Identification of all access roads to the site from the State trunkline system.

5. Current zoning map showing all properties and indicating present usage (and proposed master plan use) within 1 mile from the perimeter of the site. Additionally, the land use descriptions contained in the local zoning ordinance and master plan documents should be included for clarity.

C. Land Use and Land Cover:

1. Site land use and cover.

2. Locations of all structures within 1,200 feet from the perimeter of the site.

3. Location of existing utilities.

4. Location of floodplains on the site and within 1,200 feet of the site (as identified on MDNR prepared flood plain maps and as defined in the Act 641 Administrative Rules).

5. General soil characteristics.

D. Preliminary Analysis of Hydrogeological Conditions:

1. Regional geological information focusing upon glacial geology including the following...

   a. Glacial geology,

   b. Major topographic and geomorphic features,

   c. Surface water hydrologic features,

   d. Groundwater hydrologic features,

   e. Recharge areas,

   f. Discharge areas,

   g. Groundwater flow direction,

   h. Principal aquifers,

   i. Public water supplies, and

   j. Existing water quality.

2. Site specific information based upon preliminary site investigations including...

   a. Soil structure,

   b. Soil stratigraphy,

   c. Depth of bedrock (can be based upon other than on-site information),

   d. Structural geology,

   e. Potable water supply aquifers,

   f. All known hydrogeologic units (such as aquifers, perched water tables, aquitards, and aquicludes),

   g. Direction of groundwater flow,

   h. Surface water hydrologic features, including wetlands, and

   i. Boring logs from test drills made at a rate of at least one test drill per 5 acres of total disposal area. At least one of the test drillings will be continuously sampled.

E. Proposed Site and Facility Design:

1. Overview of the Proposal.

2. Location and Size including the following...

   a. Capacity at completion,

   b. Proposed fill area,

   c. Proposed borrow area,

   d. Cell layout,

   e. On-site roads,

   f. Structures,and

   g. Proposed groundwater monitoring wells.

3. Proposed design standards.

4. Proposed construction methods.

5. Proposed leachate collection, disposal and monitoring systems.

6. Proposed methane gas collection and Treatment System.

7. Time Frames for Development, Use, and Closure.

F. Operations:

1. Capacity.

2. Annual usage.

3. Life expectancy of facility.

4. Hours of operation. Oakland County anticipates that hours of operation to receive, process, cover, etc., are to be no longer than from 7:00 a.m. to 8:00 p.m. Monday through Friday and 8:00 a.m. to 3:00 p.m. on Saturday. No Sunday or Holidays (New Years Day, Memorial Day, 4th of July, Labor Day, Thanksgiving, Christmas Day) activity is to occur. Hours of excavation or construction of new cells, maintenance of leachate collection, storage or treatment facilities, or any activities not directly associated with disposal of waste shall conform to the above stated hours. Exceptions will be permissible for construction and maintenance operations that are time critical as to possible loss of materials, quality control, and/or seasonal considerations. Emergency or remedial activities which require operation beyond these hours are also exempt from this requirement. The developer must include a signed statement agreeing to this stipulation.

5. Written, detailed programs to control the following...

   a. Storm water runoff,

   b. Noise,

   c. Litter,

   d. Dust (Oakland County anticipates that all internal and access roadways from the public roadway to the edge of the active fill area must be paved or maintained to eliminate or prevent dust and tracking of mud off the site. The developer must include a signed statement agreeing to this stipulation.),

   e. Odors, and

   f. Emergency responses. What contingency plans are proposed for emergencies? What are the capabilities of the local police and fire departments in meeting these needs? Evidence of contact must be provided for each.

6. Landscaping, including shrubbery and trees, shall be provided and maintained to beautify the view of the landfill. The landscaping must be of sufficient maturity and density to serve as an effective sight barrier around the active fill area. Such barriers shall consist of the following: planting of evergreen trees not more than twelve feet apart, or shrubbery not more than five feet apart, in staggered rows parallel to the boundaries of the property. Evergreen transplants shall be at least four feet in height at the time of planting, and shall grow to not less than ten feet in height, and shall be sufficiently spaced to provide effective sight barriers when ten feet in height. Trees or shrubs which die must be replaced according to the previously described standards during the next growing season. The proposer agrees that idle areas will be seeded and mulched within one-week of completion of work in that area, seasonal conditions permitting.

The developer must include a signed statement agreeing to this stipulation.

G. Traffic Study:

1. The developer must provide a traffic safety study, prepared by a registered professional engineer with demonstrated expertise in traffic safety issues, for all access roads from the State trunkline system to the facility. Issues of concern or hazardous conditions identified as part of the study must be addressed by the developer in the proposal.

2. Indicate truck traffic and traffic patterns anticipated.

H. Reporting Requirements:

1. All operators of solid waste facilities permitted and licensed under Act 641 in Oakland County must provide a written statement agreeing to submit to the Solid Waste Management Committee and the clerk of the host community in which the facility is located on or before the 20th day of January, the 20th day of April, the 20th day of July and the 20th day of October, a quarterly report which covers the preceding three-month period ending on the last day of the preceding month which includes the following information:

   a. Name, location, and permit number of the facility;

   b. Name, address, and telephone number of the facility;

   c. Name, address, and telephone number of the facility operator;

   d. Total quantity of waste received at the facility during the past three months in cubic gate yards;

   e. Total quantity of waste received at the facility during the past three months originating from out-county sources in cubic gate yards by county of origin;

   f. List of all commercial/municipal haulers that have used the facility in the last three months (name, address, and service area and the total quantity of waste received at the facility from that commercial/municipal hauler in cubic gate yards by county of origin; and

   g. An estimate of remaining permitted capacity for continued waste disposal. The method for calculating this capacity must be included in the quarterly report.

I. Certification from the proposer must be included regarding criteria compliance concerning requirements for the following...

1. Natural Areas,

2. Threatened and endangered species and their habitats (Are there any federal or state-listed rare or endangered species? Evidence of contact with MDNR Wildlife Division, Fisheries Division, and Land Resource Programs Division must be provided.),

3. Public recreation areas,

4. Historic sites, districts or buildings (Describe any site or structure of historic significance that may be affected by the project. Evidence of contact with State Historic Preservation Office must be provided.),

5. Archaeological sites (Describe any archaeological site that may be affected by the project. Evidence of contact with State Historic Preservation Office must be provided.),

5. Wetlands, and

6. Location in relationship to aircraft runways. Identify any airports within 10,000 feet of the site. For landfill siting proposals, evidence of contact with the Michigan Aeronautics Commission must be provided, regardless of the site proximity to the airport(s).

J. Stipulations and Agreements to perform must be submitted concerning:

1. Provision of all weather access roads;

2. Maintenance of internal and access roads;

3. Providing water to users if the project causes groundwater contamination (Upon written demonstration by the Michigan Department of Health that a situation exists, which is caused in a significant part or in total by the solid waste facility, that impacts on the health or lives of residences by reason of actual contamination of their water supplies, the owner / operator agrees to immediately provide an alternate source of water meeting the Safe Drinking Water Standards to those affected and designated users. The quantity shall be sufficient to satisfy all normal drinking and household uses and this arrangement must continue until the situation is rectified or in the event that it cannot be, the proposer shall install a public water supply or buy out the involved properties. The developer must include a signed statement agreeing to this stipulation.);

4. Compliance with reporting requirements;

5. Establishment of a local facility operations committee (The developer must provide a written statement agreeing to participate in the establishment of a local facility operations committee. The committee will act as a liaison between the facility operator(s), residents and officials in Oakland County. Members of this committee will have unlimited access to the facility, at reasonable times, so long as their presence does not impede the operation of the facility. Other responsibilities of this committee may be negotiated between the facility operator(s) and the officials in Oakland County.

   Membership on this committee shall include as a minimum, an elected official or planning commission member from the host community, two community residents and one resident from each adjacent/impacted communities. Adjacent/impacted communities being defined as those located within a one mile radius of the site perimeters.

The purpose of this committee is to act as a liaison responding to issues or concerns raised by residents in the area and the Oakland county officials. Violations will be referred to the County Health Department. The committee will also monitor data submitted as required by other portions of this document and conduct other responsibilities assigned to it as a result of the negotiations between the facility operator(s), the host community and Oakland County officials.); and

6. Provision of quarterly monitoring reports. The developer must provide a written statement agreeing to provide the County, the local facility operations committee and/or the host community copies of all quarterly monitoring reports required by DNR, if those agencies so request.

K. Other:

1. The proposer may submit additional information highlighting significant or unique features of the proposal.

L. Note Regarding Multiple Proposals:

1. The proposer should be fully aware that should another proposal be received by the County nearly simultaneously with this proposal, that the proposals will be scored (that is, rank-ordered) in terms of how well these proposals measure in terms of the supplemental criteria shown in **Chapter 5, Part D**. The proposal receiving the highest score in such a process, will be sited and the remaining sites may be rejected. It must be noted, that the applicant is not required to respond to any of the supplemental criteria. This being a matter of choice made at the time of original submittal. Once the proposal clears the test for administrative completeness, the proposer may not submit additional information for consideration.

Chapter 5 - Part C1

FACILITY SITING CRITERIA

CRITERIA FOR DESIGNATING AND SITING ADDITIONAL SANITARY LANDFILL FACILITIES

The following criteria must be met in order for a proposed sanitary landfill and/or an expansion of an existing landfill to be considered consistent with the Oakland County Solid Waste Management Plan.

Proposed disposal facilities and expansions of existing facilities in Oakland County must, as a minimum, comply with all Act 641 rules and regulations as they may exist at the time an application is received. (Compliance with these requirements will ultimately be determined during the MDNR review of the permit application. It is not the intention of this process to review for such detailed compliance.) Additionally, the criteria that follow must be met or exceeded or the proposal will be rejected during the Consistency Review Process.

Primary Criteria:

1. New landfills proposed for inclusion in the Plan must have a minimum site size of 130 acres, which will include the active landfilling space and buffer areas. Additionally, new landfill proposals shall have a minimum bankyard volume of 10.0 million bankyards of usable airspace upon completion.

2. New landfill proposals shall contain buffer areas measuring at least 300 feet from the property line to the perimeter of the disposal area footprint.

3. The site must provide staging and parking areas for trucks, employees and visitors such that off-site access roads remain free of waiting vehicles, including areas outside the site security gates for the storage of vehicles which are anticipated to arrive before opening time. Documentation identifying the number of trucks entering the site must be provided by the developer, including an anticipated hourly arrival schedule and an anticipated early arrival schedule based upon operation of the facility at peak anticipated loading rates.

4. No disposal facility is to be sited in the 100 year flood plain as defined in the Act 641 Administrative Rules. Buffer areas may be located in the 100 year flood plain, provided that no structures or major excavations may occur in the flood plain.

5. No disposal facilities are to be located in Natural Areas as identified in Document No. 192, dated September, 1989, titled "A Natural Areas Inventory of Oakland County", as issued by the Oakland County Planning Division, and as may be amended from time-to-time. Natural Areas contain undisturbed vegetation and resemble the conditions that existed prior to settlement of the area. The buffer areas may include Natural Areas, provided the Natural Area is not disturbed.

6. No landfills may be constructed within 5,000 feet of the runway of an airport licensed to handle piston powered aircraft nor within 10,000 feet of a runway of an airport licensed to accommodate turbo props or jet aircraft. This criteria is required because of the potential hazards to air navigation presented by birds which may be attracted to the landfill site.

7. Disposal facilities are barred from wetlands as defined by the Act 641 Administrative Rules unless the proposer can meet Act 641 rules. Any new wetlands created to mitigate wetland losses shall be located within the County .

8. No disposal area shall be located within the boundaries of an identified wellhead protection area, when such an area is identified in accordance with the U.S. E.P.A. Wellhead Protection Area Code for Wellhead Protection Area Delineation or other federal or state regulations governing the delineation of wellhead protection areas. Such wellhead protection areas shall be identified in well head protection plans approved by the Michigan Department of Natural Resources, and such plans shall be on file with the County of Oakland. A Wellhead Protection Area is defined as the surface and subsurface area surrounding a water well or wellfield supplying a public water system through which contaminates are reasonably likely to move toward and reach such water well or wellfield. In effect, the wellhead protection area is the "capture area" within which pollutants can readily reach public drinking water supplies.

9. No Site shall be located in areas delineated as lying above a U.S. E.P.A. designated unprotected Sole or Principal Source Aquifer (SSA). (This provision is currently not applicable since there are no such designations in the County. However, there may be such designations in the future.)

10. All landfills must have paved access by "All Weather" roads (as defined by the Road Commission for Oakland County (RCOC)) from the site to the State trunkline system (those roadways under the jurisdiction of the Michigan Department of Transportation). These site access roads, including all bridges and culverts, must not be subject to load restrictions, seasonal or otherwise. If a paved access road meeting these requirements does not exist immediately contiguous to the proposed site access point, the proposer must reach agreement with the RCOC, or other applicable agency, to provide for constructing, upgrading or updating the access road(s) and/or maintaining the road(s) to the proposed site from the closest existing All Weather road, all to RCOC standards as a minimum, regardless of the final jurisdiction of the access road.

11. All proposed new sites and expansions of existing sites must control drainage of stormwater from the disposal area of the site in accordance with applicable law.

Secondary Criteria:

All applicants must meet or exceed the remaining criteria or the proposal will be rejected during the Consistency Review Process - except those with a host community agreement or agreements (which is approved by the appropriate City, Township or Village government by passage of a resolution acknowledging approval of the agreement) are herewith released from meeting the following criteria, although Act 641 minimums and other applicable laws, where applicable, will apply. In order for a landfill to qualify for the waivers outlined below, the proposed landfill including the primary access route (for a minimum distance of 1,000' from the truck entrance to the site) must lie wholly within the boundaries of the involved host community(ies).

12. The proposed site (at the time the Request is submitted to the County) must be identified in the adopted community master plan as being suitable for any of the following land uses: industry, heavy commercial, agriculture, and agriculture/residential zoned areas.

13. The exterior boundaries of the disposal area footprint of a landfill may not be located within 1,000 feet of an historic site, district or structure included on the national or state register of historic places.

14. The exterior boundaries of the disposal area footprint of a landfill may not be located within 1,000 feet of inland lakes and streams (as defined in Act 346) but not including drains (as defined by Act 40 of 1956).

15. The exterior boundaries of the proposed site must be not less than 1,000 feet from a school, public or private, a church or an established outdoor recreational land use (which is defined as an outdoor recreational land use where more than fifty (50) people are in attendance a day for at least fifteen (15) days per year.)

Additional Criteria Waivers for Expansions of Existing Sites:

It is the belief of the SWPC that all landfills pose a risk to the environment and that risk increases with the age of the technology employed in the design and construction of the facility. The SWPC acknowledges that expansions of existing landfill will likely employ more sophistication in the design, construction and operation of the expansion than that employed in the original site. Given that an existing site already poses a risk to the local environment and that a permitted expansion will likely pose a lesser risk and should provide for additional compliance monitoring of the existing facility, it is concluded that it may be desirous to allow expansion of existing facilities as opposed to constructing new facilities. In this regard, the SWPC has determined that certain criteria intended for new landfill sites shall be waived for landfill expansions as outlined below.

Criteria #

1. Minimum site size and minimum bankyard capacity.

2. Minimum buffer areas. Buffer areas surrounding the expansion shall meet or exceed those minimally required by Act 641 and be compatible with the existing landfill facility.

12. Land use.

Chapter 5 - Part C2

FACILITY SITING CRITERIA - OTHER ACT 641 FACILITIES

Incinerators and Resource Recovery Facilities (Energy):

These facilities may not be processed through the interim siting mechanism process. Requests for a finding of consistency must be submitted to the Oakland County Board of Commissioners and the County Executive. Such requests will be considered on an individual basis as part of a 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 Board of Commissioners.

Materials Recovery Facilities (MRF):

This disposal area designation is for municipal solid waste processing plants which are designed principally for the purpose of recovering materials from the mixed-waste, municipal solid waste stream. It should be noted here that recycling or composting facilities that process only source separated materials do not require Act 641 designation. In the event that a purely source separated materials facility is proposed, it can simply be located with the approval of the local governmental unit.

Transfer Station Facilities:

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 exempt from required Act 641 Plan designation.

Requirements for an Administratively Complete Proposal:

At the time a proposer submits a proposal for review, all documentation needed to demonstrate compliance with the informational requirements and the siting criteria detailed below must be submitted.

All proposals submitted to the County Executive shall contain, at a minimum, the following information, certifications, stipulations and agreements. This data is for informational purposes only. Proposers must submit this information for the proposal to be considered administratively complete. Evaluation of a proposal for consistency with the Oakland County Solid Waste Management Plan will be based on the criteria listed later in this Chapter. The decision making bodies will reach their decision based solely on the applicant's compliance with the criteria.

The intent of this section is to require the submission of that information that a responsible waste company would normally examine during the course of selecting and formally proposing a site. Additionally, this section includes items that Oakland County believes should be known and understood by a proposer prior to the submission of a Request for Consistency. Although some

of this information may not appear to be directly necessary to determine if the criteria contained herein are met in the application, it is necessary to identify the intentions of the proposer and to secure the proposer's commitment to certain minimum design, construction and operational standards.

Administrative Completeness:

The following information must be submitted for a transfer station or a MRF application to be considered administratively complete.

A. Name, Address, Ownership Information and Telephone Number for...

1. Applicant (including specific ownership interest in the site),
2. Property owner of the site,
3. Consulting Engineers, and
4. Designated project contact person.

B. Site Location and Orientation

1. Legal Description of Project Area.
2. Site Location Map showing all roadways and principal land features within 1 mile of the perimeter of the site.
3. Topographic Map - with contour intervals no greater than 2 feet, at a 1 inch = 200 feet scale for the entire site.
4. Access Roads:
   a. Location,
   b. Surface condition and material,
   c. Proposed access point to facility, and
   d. Identification of all access roads to the site from the State trunkline system.
5. Current zoning map showing all properties and indicating present usage within 1/4 mile from the perimeter of the site.

C. Land Use and Land Cover:

1. Site land use and cover.
2. Locations of all structures within 300 feet from the perimeter of the site.
3. Location of existing utilities .
4. Location of floodplains on the site and within 300 feet of the site (as identified on MDNR prepared flood plain maps and as defined in the Act 641 Administrative Rules).

D. Proposed Site and Facility Design:

1. Overview of the Proposal.
2. Location and Size:

   a. Capacity at completion.

   b. On-site roads.

   c. Structures.

3. Time Frames for Development & Use.

F. Operations:

1. Capacity.

2. Annual usage.

3. Hours and days of operation.

4. Written, detailed programs to control the following...

   a. Storm water runoff,

   b. Noise,

   c. Litter,

   d. Dust,

   e. Odors, and

   f. Emergency responses. What contingency plans are proposed for emergencies? What are the capabilities of the local police and fire departments in meeting these needs? Evidence of contact must be provided for each.

5. Landscaping, including shrubbery and trees, shall be provided and maintained to beautify the view of the facility in accordance with local zoning requirements. The developer must include a signed statement agreeing to this stipulation.

G. Traffic Study:

1. The developer must provide a traffic safety study, prepared by a registered professional engineer with demonstrated expertise in traffic safety issues, for all access roads from the State trunkline system to the facility. Issues of concern or hazardous conditions identified as part of the study must be addressed by the developer in the proposal.

2. Indicate truck traffic and traffic patterns anticipated.

H. Reporting Requirements:

1. Operators of solid waste facilities permitted under this mechanism must provide a written statement agreeing to submit to the County's solid waste staff and the clerk of the host community in which the facility is located on or before the 20th day of January, the 20th day of April, the 20th day of July and the 20th

day of October, a quarterly report which covers the preceding three-month period ending on the last day of the preceding month which includes the following information:

a. Name, location, and permit number of the facility;

b. Name, address, and telephone number of the facility;

c. Name, address, and telephone number of the facility operator;

d. Total quantity of waste received at the facility during the past three months. For transfer stations, this will be reported in cubic gateyards and for MRFs, this will be reported in tons;

e. Total quantity of waste received at the facility during the past three months originating from out-county sources by county of origin (see method of reporting above);

f. List of all commercial/municipal haulers that have used the facility in the last three months (name, address, and service area and the total quantity of waste received at the facility from that commercial/municipal hauler by county of origin (see method of reporting above); and

g. Total quantity of recyclables processed, in tons and by type of material, and the total tons of process residuals.

I. Certification must be included regarding criteria compliance concerning requirements for the following...

1. Natural Areas,

2. Public recreation areas, and

3. Wetlands.

J. Stipulations and Agreements to perform must be submitted concerning:

1. Provision of all weather access roads;

2. Maintenance of internal and access roads;

3. Compliance with reporting requirements; and

4. The developer must provide a written statement agreeing to provide the County and/or the host community. copies of all quarterly monitoring reports required by DNR, if those agencies so request.

K. Other

1. The proposer may submit additional information highlighting significant or unique features of the proposal.

L. Need Statement: A need statement must be submitted in support of the project which includes or demonstrates the items following. This material is required to insure that the proposer is fully aware of the market into which the proposed facility will be placed.

1. All facilities currently serving the County which provide the same services as proposed including the capacity of such other facilities.

2. A complete review of the advantages that would be gained by the location of such a facility within the County.

3. A demonstration that Oakland County's waste stream currently suffers a deficiency in transfer capacity or in processing capacity that would be at least partially filled by the approval of the project proposed.

4. Responses to future "Need Statement Requirements for Oakland County MRFs and Transfer Stations" as may be issued from time-to-time by the County Executive, after approval by the SWMC.

Primary Criteria:

The following criteria must be met for a transfer station or a MRF to be found consistent with the Oakland County Solid Waste Management Plan. Additionally, should the proposed facility be located within a municipality which already is host to one or more designated, permitted, or operating Act 641 facilities, the application may only be processed through this Interim Siting Mechanism if the applicant has obtained a host community agreement (which is approved by the appropriate City, Township, or Village government by passage of a resolution acknowledging approval of the agreement). Other such proposals would have to be processed on an individual basis as part of a 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 Board of Commissioners.

1. The facilities shall not be located within the 100 year flood plain.

2. Facilities are barred from wetlands unless the proposer can meet Act 641, Rule 505. Any new wetlands created to mitigate wetland losses shall be located within the county.

3. No disposal facilities are to be located in Natural Areas as identified in Document No. 192, dated September, 1989, titled "A Natural Areas Inventory of Oakland County", as issued by the Oakland County Planning Division, and as may be amended from time-to-time. Natural Areas contain undisturbed vegetation and resemble the conditions that existed prior to settlement of the area.

4. All proposed new sites and expansions of existing sites must control drainage or storm water from the site. Methods of storm water disposal must comply with local zoning and building codes.

5. Transfer station buildings shall not be located within 100 feet of lakes and perennial streams.

Secondary Criteria:

An applicant with a host community agreement or agreements (which is approved by the appropriate City, Township or Village government by passage of a resolution acknowledging approval of the agreement) is herewith released from meeting the following criteria, although Act 641 minimums, where applicable, will apply. In order for a facility to qualify for the waivers outlined below, the proposed project must lie wholly within the boundaries of the involved host community(ies). All other applicants must meet or exceed the remaining criteria or the proposal will be rejected during the Consistency Review Process.

6. The site must provide staging and parking areas for trucks, employees and visitors such that off-site access roads remain free of waiting vehicles, including areas outside the site security gates for the storage of vehicles which are anticipated to arrive before opening time. Documentation identifying the number of trucks entering the site must be provided by the developer, including an anticipated hourly arrival schedule and an anticipated early arrival schedule based upon operation of the facility at peak anticipated loading rates.

7. Proposed facility sites (at the time the request is submitted to the county) must be identified in the adopted community master plan as being suitable for any of the following uses: industry, heavy commercial, agricultural and agricultural/residential zoned areas.

8. The facility shall meet all lawful ordinances, laws, rules, regulations, policies, or practices of a municipality, of the county, or of a governmental authority created by statute, currently in existence or which may hereafter be enacted or established that do not conflict with Act 641 [MCL 299.430 (4)]. Consistency cannot be denied based on any decision making process outside of the amended Solid Waste Management Plan or unless otherwise expressly authorized by law.

9. All facilities must have paved access by "All Weather" roads (as defined by the Road Commission for Oakland County (RCOC)) from the site to the State trunkline system (those roadways under the jurisdiction of the Michigan Department of Transportation). These site access roads, including all bridges and culverts, must not be subject to load restrictions, seasonal or otherwise. If a paved access road meeting these requirements does not exist immediately contiguous to the proposed site access point, the proposer must reach agreement with the RCOC, or other applicable agency, to provide for constructing, upgrading or updating the access road(s) and/or maintaining the road(s) to the proposed site from the closest existing All Weather road, all to RCOC standards as a minimum, regardless of the final jurisdiction of the access road.

10. Transfer station buildings shall not be located closer than 300 feet to any residences existing at the time application for consistency is made.

Chapter 5 - Part D

SUPPLEMENTAL CRITERIA

In the event that multiple proposals are under consideration by the Solid Waste Management Committee (see **Chapter 5 - Part A, Section V.**), the proposals shall be rank-ordered. This ordering shall be based upon the number of points each proposal receives in meeting supplemental criteria presented in this Chapter. The proposal(s) receiving the most points will be found consistent with the Plan. Multiple requests may have to be found consistent with the Plan should the top-ranked proposal not provide sufficient disposal capacity (see **Chapter 5 - Part A, Section 11.**).

The SWMC will review the proposer's responses and data submitted for each of the supplemental criteria. Scores will be assigned by the SWMC, in concert with the following scoring guidelines.

> Each site will be scored in each of the supplemental criteria categories with the "best" site proposal receiving the maximum number of points for that category. The other site proposal will be assigned a score of one-half the first site's score. If more than two proposals are being considered, the next best site in this category will receive a score determined by multiplying the first site's maximum points times a fraction, the numerator being total number of sites being ranked plus one minus the scoring position of the site (or 2 for the second best site, 3 for the third best site and so on) and the denominator being the total number of sites being ranked and so on until all competing sites are ranked in each category.

The maximum number of points will be assigned by Supplemental Criteria Category as follows. See an example scoring of potential sites at the end of Chapter - Part D. The site receiving the highest total score will be ranked 1st. Others will be ranked 2nd, 3rd, etc.

Supplemental Criteria Category		Maximum Points
1.	Interaction with Adjacent Land Uses	10
2.	Size and Quality of Buffer Areas	10
3.	Potential Impacts to Environmental Resources	20
4.	Hydrogeological Concerns	30
5.	Accessibility	10
6.	Host Community Agreement	20
7.	Downstream Wells (Domestic, Municipal, and Commercial)	10
	Maximum Possible Score	110

The SWMC will include the results of its rank-ordering of the several site proposals in its recommendations to the Board of Commissioners (see **Chapter 5 - Part A, Section IV.**)

1. INTERACTION WITH ADJACENT LAND USES:

A. Areas of Concern:

- Minimize land use conflicts; consider adjacent land uses of industrial character more compatible than sensitive or commercial land uses.
- Minimize number of residences to be relocated.
- Minimize impacts of facility on sensitive land uses (schools, day care centers, churches, residences, nursing homes, hospitals, and historic areas).
- Locate in an area currently identified for future compatible land use activities, with industrial considered more compatible than sensitive or commercial land uses.

B. Evaluation Parameters:

- Identify all existing residential dwelling units that lie within a one mile radius of the site perimeter.
- Identify all sensitive receptors (schools, day care centers, churches, historic areas, hospitals, nursing homes) that are located within a one mile radius of the site perimeter.
- Identify all recreational facilities that are located within a one mile radius of the site perimeter.

C. Site Rankings:

Each residential dwelling unit shall be assigned a value of 1. Each sensitive receptor will be assigned a value of 5. Each recreational facility shall be assigned a value of 5. The values assigned will be multiplied by the number of units in each category and all resulting values will be summed. The site receiving the smallest number resulting total will be determined to be the "best" site" and scored as indicated in the preamble.

2. SIZE AND QUALITY OF BUFFER AREAS:

A. Areas of Concern:

- Maximize the relative size and quality of landfill buffer areas to minimize impacts on contiguous land uses.
- Maximize the amount of buffer, especially wooded buffer, surrounding the site area.
- Maximize the amount of coniferous vegetation in the wooded buffer.

B. Evaluation Parameters:

- Identify the total acres of buffer zones as measured from the completed landfill's footprint to the project boundaries. Identify the total acreage contained in the project boundaries. Express the buffer size as a percentage of the total project's area.

- Identify the percentage of the completed buffer that will be wooded.

- Identify the percentage of the completed buffer that will be covered with coniferous vegetation.

C. Site Rankings:

The percentages resulting from the three parameters will be summed. The site receiving the highest total percentage will be ranked as the "best" site and scored as indicated in the preamble.

3. POTENTIAL IMPACTS TO ENVIRONMENTAL RESOURCES:

A. Areas of Concern:

- Avoid siting facility in natural areas of county-wide significance, i.e., tracts of land containing relatively undisturbed native vegetation, land resembling that which existed prior to European settlement, or sites which reflect the County's natural diversity.

- Minimize wetland disruption and replace aggregate disturbed wetlands on at least a one to one basis.

- Avoid disturbance to habitats supporting threatened and endangered species.

- Minimize the impact to 100-year floodway/floodplain areas and minimize impact of the facility on surface waters during flood periods and impact of flood on facility.

- Minimize disturbance to intermittent streams that drain less than two square miles.

- Minimize impact to potentially sensitive county drains, county streams and natural drainage areas.

- Minimize impacts from erosion and sedimentation.

- Protect existing surface and groundwater resources from release of pollutants: aquifer potential, local geology and recharge areas. (Aquifer potential describes the likelihood of encountering a significant water-bearing zone in the first 50 feet of sediments which, if contaminated, would diminish available water supplies in the area).

B. Evaluation Parameters:

- Quantify the acreage of all wetlands and floodplains that will be disturbed by the project.

- Describe changes that will result in existing peak discharge rates for stormwater drainage resulting from the project.

C. Site Rankings:

One-half of this score will be based on the acreage of wetlands and floodplains disturbed. The site disturbing the least number of acres will receive a partial score of 1/2. The site disturbing

the most will receive a partial score of 0. Other sites will receive a partial score proportional to the first and last sites based upon the relative acreages disturbed.

The second one-half of this score will be based on the percentage change in peak stormwater discharge rates. The site with the smallest change will receive a score of 1/2. The site with the largest change will receive a score of 0. Other sites will receive a partial score proportional to the first and last sites based upon the relative percent change.

The site receiving the highest score on both parameters will be the "best" site and scored as indicated in the preamble.

4. HYDROGEOLOGICAL CONCERNS:

A. Areas of Concern:

- Oakland County has numerous concerns about the geology and hydrogeology of the County and the impact that may occur on the County's aquifers because of the placement of proposed landfills.

- The County has a wide variety of soil and groundwater conditions, some of which are protective of the aquifer system and some of which provide essentially no protection at all. Certain areas contain soil formations that are low in permeability providing high degrees of protection to the underlying aquifer(s) while other areas have soil formations that are highly permeable and provide no protection to the underlying aquifer(s) at all.

- It is the belief of the County, that the landfill site itself should provide as much protection to the groundwater resources of the County as possible. To this end, the County has reviewed available data relating to the nature of subsurface soil types throughout the County and has determined by way of overlay maps, that it is feasible to site landfills in areas of the County that contain soil formations which are protective of the aquifer system. On this basis, it has been determined that it is the responsibility of the County to ensure that all new landfill sites incorporate the most protective geologic setting.

B. Evaluation Parameters:

- Aquifer Potential Index as defined and described in the report entitled Water for a Rapidly Growing Urban Community -- Oakland County, Michigan, Geological Survey Water-Supply Paper 2000 (F. R. Twenter and R. L. Knutilla, 1972), U. S. Department of the Interior, for the natural land surface to a depth of 50'. The applicant may submit evidence that the Aquifer Potential Index of the proposed site is different than shown in this broad based reference work based on compiled records of domestic well logs, or those contained in the Oakland County Database (M.I.R.A.S. program), or by site borings. (See map at end of Chapter 5 - Part D)

C. Site Rankings:

Proposed sites will be assigned values for this category based on the following. The site receiving the highest value will be ranked the "best" site and scored as indicated in the preamble.

Aquifer Potential Index of "Low"	2
Aquifer Potential Index of "Medium"	1
Aquifer Potential Index of "High"	0

5. ACCESSIBILITY:

A. Areas of Concern:

- Minimize the exposure (ability to hear, see, smell or feel vibration of trucks) of residents located along access routes to the site.
- Avoid routing of hauling trucks through commercial centers.
- Minimize the impacts of facility truck traffic on the existing road system capacity.

B. Evaluation Parameters:

- Identify the length of the primary access route from the closest freeway access point to the site truck entrance.
- Identify the length of this primary access routed that is currently under the jurisdiction of the Road Commission for Oakland County and which is categorized as an "All Weather Road" (as defined by the RCOC) and or which is under the jurisdiction of the Michigan Department of Transportation.

C. Site Rankings:

One-half of this category's score will be based on the shortest length of primary access route from the closest freeway access point. The site with the shortest length will receive a score of 1/2. The site with the longest length will receive a score of 0. Other sites will be scored proportionally downward.

The second one-half of the score will be based upon the type of access roadway available and the site receiving the highest percentage of the total route under the jurisdiction of the County and State agencies will receive a score of 1/2. The site with lowest percentage of the total will receive a score of 0. Other sites being scored proportionately downward.

The site receiving the highest score will be the "best" site and will be scored as indicated in the preamble.

6. HOST COMMUNITY AGREEMENT:

A. Areas of Concern:

- Have host community fee negotiations taken place?
- Do the host community fees and other arrangements reflect the potential impacts on the host community?

B. Evaluation Parameters:

As compensation for the various impacts associated with a solid waste facility, this plan endorses the concept of payment, by the facility owner, to the community in which the facility is located, of a "host community fee." The two parties involved (the facility owner and the community within which the facility is located) shall have the responsibility of negotiating a mutually acceptable host community fee.

C. Site Rankings:

Sites without a host community agreement (as evidenced by the passage of a resolution acknowledging approval of the agreement by the appropriate City, Township or Village government) shall receive a zero score. Competing sites with host community agreements shall be rank ordered with the site contributing the highest per capita (the 1990 U.S. Census final tally being used as a base) revenue to the host municipality during the fifth agreement year will be the site receiving the maximum score.

7. Downstream Wells (Domestic, Municipal and Commercial):

A. Areas of Concern:

- Minimization of the exposure of existing water supply wells (serving uses such as Domestic, Commercial and Commercial) to potential leakage from the proposed site.

B. Evaluation Parameters:

- Establish a "footprint" extending from the proposed site boundary (here, the site boundary includes any likely expansion areas.) 1/4 mile upgradient, 1/4 mile perpendicular to the direction of groundwater flow and 3/4 mile downgradient.
- Identify all domestic, municipal and commercial wells within the "footprint" defined above. Determine the rate of withdrawal for each of the identified wells. (Data may be obtained from the (1) actual well records, (2) from municipal or county records, or (3) from an engineering estimate. In the case of domestic wells, the rate of withdrawal may be estimated on the basis of a usage rate of 55 gallons per person per day and 3.5 residents per household.)

- Determine the shortest distance from each well falling within the defined "footprint" to the nearest site boundary. Divide the usage rate for the subject well by its distance in feet from the site boundary. This value is defined as the Rate / Distance Ratio (RDR) for that individual well.

- Sum the individual well RDRs for each site under consideration to determine the Site RDR.

C. Site Rankings:

Determine the sum of all Site RDRs for all the sites under consideration (e.g., RDR1 + RDR2 + RDR3) to determine the Total RDRs for all sites..

Determine the score for each individual site using the following formula:

Site Score = 10 * [1-(Site RDR / Total RDR for all sites)]

Sites which provide a double composite liner system shall have their score proportionately increased by 25-percent at the expense of sites not providing such additional protection.

The site receiving the highest score will be determined to be the "best site" and scored as indicated in the preamble.

Rank Ordering Competing Applications:
Example of Using the Supplemental Criteria to Rank-Order Competing Sites.

	Site A	Site B	Site C
1. Interaction with Adjacent Land Uses - 10 Points.			
Parameters	23	50	13
DUs within 1 mile	1	4	0
SRs within 1 mile	1	0	2
RFs within 1 mile			
Criteria Score			
DUs at 1 each	23	50	13
SRs at 5 each	5	20	0
RFs at 5 each	5	0	10
Total Score	33	20	23
Site Rank	2nd Best	3rd Best	Best
Suppl. Criteria Points #1	6 2/3	3 1/3	10
2. Size and Quality of Buffer Zones - 10 Points.			
Parameters			
Percent of site in buffer	47	44.4	38.7
% of buffer wooded	15	21	25.8
% of buffer coniferous	7.5	7.5	0
Criteria Score	69.5%	72.9%	64.5%
Site Rank	2nd Best	Best	3rd Best
Suppl. Criteria Points #2	6 2/3	10	3 1/3
3. Potential Impacts to Environmental Resources - 20 Points.			
Parameters			
Acres disturbed	13	16	17
Change in rate	+3%	+5%	+7%
Criteria Score			
Acres disturbed	10	2.5	0
Change in rate	10	5	0
Total Score	20	7.5	0
Site Rank	Best	2nd Best	3rd Best
Suppl. Criteria Points #3	20	13 1/3	6 2/3
4. Hydrogeological Concerns - 30 Points			
Parameters			
Aquifer Potential Index	HIGH	MEDIUM	LOW
Criteria Score	0	1	2

Site Rank	3rd Best	2nd Best	Best
Suppl. Criteria Points #4	10	20	30

5. Accessibility - 10 Points

Parameters			
Access route length	3.0	4.0	7.0
Percent RCOC or MDOT	85%	70%	65%
Criteria Score			
Length	5	3.75	8
Percent RCOC or MDOT	5	1.25	
Total Score	10	5.0	0
Site Rank	Best	2nd Best	3rd Best
Suppl. Criteria Points #4	10	6 2/3	3 1/3

6. Host Community Agreement - 20 Points.

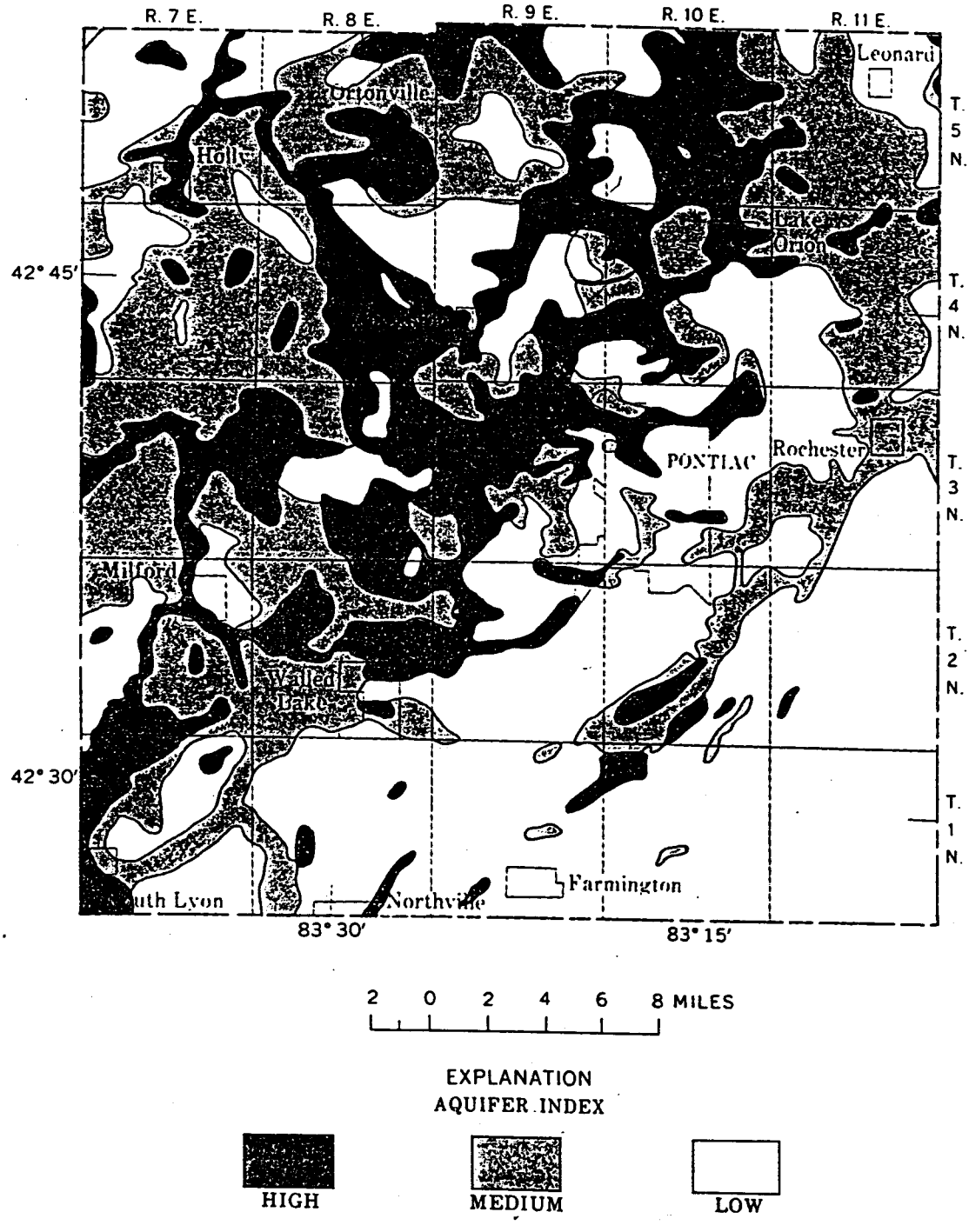
Parameters			
Host Agreement?	Yes	Yes	No
1990 population	34,500	9,242	
5th year revenues	$75,000	$20000	0
Criteria Score			
$ per capita	$2.17	$ 2.16	—
Site Rank	Best	2nd Best	3rd Best
Suppl. Criteria Points #6	20	13 1/3	6 2/3

7. Downstream Wells - 10 Points.

Parameters			
Site RDR	169.8	66.35	60.35
Site Score	4.27	7.76	8.00
Liner adjustment	1.25	1	1
Adj. Site Score	5.34	7.76	8.00
Site Rank	3rd Best	2nd Best	Best
Suppl. Criteria Points #7	3 1/3	6 2/3	10

Total Supplemental Criteria Score.

Criteria	Site A	Site B	Site C
1.	6 2/3	3 1/3	10
2.	6 2/3	10	3 1/3
3.	20	13 1/3	6 2/3
4.	10	20	30
5.	10	6 2/3	3 1/3
6.	20	13 1/3	6 2/3
7.	3 1/3	6 2/3	10
Final Site Score	76 2/3	73 1/3	70
Final Site Rank	1ST	2ND	3RD



Glacial deposits from land surface to a depth of 50 feet have a medium to high aquifer index throughout much of the northwestern part of the county. FIG. 69

Chapter 6

CONTINGENCY PLAN

The contingency plan described in Oakland County's original 1990 Plan Update documents was a broad stroke management overview guide intended for corrections of longer term situations as opposed to a point specific plan for use in a short-term emergency situation. This brings to the front the question of exactly what is an emergency situation? Most specifically, an emergency would be in place with unanticipated closure one or more of the major in-county or otherwise available landfills, for whatever reason, and the remaining facilities available to Oakland County waste generators did not have sufficient operating capacity to handle the increased daily loads. Therefore, Oakland's Contingency Plan should be amended by a total redraft to reflect current realities.

Quite obviously, it is difficult enough to locate and site disposal capacity in the context of the 5-year and 20-year planning periods, without having to have additional site specific plans for an emergency situation. Employment of the interim siting mechanisms in **Chapter 5**, should make sure that disposal capacity problems do not occur except for true emergencies.

The material contained herein replaces Chapter 8, Section 8.9 in the 1990 Plan Update in its entirety.

Revised CONTINGENCY PLAN:

The Solid Waste Management Plan describes a waste management system designed to meet the needs of the County through and beyond the 20-year planning period. The waste management system has several components: source reduction and reuse, recycling, composting, combustion with energy recovery, and landfilling. If one of the major components is disrupted, for instance, if a landfill is closed, then a contingency response will need to be implemented to ensure that the disposal needs of the County are met. The contingency plan presented in this Chapter discusses a general plan for decision making and a specific plan for major emergencies. Specific decisions should be made after considering the given situation and all available options.

The following options could be considered for short-term and long-term contingencies:

1. Increasing efforts in recycling and composting;
2. Increasing waste volumes going to operating waste-to-energy facilities in the County or in other counties where an excess of daily operating capacity might exist;
3. Implementing new waste disposal facilities in the County;
4. Increasing waste volumes going to operating landfills in the County; or
5. Exporting waste to disposal facilities located in other counties.

The benefits and drawbacks associated with each of these options must be considered before a decision is finalized. For instance, waste-to-energy facilities have a limited burning capacity, and often additional waste cannot be directed to them. More intense use of existing landfills could jeopardize future planned landfill space. Increasing efforts in recycling and composting

often requires a certain amount of lead time for proper implementation, as does the implementation of a new waste management facility. The final option, exporting excess solid waste, would relieve the County of any immediate County-related disposal concerns. The County recognizes the ongoing flow of solid waste across County borders as is highlighted in **Chapter 3** and includes this contingency as an option in this Plan.

If the need for contingency planning arises, the County must consider all of the options available and identify the most appropriate means of handling the County's waste in the immediate future and for the long-term. It is understood and agreed that proper collection and disposal of solid wastes is a vital concern to health, welfare, and safety of all people in all municipalities in the County. To that end, should any facility in the Plan encounter an emergency, or short-term problems with solid waste disposal, the other facilities will provide back-up disposal to the extent feasible for the duration of the emergency. Users of other disposal facilities under emergency conditions will be expected to pay those charges ordinarily imposed.

In the event of an emergency situation which creates the need for an immediate increase in the amount of disposal capacity necessary, Oakland County will make short-term arrangements with other counties for usage of then existent and available landfill capacity. This includes Genesee, Washtenaw, Wayne, Macomb, Lapeer and Lenawee Counties where current authorization of inter-county flows exist or are proposed by this Plan Amendment or other Michigan counties should the Solid Waste Management Plans be amended accordingly (see **Chapter 3**). Should an insufficient amount of disposal capacity thus be made available, landfill capacity would be sought in other states and in Canada as was allowed by the June 1, 1992 U.S. Supreme Court decision. Oakland County has had conversations with the owners and/or operators of the landfill facilities listed below, as an example of such opportunities, and they have expressed a willingness to assist the County in the event of an emergency. Such arrangements will remain in place until the disposal capacity problem is resolved in accord with Act 641 guidelines and procedures - either by the correction of the original problem which caused the emergency, by the siting, construction and operation of new disposal capacity, or by Act 641 permitted export arrangements.

Bigfoot Run	Morrow, Ohio
Bobmeyer Road	Morrow, Ohio
Muskingum	Zanesville, Ohio
Bond Road	Morrow, Ohio
Carbon Limestone	Lowellville, Ohio
County Land Development	Lowellville, Ohio
Glenwillow	Glenwillow, Ohio
Lorain Co.	Oberlin, Ohio
Ottawa County	Port Clinton, Ohio
Willowcreek	Atwater, Ohio
Countywide RDF	East Sparta, Ohio
ELDA RDF	Cincinnati, Ohio
Evergreen RDF	Northwood, Ohio
Herrick Valley RDF	Adena, Ohio
Suburban RDF	Brownsville, Ohio
Stoney Hollow RDF	Dayton, Ohio
Byers RDF	Logansport, Indiana
Danville RDF	Danville, Indiana
LaPort County RDF	Michigan City, Indiana
Prairie View RDF	Wyatt, Indiana
Gallatin National Co.	Fairview, Illinois

Chapter 7

DESIGNATION OF ADDITIONAL DISPOSAL CAPACITY

Act 641 requires that counties will have "...access to a sufficient amount of available and suitable land, accessible to transportation media, to accommodate the development and operation of solid waste disposal areas, or resource recovery facilities..." Additionally, these areas or facilities must be "...capable of being developed and operated in compliance with..." the law and rules of the State and that the proposed facilities are technically and economically feasible. Oakland County's 1990 Solid Waste Management Plan Update designated six (6) Type II and Type III landfills as outlined below.

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, conditionally exempt small quantity generator waste, industrial wastes, and all wastes which may be legally disposed of in a Type III landfill.

1. Collier Road Landfill, 575 Collier Road, City of Pontiac, including a proposed future lateral expansion, containing 220 acres, more or less.

2. Eagle Valley Landfill, 600 West Silverbell Road, Orion Township, including a proposed lateral expansion. The expansion commenced operations in early 1992. The total site contains 330 acres, more or less. Future expansions on this site may not be requested by the operator nor recommended by the County, without the approval of the Township, in concert with a consent judgement filed in 1991 in the Oakland County Circuit Court.

3. Lyon Land Development Company Landfill, 5380 Milford Road, Lyon Township. This facility received its final loads of waste during late September, 1993. It is currently being capped, closed and converted into recreational facilities for Lyon Township. This location is the site of the first plant in Oakland County which converts recovered landfill gases into electrical energy. The plant became operational in June, 1993.

4. Wayne Disposal - Oakland Landfill, 2350 Brown Road, City of Auburn Hills, containing 93 acres, more or less, with a sanitary landfill footprint of approximately 44 acres.

5. SOCRRA Landfill, 741 Avon Road, City of Rochester Hills, containing 183 acres more or less and including a proposed future 57 acre expansion located on properties adjacent to, and north of the original landfill which is intended to be developed as a covered ash monofill for waste-to-energy residuals. The original facility is presently operated as a composting site.

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 and/or industrial wastes.

6. Waterford Hills Landfill, 7900 Gale Road, Waterford Township, containing 50 acres more or less. Although designated in the original Plan as a Type III landfill, this facility operated from the beginning as a licensed Type II facility since Type II permits were issued by MDNR prior to approval of the original Plan. This landfill was closed by MDNR in October of 1990, because of environmental violations. At the time of preparation of this Plan Amendment, litigation is ongoing with regard to permanent closure and remediation of the observed groundwater problems. Bids are being received by MDNR for final closure and cover of the facility and funds have been set aside for this purpose by the State. MDNR has maintained that once an Act 641 facility receives construction permits, it cannot be "planned" out of operation by an alteration in its Act 641 designation.

As indicated in **Chapter 2**, these several landfill facilities had a combined existing capacity of 13.061 million bankyards at the beginning of 1993 as well as designated additional capacity of 2.865 million bankyards for a total of 15.926 million bankyards. These facilities operated at a combined total gateyard rate of 2.728 million gateyards in 1992. A simple and cursory analysis of this material shows that if it is assumed that the capacity was uniformly available to all, and that if it is assumed that the County was operating in a closed border environment (no inter-county, inter-state, or inter-country imports or exports), that the existing in-county capacity would be consumed by late 1997 and that if all the capacity (existing and designated) were uniformly available to all, the combined total would be consumed by early fall, 1999 (see **Chapter 4 - Page 10**).

Act 641 Designations - Additions:

Wayne Disposal - Oakland, Landfill Expansion, Brown Rd. in Auburn Hills A lateral expansion of the existing Wayne Disposal - Oakland Landfill in the City of Auburn Hills is proposed on those properties lying east of the present operation. The new properties involved include two parcels of land totalling approximately 82 acres in size and are bounded by Brown Road, M-24 (Lapeer Road), Harmon Road, and the present landfill. The sanitary landfill footprint of the expansion is anticipated to occupy an area no larger than 50 +/- acres and should yield approximately 7 million bankyards of usable disposal capacity. Continuing the simplistic analysis above, the addition of this facility to the Act 641 Plan would add approximately 3.5 years of disposal capacity to that currently designated (see **Chapter 4 - Page 10**).

It is recognized that the County does not currently operate in a closed border mode with regard to inter-county flows. In fact, the total disposal capacity available to Oakland County Act 641 wastes (at in-county sites and through inter-county flow provisions contained the approved Plan Updates of several contiguous counties) exceeds the needs of Oakland County by approximately 50% - for the Year 1994. However, this situation will not long hold. Without the provision of additional capacity within the County, the opportunities for disposal availability will diminish to less than the size of the Oakland County waste stream by early 1999 and the economics of waste disposal will dramatically change as the supply and demand curves merge. With the proposed lateral expansion, it is anticipated that sufficient landfill capacity will exist for Oakland County wastes to about 2005-2008. Considerable additional discussion of the impact of this proposal is contained in **Chapter 4**, which deals specifically with inter-county flows and a demonstration of available disposal capacity. Also see Exhibits 4.16 through 4.19 in **Chapter 4**.

It is recommended that this proposed lateral expansion be formally designated as a Type II landfill.

Chapter 8

SERVERABILITY CLAUSE

SEVERABILITY CLAUSE:

If any portion of this Plan Amendment to the 1990 Solid Waste Management Plan Update, or the application thereof to any person or circumstance shall be disallowed by the Michigan Department of ^Natural Resources or found invalid by a court of competent jurisdiction, such disallowance or invalidity shall not affect the remaining portions or applications of the Plan Amendment which shall be given effect without the disallowed or invalid portion or application (unless the MDNR disallowed portion or application is otherwise allowed by a court of competent jurisdiction) and to this end all provisions of said Plan Amendment are declared to be severable.

APPENDIX

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List of Exhibits:

SPECIAL APPENDIX

Recommended amendments to the 1990 Solid Waste Management Plan Update dated December 16, 1993, April 14, 1994, and April 28, 1994 were prepared by the Designated Planning Agency and the Solid Waste Planning Committee (SWPC). Those documents contained elements designed to protect the citizens of Oakland County that were deleted in the final amendment at the direction of the Michigan Department of Natural Resources (MDNR). Both the SWPC and the Board of Commissioners note that, absent the objections of the MDNR, all elements of the proposed plan amendments, from December 1993 through April 1994 would have been made part of this final plan.

Excerpts from the Board of Commissioners
Resolution # 94171 dated June 9, 1994.

Facilities Requiring Act 641 Designation

Act 641 and the rules promulgated to implement the act, require that solid waste disposal facilities and processing plants be designated, by site, in the county solid waste management plan.. However, they exempt facilities that process source-separated materials from those requirements. Therefore, MRF's processing source-separated recyclables and compost facilities processing yard wastes are not required to be included in the county solid waste management plan, nor do they require a 641 construction permit or operating license.

Facilities that require specific inclusion in Act 641 solid waste management plans are transfer stations, recycling facilities that separate and process recyclables from mixed waste, mixed solid waste composting facilities, incinerators, waste-to-energy facilities, Type II & III sanitary landfills and such other facilities that process, reduce, store, or dispose of solid waste.

Excerpts from Act 641 and its rules pertaining to this matter follow.

Excerpts from Act 641

Sec. 4. (4) "Disposal area" means a solid waste transfer facility, incinerator, sanitary landfill, processing plant, or other solid waste handling or disposal facility utilized in the disposal of solid waste.

Sec. 4. (6) "Garbage" means rejected food wastes, including waste accumulation of animal, fruit, or vegetable matter used or intended for food or that attends the preparation, use, cooking, dealing in, or storing of meat, fish, fowl, fruit, or vegetable.

Sec. 6. (1) "Recyclable materials" means source separated materials, site separated materials, high grade paper, glass, metal, plastic, aluminum, newspaper, corrugated paper, year clippings, and other materials that may be recycled or composted.

Sec. 6. (3) "Resource recovery facility" means machinery, equipment, structures, or any parts or accessories of machinery, equipment, or structures, installed or acquired for the primary purpose of recovering materials or energy from the waste stream.

Sec. 6. (5) "Rubbish" means nonputrescible solid waste, excluding ashes, consisting of both combustible and noncombustible waste, including paper, cardboard, metal containers, year clippings, wood, glass, bedding, crockery, demolished building materials, or litter of any kind that may be a detriment to the public health and safety.

Sec. 6. (8) "Site separated material" means glass, metal, wood, paper products, plastics, rubber, textiles, garbage, yard clippings, or any other material approved by the director 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 director is separated from solid wastes.

Sec. 7. (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 Complied Laws, and regulated under part 138 of Act No. 368 of the Public Acts of 1978 and section 5a of the air pollution act, Act No. 348 of the Public Acts of 1965, being section 336.15a of the Michigan Compiled Laws.

(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 director. Agricultural uses that involve the land application of by-products from fruit, vegetable, or sugar beet processing do not require a plan described in this subdivision or a permit or license under this act, if applied at an agronomic rate consistent with best 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 Complied Laws.

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

(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 which is covered with asphalt, concrete, or other material approved by the director 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 director. In evaluating the site, the director 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.

(i) Other wastes regulated by statute.

Sec. 7. (3) "Solid waste processing plant" means a tract of land, building, unit, or appurtenance of a building or unit or a combination of land, buildings, and units that is used or intended for use for the processing of solid waste or the separation of material for salvage or disposal, or both, but does not include a plant engaged primarily in the acquisition, processing, and shipment of ferrous or nonferrous metal scrap, or a plant engaged primarily in the acquisition, processing, and shipment of slag or slag products.

Sec. 7. (6) "Source separated material" means glass, metal, wood, paper products, plastics, rubber, textiles, garbage, yard clippings, or any other material approved by the director that is separated at the source of generation for the purpose of conversion into raw materials or new products.

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

Sec. 10. (1) Except as otherwise provided in section 22a, a person otherwise allowed under this act to own or operate a solid waste disposal area shall not establish a disposal area without a construction permit from the director, contrary to an approved solid waste management plan, or contrary to a permit, license, or final order issued pursuant to this act. A person proposing the establishment of a disposal area shall make application for a construction permit to the director through the health officer on a form provided by the director. If the disposal area is located in a county or city that does not have a certified health department, the application shall be made directly to the director.

Sec. 12. (3) Beginning on the effective date of the amendatory act which adds this subsection and except as otherwise provided in this subsection, the director shall not issue a construction permit for a disposal area within a planning area unless a solid waste management plan for that planning area has been approved pursuant to sections 28 and 29 and unless the disposal area complies with and is consistent with the approved solid waste management plan. The director may issue a construction permit for a disposal area designed to receive ashes produced in connection with the combustion of fossil fuels for electrical power generation in the absence of an approved county solid waste management plan, upon receipt of a letter of approval from whichever county or counties, group of municipalities, or regional planning agency has prepared or is preparing the county solid waste management plan for that planning area under section 25 and from the municipality in which the disposal area is to be located.

Sec. 30. (1) Not later than September 11, 1979, the director shall promulgate rules for the development, form, and submission of initial solid waste management plans. The rules shall require all of the following:

(a) The establishment of goals and objectives for prevention of adverse effects on the public health and on the environment resulting from improper solid waste collection, processing, or disposal including protection of surface and groundwater quality, air quality, and the land.

(b) An evaluation of waste problems by type and volume, including residential and commercial solid waste, hazardous waste, industrial sludges, pretreatment residues, municipal sewage sludge, air pollution control residue, and other wastes from industrial or municipal sources.

(c) An evaluation and selection of technically and economically feasible solid waste management options, which may include sanitary landfill, resource recovery systems, resource conservation, or a combination of options.

(d) An inventory and description of all existing facilities where solid waste is being treated, processed, or disposed of, including a summary of the deficiencies, if any, of the facilities in meeting current solid waste management needs.

(e) The encouragement and documentation as part of the plan, of all opportunities for participation and involvement of the public, all affected agencies and parties, and the private sector.

(f) That the plan contain enforceable mechanisms for implementing the plan, including identification of the municipalities within the county responsible for the enforcement. This subdivision does not preclude the private sector's participation in providing solid waste management services consistent with the county plan.

(g) Current and projected population densities of each county and identification of population centers and centers of solid waste generation, including industrial wastes.

(h) That the plan area has, and will have during the plan period, access to a sufficient amount of available and suitable land, accessible to transportation media, to accommodate the development and operation of solid waste disposal areas, or resource recovery facilities provided for in the plan.

(i) That the solid waste disposal areas or resource recovery facilities provided for in the plan are capable of being developed and operated in compliance with state law and rules of the department pertaining to protection of the public health and the environment, considering the available land in the plan area, and the technical feasibility of, and economic costs associated with, the facilities.

(j) A timetable or schedule for implementing the county solid waste management plan.

Excerpts from Act 641 Rules

Rule 401. (1) Solid waste processing plants include those facilities which process solid waste or solid waste in conjunction with liquids for ultimate disposal as a waste or for use as a resource. Solid waste processing plants do not include those facilities which process source separated materials such as glass, cans, and paper for recycling. Both of the following are specifically included as solid waste processing plants:

(a) Incinerators of solid waste.

(b) Facilities processing paper, glass, metals, or other recyclables from a mixture of wastes.

(Rule 404 pertains to solid waste processing plants)

Rule 404. Before issuance of a construction permit, the applicant shall do all of the following:

(c) (ii) An explanation of how the facility is consistent with the approved solid waste management plan described in part 7 of these rules.

(Rule 504 pertains to transfer facilities)

Rule 504. Before issuance of a construction permit, the applicant shall do all of the following:

(b) (xiii) An explanation of how the facility is consistent with the approved solid waste management plan described in part 7 of these rules.

(Rule 711 pertains to Plan Format and Content)

Rule 711. To comply with the requirements of the act and to be eligible for 80% state funding, county solid waste management plans shall be in compliance with the following general format and shall contain the following elements:

(e) Plan selection shall be based on all of the following:

(iii) Site requirements, including the following requirements:

(A) The selected alternative shall identify specific sites for solid waste disposal areas for the 5-year period subsequent to plan approval or update.

(B) If specific sites cannot be identified for the remainder of the 20-year period, the selected alterative shall include specific criteria that guarantee the siting of necessary solid waste disposal areas for the 20-year period subsequent to plan approval.

Act 641 Exemptions Pertaining to Transfer Stations:

Sec. 22a. (1) A disposal area that is a solid waste transfer facility is not subject to the construction permit and operating license requirements of this act if either of the following circumstances exists:

(a) The solid waste transfer facility is not designed to accept wastes from vehicles with mechanical compaction devices.

(b) The solid waste transfer facility accepts less than 200 uncompacted cubic yards per day.

Available Disposal Capacity

Analyzing the 5-1/2 County Free-Market Area

Primary Assumption: Inter-County flow restrictions do not exist within the area.

This is difficult to do with any precision, but ...

1. Average gateyards/bankyard were calculated across the entire 5-1/2 county waste stream (1.7285). (See Exhibit A.3)

2. 1992 observed fill rates were assumed to continue unchanged (expressed in gateyards). (Except where existing or emergent annual caps would impose a lower number.)

3. The gateyards were converted into bankyards utilized.

4. In a given future year, if the product of the number of years times the average fill rate is less than the 1-1-93 capacity, the average fill rate is shown for that year. If the product is more than the 1-1-93 capacity, zero is shown. (See Exhibit A.4)

5. The sum of all available capacity in a given year is computed. (See totals in A.4)

6. The total available is compared to the estimated annual gateyards. (See graphic, Exhibit A.5)

7. When the available value becomes less than the estimated annual gateyards, a shortage could be projected. (Also see graphic.)

    A. 30% VR curve - at beginning of 2008

    B. 40% VR curve - at beginning of 2009

    C. 50% VR curve - at mid 2013

However, the logic is far from perfect and upon first inspection contains the following problem.

1. In the early years, when available operating capacity exceeds the waste stream, either

    A. it will not all be used, thus decreasing available capacity in later years, or

    B. if it is used, then the usage must represent imports from out-of-the-region.

2. Since out-of-state and out-of-country flows are essentially unrestricted (unless the host counties have an annual cap in the landfill's operating level), there appears to be little to stop annual usage levels beyond that shown, thus diminishing capacity available in later years.

3. In the later years when the available capacity is less than the projected waste stream, the operating level of the remaining facilities could (and probably would) be adjusted upwards to match the waste stream needs.

4. Finally, additional disposal capacity will be added to the matrix as the private sector seeks to increase its supply to meet the market area's demand.

In any event, the model can be used to estimate when supply will not meet demand. Secondly, if the assumption is made that the early excess operating capacity is not used by out-of-region imports, the excesses can be totalled and compared to later year's needs. In both cases, the year of depletion (or shortage) can be estimated fairly well and this method appears acceptable for long-term availability predictions. (See Exhibit A.6)

1. 30% VR curve - at the end of 2015

2. 40% VR curve - at the beginning of 2021

3. 50% VR curve - at mid 2026

Summary - Depending upon whether or not the excess operating capacity during the early years is (A) fully utilized by out-of-region wastes or (B) not used at all by out-of-region wastes ...

Volume Reduction Scenario	(A) Apparent time of operating shortfall	(B) Extended time of operating shortfall
1. 30% VR curve	beginning of 2008	end of 2015
2. 40% VR curve	beginning of 2009	beginning of 2021
3. 50% VR curve	mid 2013	mid 2026

Exhibit A.7 shows the values used as the basis for **Chapters 3 and 4**, processed through the same analysis technique. These values will be adjusted as appropriate during the Public Comment period and based upon the information received from MDNR, SEMCOG, the contiguous counties and other interested counties. Additionally, this type of approach would be used in each annual certification of disposal capacity availability.

5 & 1/2 Counties, 1993 thru 2012

@ 30% VR	Item	@ 40% VR	@ 50% VR
Year 1992			
2.370	Gateyards/Ton	2.367	2.363
1.711	Gtyds/Bankyard	1.710	1.708
8,368,635	Bankyards	8,144,853	7,921,071
1.385	Bnkyds/Ton	1.384	1.384
0.722	Tons/Bnkyd	0.722	0.723
1,443.79	#/Bnkyd	1,444.60	1,445.46
843.827	#/ avg gtyd	845.043	846.330
Year 2020			
2.440	Gateyards/Ton	2.412	2.372
1.759	Gtyds/Bankyard	1.747	1.730
6,541,760	Bankyards	5,506,642	4,471,524
1.387	Bnkyds/Ton	1.381	1.371
0.721	Tons/Bnkyd	0.724	0.729
1,441.62	#/Bnkyd	1,448.45	1,458.45
819.794	#/ avg gtyd	829.194	843.176
1.735	Average Gateyards per Bankyard	1.728	1.719

Solid Waste Database
Oakland County, Michigan

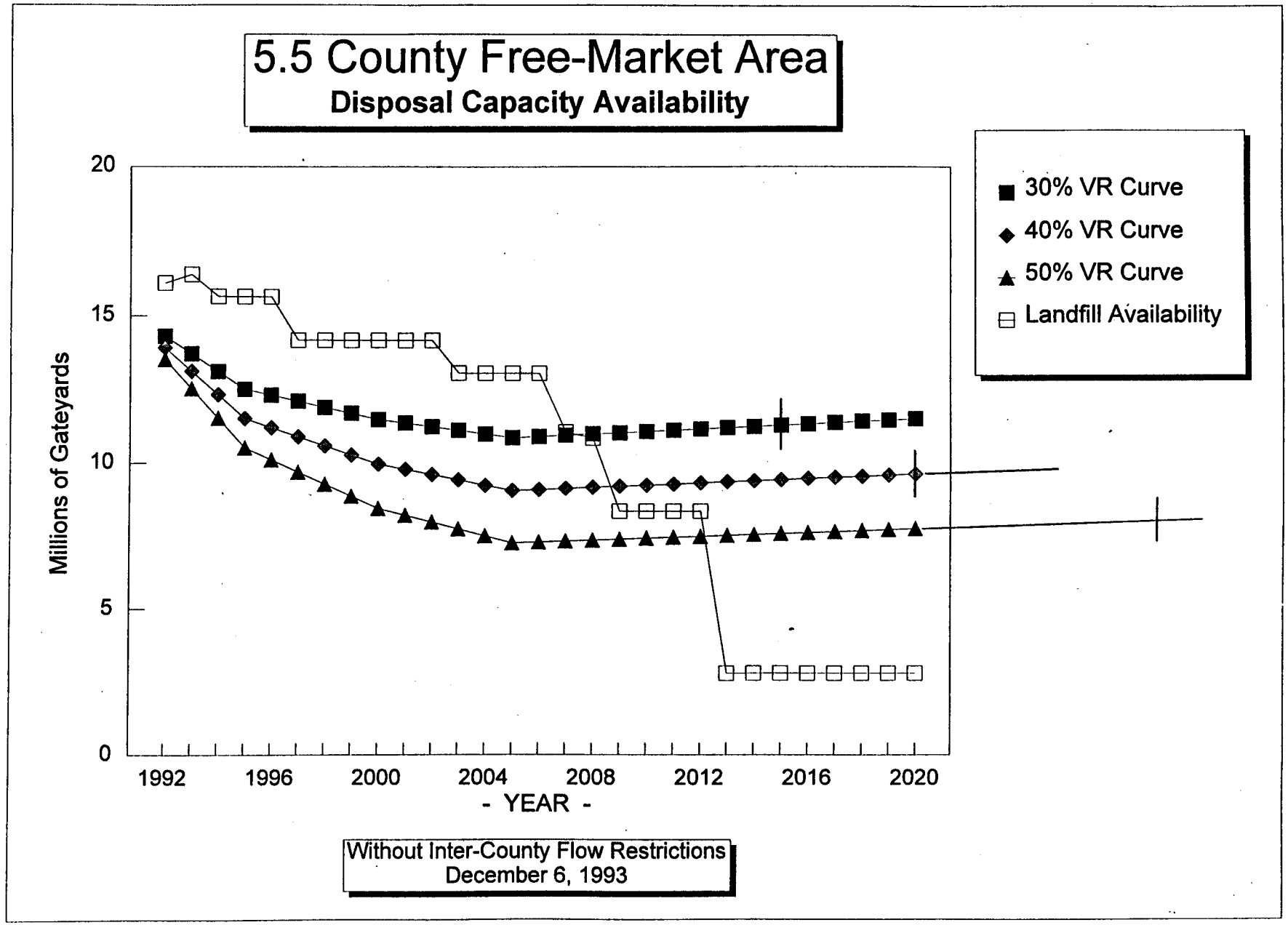
How Much Annual Operating Capacity Will Be Available?
Worksheet

12/06/93
22:10

Average gtyds/bankyard
1.7285

	Arbor Hills	Lyon Development	Wayne Disposal	Eagle Valley	Collier Road	Pinetree Acres	Riverview Highlands	Woodland Meadows	Sauk Trail Hills *	Carleton Farms **	Sibley Quarry	Huron Quarry	Ford Allen Park	Levy Taylor	McLouth Steel	City of Livonia	Citizens Disposal	Laidlaw Lenawee 2.5	Wayne Disp. Rockwood Monroe 0.250	Wash & Liv CDD & ISW to Jackson 30% VR	Totals
Space remaining at 1-1993	35.900	0.300	2.017	8.684	3.215	20.650	18.750	24.320	17.000	22.25	14	1.167	1.762	2.33	5.01	0.918	4.3	1.064	0.429		
1992 Usage	2.955	1.144	0.712	0.716	0.156	0.832	1.032	2.574	0	1.872	0.4	0.025	0.2	0.4	0.15	0.02	0.715	0.749	0.215		
Proposed Annual Limit	2.955	1.144	0.712	0.716	0.156	0.832	1.032	2.496	2.000	1.872	0.4	0.025	0.2	0.4	0.15	0.02	0.715	0.749	0.215		
Year																					
1992	2.955	1.144	0.712	0.716	0.156	0.832	1.032	2.574	1.000	1.872	0.400	0.025	0.200	0.400	0.150	0.020	0.715	0.749	0.215	0.241	16.108
1993	2.955	0.519	0.712	0.716	0.156	0.832	1.032	2.496	2.000	1.872	0.400	0.025	0.200	0.400	0.150	0.020	0.715	0.749	0.215	0.232	16.396
1994	2.955	0.000	0.712	0.716	0.156	0.832	1.032	2.496	2.000	1.872	0.400	0.025	0.200	0.400	0.150	0.020	0.715	0.749	0.000	0.223	15.653
1995	2.955	0.000	0.712	0.716	0.156	0.832	1.032	2.496	2.000	1.872	0.400	0.025	0.200	0.400	0.150	0.020	0.715	0.749	0.000	0.215	15.645
1996	2.955	0.000	0.712	0.716	0.156	0.832	1.032	2.496	2.000	1.872	0.400	0.025	0.200	0.400	0.150	0.020	0.715	0.749	0.000	0.211	15.641
1997	2.955	0.000	0.000	0.716	0.156	0.832	1.032	2.496	2.000	1.872	0.400	0.025	0.200	0.400	0.150	0.020	0.715	0.000	0.000	0.206	14.175
1998	2.955	0.000	0.000	0.716	0.156	0.832	1.032	2.496	2.000	1.872	0.400	0.025	0.200	0.400	0.150	0.020	0.715	0.000	0.000	0.202	14.171
1999	2.955	0.000	0.000	0.716	0.156	0.832	1.032	2.496	2.000	1.872	0.400	0.025	0.200	0.400	0.150	0.020	0.715	0.000	0.000	0.198	14.167
2000	2.955	0.000	0.000	0.716	0.156	0.832	1.032	2.496	2.000	1.872	0.400	0.025	0.200	0.400	0.150	0.020	0.715	0.000	0.000	0.194	14.163
2001	2.955	0.000	0.000	0.716	0.156	0.832	1.032	2.496	2.000	1.872	0.400	0.025	0.200	0.400	0.150	0.020	0.715	0.000	0.000	0.192	14.161
2002	2.955	0.000	0.000	0.716	0.156	0.832	1.032	2.496	2.000	1.872	0.400	0.025	0.200	0.400	0.150	0.020	0.715	0.000	0.000	0.190	14.159
2003	2.955	0.000	0.000	0.716	0.156	0.832	1.032	2.496	2.000	1.872	0.400	0.025	0.200	0.000	0.150	0.020	0.000	0.000	0.000	0.188	13.042
2004	2.955	0.000	0.000	0.716	0.156	0.832	1.032	2.496	2.000	1.872	0.400	0.025	0.200	0.000	0.150	0.020	0.000	0.000	0.000	0.186	13.040
2005	2.955	0.000	0.000	0.716	0.156	0.832	1.032	2.496	2.000	1.872	0.400	0.025	0.200	0.000	0.150	0.020	0.000	0.000	0.000	0.184	13.038
2006	2.955	0.000	0.000	0.716	0.156	0.832	1.032	2.496	2.000	1.872	0.400	0.025	0.200	0.000	0.150	0.020	0.000	0.000	0.000	0.184	13.038
2007	2.955	0.000	0.000	0.716	0.156	0.832	1.032	2.496	0.000	1.872	0.400	0.025	0.200	0.000	0.150	0.020	0.000	0.000	0.000	0.184	11.038
2008	2.955	0.000	0.000	0.716	0.156	0.832	1.032	2.496	0.000	1.872	0.400	0.025	0.000	0.000	0.150	0.020	0.000	0.000	0.000	0.184	10.838
2009	2.955	0.000	0.000	0.716	0.156	0.832	1.032	0.000	0.000	1.872	0.400	0.025	0.000	0.000	0.150	0.020	0.000	0.000	0.000	0.184	8.342
2010	2.955	0.000	0.000	0.716	0.156	0.832	1.032	0.000	0.000	1.872	0.400	0.025	0.000	0.000	0.150	0.020	0.000	0.000	0.000	0.185	8.343
2011	2.955	0.000	0.000	0.716	0.156	0.832	1.032	0.000	0.000	1.872	0.400	0.025	0.000	0.000	0.150	0.020	0.000	0.000	0.000	0.185	8.343
2012	2.955	0.000	0.000	0.716	0.156	0.832	1.032	0.000	0.000	1.872	0.400	0.025	0.000	0.000	0.150	0.020	0.000	0.000	0.000	0.185	8.343
2013	0.000	0.000	0.000	0.000	0.156	0.832	1.032	0.000	0.000	0.000	0.400	0.025	0.000	0.000	0.150	0.020	0.000	0.000	0.000	0.185	2.800
2014	0.000	0.000	0.000	0.000	0.156	0.832	1.032	0.000	0.000	0.000	0.400	0.025	0.000	0.000	0.150	0.020	0.000	0.000	0.000	0.185	2.800
2015	0.000	0.000	0.000	0.000	0.156	0.832	1.032	0.000	0.000	0.000	0.400	0.025	0.000	0.000	0.150	0.020	0.000	0.000	0.000	0.186	2.801
2016	0.000	0.000	0.000	0.000	0.156	0.832	1.032	0.000	0.000	0.000	0.400	0.025	0.000	0.000	0.150	0.020	0.000	0.000	0.000	0.186	2.801
2017	0.000	0.000	0.000	0.000	0.156	0.832	1.032	0.000	0.000	0.000	0.400	0.025	0.000	0.000	0.150	0.020	0.000	0.000	0.000	0.186	2.801
2018	0.000	0.000	0.000	0.000	0.156	0.832	1.032	0.000	0.000	0.000	0.400	0.025	0.000	0.000	0.150	0.020	0.000	0.000	0.000	0.186	2.801
2019	0.000	0.000	0.000	0.000	0.156	0.832	1.032	0.000	0.000	0.000	0.400	0.025	0.000	0.000	0.150	0.020	0.000	0.000	0.000	0.186	2.801
2020	0.000	0.000	0.000	0.000	0.156	0.832	1.032	0.000	0.000	0.000	0.400	0.025	0.000	0.000	0.150	0.020	0.000	0.000	0.000	0.187	2.802

* 1992 value assumed to be Willow Run
** 1992 value assumed to be City Sand & Landfill


5.5 County Free-Market Area
Disposal Capacity Availability
30% VR Curve
40% VR Curve
50% VR Curve
Landfill Availability
Millions of Gateyards
20
15
10
5
0
1992
1996
2000
2004
2008
2012
2016
2020
- YEAR -
Without Inter-County Flow Restrictions
December 6, 1993

Solid Waste Database
Oakland County, Michigan

12/08/93
20:54

5.5 Counties - Total Gateyards Generated

Year	Gateyard Availability From Gtyd1206.WK4 (Millions)	Excess Over 30% VR Curve	Excess Over 40% VR Curve	Excess Over 50% VR Curve	Following Oakland County's Volume Reduction Curve Year 2005 30% VR	Year 2005 40% VR	Year 2005 50% VR
1992	16.108	1,788,860	2,183,963	2,579,067	14,318,747	13,923,643	13,528,539
1993	16.396	2,676,575	3,271,142	3,865,709	13,718,993	13,124,426	12,529,859
1994	15.653	2,538,551	3,333,856	4,129,160	13,114,859	12,319,555	11,524,251
1995	15.645	3,138,437	4,135,753	5,133,069	12,506,345	11,509,029	10,511,713
1996	15.641	3,338,181	4,438,732	5,539,284	12,302,401	11,201,849	10,101,298
1997	14.175	2,078,419	3,282,844	4,487,268	12,096,952	10,892,528	9,688,103
1998	14.171	2,281,153	3,590,086	4,899,020	11,889,998	10,581,064	9,272,130
1999	14.167	2,485,381	3,899,461	5,313,542	11,681,538	10,267,458	8,853,377
2000	14.163	2,691,104	4,210,968	5,730,833	11,471,574	9,951,709	8,431,845
2001	14.161	2,812,037	4,387,501	5,962,965	11,348,626	9,773,162	8,197,698
2002	14.159	2,934,069	4,565,451	6,196,833	11,224,575	9,593,193	7,961,810
2003	13.042	1,942,200	3,629,818	5,317,437	11,099,419	9,411,800	7,724,181
2004	13.040	2,066,429	3,810,603	5,554,777	10,973,160	9,228,986	7,484,811
2005	13.038	2,191,758	3,992,806	5,793,853	10,845,796	9,044,748	7,243,700
2006	13.038	2,148,104	3,954,726	5,761,348	10,889,660	9,083,038	7,276,416
2007	11.038	104,449	1,916,646	3,728,843	10,933,525	9,121,328	7,309,131
2008	10.838	(139,205)	1,678,566	3,496,338	10,977,389	9,159,617	7,341,846
2009	8.342	(2,678,859)	(855,513)	967,833	11,021,253	9,197,907	7,374,561
2010	8.343	(2,722,513)	(893,593)	935,327	11,065,117	9,236,197	7,407,276
2011	8.343	(2,766,167)	(931,673)	902,822	11,108,981	9,274,486	7,439,992
2012	8.343	(2,809,822)	(969,752)	870,317	11,152,846	9,312,776	7,472,707
2013	2.800	(8,396,476)	(6,550,832)	(4,705,188)	11,196,710	9,351,066	7,505,422
2014	2.800	(8,440,130)	(6,588,912)	(4,737,693)	11,240,574	9,389,356	7,538,137
2015	2.801	(8,483,784)	(6,626,991)	(4,770,199)	11,284,438	9,427,645	7,570,852
2016	2.801	(8,527,438)	(6,665,071)	(4,802,704)	11,328,302	9,465,935	7,603,568
2017	2.801	(8,571,093)	(6,703,151)	(4,835,209)	11,372,167	9,504,225	7,636,283
2018	2.801	(8,614,747)	(6,741,230)	(4,867,714)	11,416,031	9,542,514	7,668,998
2019	2.801	(8,658,401)	(6,779,310)	(4,900,219)	11,459,895	9,580,804	7,701,713
2020	2.802	(8,702,055)	(6,817,390)	(4,932,724)	11,503,759	9,619,094	7,734,428

Total Excess 1993 Thru 2007	Total Excess 1993 Thru 2008	Total Excess 1993 Thru 2012
35,426,846	58,098,961	84,586,580

Total Shortage 2008 Thru 2015	Total Shortage 2009 Thru 2020	Total Shortage 2013 Thru 2029
(36,436,956)	(57,123,418)	(84,408,905)

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Solid Waste Database
Oakland County, Michigan

	Lyon Development	Wayne Disposal	Eagle Valley	Collier Road
Average glyds/bankyard 1.7285				
Space remaining at 1-1993	0.300	2.017	8.584	3.215
1992 Usage	1.144	0.712	0.716	0.156
Proposed Annual Limit	1.144	0.712	0.712	0.156

Oakland's Export Possibilities

Oakland Alone	Wayne at Zero	Wayne at 1 Million	Wayne at 2 Million	Livingston	Lapeer	Lenawee	Macomb	Genesee	Washtenaw #1	Washtenaw #2	Wayne	Year	Lyon Development	Wayne Disposal	Eagle Valley	Collier Road
2.728	6.438	7.438	8.438	0.000	0.050	0.750	0.510	0.400	1.500	0.500	2.000	1992	1.144	0.712	0.716	0.156
2.099	5.809	6.809	7.809		0.050	0.750	0.510	0.400	1.500	0.500	2.000	1993	0.519	0.712	0.712	0.156
1.580	5.290	6.290	7.290		0.050	0.750	0.510	0.400	1.500	0.500	2.000	1994	0.000	0.712	0.712	0.156
1.580	5.290	6.290	7.290		0.050	0.750	0.510	0.400	1.500	0.500	2.000	1995	0.000	0.712	0.712	0.156
1.580	5.290	6.290	7.290		0.050	0.750	0.510	0.400	1.500	0.500	2.000	1996	0.000	0.712	0.712	0.156
0.868	3.828	4.828	5.828		0.050		0.510	0.400	1.500	0.500	2.000	1997	0.000	0.000	0.712	0.156
0.868	3.828	4.828	5.828		0.050		0.510	0.400	1.500	0.500	2.000	1998	0.000	0.000	0.712	0.156
0.868	3.268	4.268	5.268					0.400	1.500	0.500	2.000	1999	0.000	0.000	0.712	0.156
0.868	3.268	4.268	5.268					0.400	1.500	0.500	2.000	2000	0.000	0.000	0.712	0.156
0.868	3.268	4.268	5.268					0.400	1.500	0.500	2.000	2001	0.000	0.000	0.712	0.156
0.868	3.268	4.268	5.268					0.400	1.500	0.500	2.000	2002	0.000	0.000	0.712	0.156
0.868	2.868	3.868	4.868						1.500	0.500	2.000	2003	0.000	0.000	0.712	0.156
0.868	2.868	3.868	4.868						1.500	0.500	2.000	2004	0.000	0.000	0.712	0.156
0.868	2.868	3.868	4.868						1.500	0.500	2.000	2005	0.000	0.000	0.712	0.156
0.868	2.868	3.868	4.868						1.500	0.500	2.000	2006	0.000	0.000	0.712	0.156
0.868	2.868	3.868	4.868						1.500	0.500	2.000	2007	0.000	0.000	0.712	0.156
0.868	2.868	3.868	4.868						1.500	0.500	2.000	2008	0.000	0.000	0.712	0.156
0.868	2.868	3.868	4.868						1.500	0.500	2.000	2009	0.000	0.000	0.712	0.156
0.868	2.868	3.868	4.868						1.500	0.500	2.000	2010	0.000	0.000	0.712	0.156
0.868	2.868	3.868	4.868						1.500	0.500	2.000	2011	0.000	0.000	0.712	0.156
0.868	2.868	3.868	4.868						1.500	0.500	2.000	2012	0.000	0.000	0.712	0.156
0.156	0.156	0.156	0.156									2013	0.000	0.000	0.000	0.156
0.156	0.156	0.156	0.156									2014	0.000	0.000	0.000	0.156
0.156	0.156	0.156	0.156									2015	0.000	0.000	0.000	0.156
0.156	0.156	0.156	0.156									2016	0.000	0.000	0.000	0.156
0.156	0.156	0.156	0.156									2017	0.000	0.000	0.000	0.156
0.156	0.156	0.156	0.156									2018	0.000	0.000	0.000	0.156
0.156	0.156	0.156	0.156									2019	0.000	0.000	0.000	0.156
0.156	0.156	0.156	0.156									2020	0.000	0.000	0.000	0.156

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Basic Material Behind Chapters 3 and 4

These are the data points driving the Oakland County graphics shown in Chapter 4, Page 7 and in Exhibit 4.25. This material will be adjusted as appropriate during the April, 1994 SWPC final review of the proposed Plan Amendment.

Overview of the Public Involvement Process

Act 641 of 1978 (as amended) and its Administrative Rules require a rather rigorous public involvement process for Solid Waste Management Plan Amendments and/or Updates. This initially involves Board of Commissioners' appointment of 14 voting members (representing various interests) to a Solid Waste Planning Committee (SWPC) for two-year terms. This step was completed on September 23, 1993. The SWPC knowledge base was further enhanced by the additional appointment of 13 Advisory Members on October 21, 1993.

The primary mission of the SWPC is to assist the County Executive and staff (Oakland County's Designated Planning Agency (DPA)) in the preparation of Plan Amendments or Updates. The SWPC also insures that the DPA properly seeks public participation in the process.

On the opposite hand, the Designated Planning Agency is responsible for preparation of the Plan Amendment and/or Update. The DPA must solicit the advise and consent periodically with the municipalities, appropriate organizations, the private sector, SEMCOG, and adjacent counties and municipalities in adjacent counties that may be significantly impacted. The DPA must also meet at least quarterly with the SWPC during the plan review process; must maintain a mailing list of all municipalities, the private sector and all interest persons; and must notify the chief elected officials of each municipality (and any other person so requesting), at least 10 days prior to each public meeting with the SWPC, indicating the subject matter being discussed.

When the Draft Plan Amendment or Update is completed, the DPA must provide copies to the MDNR, each municipality, adjacent counties (and adjacent cities if they are affected or have so requested), and to SEMCOG. These agencies are allowed a minimum of 90 days of review time and were notified of the current amendment on December 21, 1993.

The DPA is also required to conduct a public hearing on the amendment, after release of the documents by the Solid Waste Planning Committee. The SWPC authorized this action at its meeting of December 16, 1993. The DPA issued press releases announcing the plan review schedule and published notices of the public hearing in several newspapers in February of 1994. A public hearing was conducted on March 31, 1994 and the public record was closed (see separate section for public comments and for the public hearing transcript). A copy of all public comments and the public hearing transcript follow with the Plan Amendments through the remainder of the approval process. After receiving the public comments, the DPA adjusted the Amendments as was appropriate and presented its recommendations to the Solid Waste Planning Committee on April 14, 1994.

The SWPC considered the DPA's recommendations and made its formal recommendations to the Board of Commissioners on April 28, 1994, within Act 641's 30 day time limit since closure of the public record. The Board of Commissioners will review the SWPC's recommendation at its regularly scheduled meetings in May and June of 1994, where public participation is always sought. The Board of Commissioners may approve the plan as submitted by the SWPC or prepare a "statement of objections." If a "statement of objections" is prepared by the Board, this material is returned to the SWPC for their comments and recommendations. The SWPC must respond within 30 days to any issue raised and the Board of Commissioners may then either approve or amend the documents.

After release of the plan amendment or update by the Board of Commissioners, each of Oakland County's 61 municipalities must approve or disapprove the document. If 67% approve (41 approvals required), the document is forwarded to the MDNR Director for final approval. The document becomes effective on the date approved by the MDNR Director.

Record of Public Comments:

This material was bound and distributed separately on April 6, 1994. Additional copies are available upon request. Call Solid Waste Management at (810) 858-1352 for information. This Plan Amendment only contains the cover sheet and a Quick Reference Chart Showing Principal Areas of Concern from that reference document.

March 31, 1994 Public Hearing Transcript:

This material was bound and distributed separately on April 6, 1994. Additional copies are available upon request. Call Solid Waste Management at (810) 858-1352 for information. This Plan Amendment only contains the cover sheet and a Quick Reference Chart Showing Principal Areas of Concern from that reference document.

Designated Planning Agency Responses:

This material describes the Designated Planning Agency's responses to the numerous public comments received during the course of public review of the plan amendments. This includes all written correspondence received since release of the first draft documents on December 16, 1993 through the approval of the plan amendments by the Board of Commissioners on June 9, 1994.

Because of the press of the final deadline imposed by MDNR on the current Oakland County plan amendment process caused by the issuance of a Stipulation and Order For Dismissal in the Holly Disposal, Inc. v MDNR litigation, the document remains incomplete at this time. The Designated Agency Responses will be added to the final document on the next printing run. Interested parties may contact Solid Waste Management at (810) 858-1352 for a copy of the responses. June 13, 1994.

RECORD OF PUBLIC COMMENTS

on the

PROPOSED AMENDMENTS

to the

1990 SOLID WASTE MANAGEMENT PLAN

for

OAKLAND COUNTY, MICHIGAN

April 6, 1994

Solid Waste Management Plan - Proposed Amendments

Public and Public Agency Comment Summary

Quick Reference Chart Showing Principal Areas of Concern

(Combination of Written Comments and Public Hearing Testimony)

		Proposed Plan Amendment Chapter #								Other Facilities not Discussed in Original Chapter 7	Misc. and/or Not Related
		Database		Flows	Capacity	Criteria	Contingency	Facilities	Misc.		
Item #	PH #	1	2	3	4	5	6	7	Appendix		
1						X				X	
2				X						X	X
3				X						X	X
4										X	X
5								X			
6											X
7				X						X	X
8		X		X	X	X	X	X	X	X	
9	T3			X				X			
10	T7									X	
11	T13							X		X	
12						X		X		X	
13						X					
14				X				X			
15										X	
16										X	
17	T1					X				X	
18	T8					X					
19								X		X	
20										X	
21				X		X		X			
22	T17					X					X
23	T5					X					X
24	T9							X			
25	T11					X					
26	T6									X	
27	T7										X
28	T4									X	
	T2									X	X
	T9					X					
	T10										X
	T12									X	
	T14							X		X	X
	T15										X
	T16				X						X
	T17										X
	T18										X
	T19									X	X
	T20										X
	T21										X

Revised on 4/30/94
4/05/94
RJS, PE

Notes: Item # refers to the Written Comments Received Item #
PH # refers to the Public Hearing Transcript Item #

Note: The draft Plan Amendment as distributed in December 1993, was split into two documents by the Designated Planning Agency in its final recommendations to the Solid Waste Planning Committee on April 14, 1994. The first dealt with issues contained in the MDNR's conditional approval letter of November 1991, and the second dealt with miscellaneous facility designations and deletions.

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Solid Waste Planning Committee

Ardath Regan, Chairperson
Dennis Powers, Vice-Chairperson

Nancy Bates
Timothy Carpenter, P.E.
Alan Druschitz
Sandra Dyl
Dawn Furlong
Michael Izzo
Lenora Jadun P.E.
Robert Leininger
Yale Levin
Robert Line
Samuel Seabright, P.E.
Thomas Waffen P.E.

SWPC Advisory Members

Pete Connors
Claudia Filler
Robert Justin
Patrick Kresnak
Rich Pirrotta
Gerald Schlaf
George Schutte, P.E.
Al Shay
Ted Starbuck
Jerry Strang
Daryl Toby
Mike Tyler
Lawrence Wesson

10-08-93

Mission Statement

General
In accord with Act 641 of 1978 as amended, the Department of Solid Waste Management will act as the Oakland County Designated Planning Agency and will work with the County's Solid Waste Planning Committee (SWPC) on Oakland County's Solid Waste Management Plan and amendments.

Near-term Mission -- Amendments to the Existing Plan Update
Recommendations on the following items (in the form of short, point-specific amendments to the 1990 Oakland County Solid Waste Management Plan Update) should be prepared and presented to the SWPC for release for public comment prior to the end of 1993.

A. The MDNR Director did not fully approve the 1990 Plan Update, finding deficiencies with quantification of flows to other counties, the interim siting mechanism which did not guarantee siting to an applicant meeting all specified criteria and the contingency plan. Alternate Plan language is required.

When developing language for a new interim siting mechanism as outlined in Item A, consider the development of a dual interim siting mechanism, which (1) provides for rapid processing of designation requests for lesser Act 641 facilities such as compost sites, recyclable materials processing facilities (MRFs), mixed-waste MRFs and transfer stations and (2) provides for a more rigorous process for major Act 641 facilities such as landfills and waste-to-energy facilities.

B. Because of the passage of time and because of the closure of the Waterford Hills landfill for environmental violations, 20 years of disposal capacity as required by Act 641 is no longer available. Consider the following Plan Amendment request for additional landfill capacity within the framework of the newly recommended quantified inter-county flow schedule and interim siting mechanism outlined in A above (which mechanism would be operative if sufficient disposal capacity is not designated or otherwise identified).

1. A lateral expansion of the Wayne Disposal-Oakland landfill on Brown Road in Auburn Hills.

C. Reconsider the designation of facilities identified in the 1990 Plan Update which are no longer operational or for which no specific plans have ever been advanced such as...

1. Waterford Hills landfill
2. Rose Township MRF
3. Alternate RRRASOC MRF sites

D. Consider the designation of the following facilities which have been suggested by the County's municipalities.

1. RRRASOC mixed-waste MRF, 20000 W. Eight Mile Road, Southfield
2. Pontiac mixed-waste MRF/Transfer Station, location to be determined
3. Pontiac Mixed-waste MRF/Transfer Station, location to be determined

Short-term Mission -- Prepare for issuance of a new Plan Update
The 1990 Plan Update was based upon 1980 census data and upon regional development forecasts prepared in the mid-80s. In preparation for the next Plan Update, work with the SWPC to develop a revised database; stay current in all changes proposed for the planning process in Act 641 and its Administrative Rules; and begin development of a revised implementation mechanism, all of which will form the basis for the rapid production of the next major solid waste plan.

Long-term Mission -- Prepare a new Act 641 Plan Update
It is anticipated that the next round of Plan Updates for all of Michigan's 83 Counties will be initiated by the MDNR in mid 1994. When the process is initiated by MDNR, a revised Mission Statement will be promulgated based upon the now anticipated legislative and administrative changes to Act 641, upon the then existent policies of the Michigan Natural Resources Commission, and upon input and recommendations received from the Department, the Solid Waste Planning Committee and from the Board of Commissioners.

Rules & Procedures for the
Oakland County Solid Waste Planning Committee
(As Adopted on November 11, 1993)

I. Rules of Order

A. All meetings of the Oakland County Solid Waste Planning Committee (SWPC) will be established and conducted in accordance with the requirements of Act 641, the Solid Waste Management Act, and Act 267, the Open Meetings Act.

B. "Robert's Rules of Order" shall be the parliamentary authority of the SWPC and shall govern the proceedings of the SWPC. Rules adopted by the SWPC shall supersede any rules in the parliamentary authority with which they conflict.

II. Election of Officers

A. The SWPC shall annually elect a Chairperson and a Vice Chairperson.

B. A staff member of the Designated Planning Agency (DPA) shall act as temporary Chairperson until a Chairperson is elected.

C. Any member of the SWPC may place the name of another member in nomination for office. Nominations do not require a second.

D. The nomination and election of the Chairperson and Vice Chairperson shall be separate.

E. Election of the Chairperson and Vice Chairperson shall be by roll call vote. The vote of eight members is required to elect the Chairperson and Vice Chairperson.

III. Meetings of the Solid Waste Planning Committee

A. The SWPC shall meet at the times and places determined by the DPA in conjunction with the Chairperson, but not less than quarterly during preparation of a Plan Amendment or Plan Update.

B. The DPA and the Chairperson of the SWPC shall establish the meeting agenda which is to be included with the notice of the meeting.

C. SWPC members may contact DPA staff or the SWPC Chair-person to request that items be placed on the agenda or, during the "New Business" portion of the meeting, a SWPC member may request that an item appear on a future agenda. Such item will be placed on the agenda of the next meeting or a subsequent meeting.

D. Members of the public may contact DPA staff or the SWPC Chairperson to request that items be placed on the agenda or, during the "Public Comment" portion of the meeting, a member of the public may request that an item appear on a future agenda. The proposed item should reflect the immediate tasks of the SWPC.

E. The SWPC shall not act on matters or issues not on the agenda.

F. Staff should notify local government officials if industry presentations are to be made to the SWPC regarding facilities in their municipality.

IV. Presence and Voting

A. A majority of the SWPC voting members serving and present at the call of the Chairperson shall constitute a quorum.

B. The designee(s) of the member(s) appointed to represent city, county or township government may vote in the absence of the appointed member(s) (see Section 26(2) of Act 641). The DPA and the Chairperson of the SWPC shall be notified of the identity of the designee(s), in writing, at least five (5) days before a designee may vote at a meeting of the SWPC. Notice shall also be in writing by the appointed member(s) of any proposed change in designee.

C. Only the fourteen (14) persons appointed to the SWPC in compliance with the requirements of Act 641, or the designees identified in sub-section IV B above, may vote on formal resolutions of the SWPC. A majority vote of those present will constitute adoption of a formal resolution. A member, or designee, must be present at the time the vote is taken to vote on a formal resolution of the SWPC.

D. Non-voting advisory members may, and are, encouraged to participate in all discussions. They may not propose nor second motions or resolutions, and they may not vote on motions or resolutions of the SWPC.

E. Approval of a Plan Amendment or Plan Update requires a majority vote of the committee members appointed and serving (see Section 26(1) of Act 641).

V. Public Participation

A. Public comments regarding agenda items will be received as those items are taken up by the SWPC. Public comments on non-agenda matters will be received during the "Public Comment" portion of the meeting.

B. Persons wishing to address the SWPC shall identify themselves and state their address and the reason for addressing the SWPC.

C. Persons shall limit their comments to three (3) minutes unless the time is extended by the Chairperson or by a majority vote of the SWPC members present and voting.

D. The Open Meetings Act allows persons to record or broadcast the SWPC meetings. However, such actions shall result in a minimum of disruption of the meeting. The Chairperson shall determine if the actions are disrupting the meeting and the Chairperson shall have the right to direct that those actions be modified so as to not cause disruption of the meeting.

VI. Amendment of Rules and Procedures

Amendments to these Rules and Procedures shall be adopted by an affirmative vote of two-thirds (2/3) of the members of the SWPC provided that written notice of any proposed amendment is given to the members at least ten (10) days prior to the vote thereon.

VII. Agenda Format

The agenda format for SWPC meetings shall be as follows:

1. Call Meeting to Order
2. Roll Call
3. Approve Minutes of Previous Meeting(s)
4. Approve Agenda
5. Unfinished Business -- this portion of the meeting is to ...
    a. address items carried over from previous meetings.
6. New Business -- this portion of the meeting is to ...
    a. address new issues,
    b. receive and address information presented by DPA staff and/or special committees,
    c. and to allow SWPC members to request inclusion of an item on a future agenda
7. Miscellaneous Business -- this portion of the meeting is for ...
    a. announcements,
    b. discussion of future meetings,
    c. general comments by SWPC members and DPA staff,
    d. and such other items of business as may come before the SWPC.
8. Public Comment -- this portion of the meeting is to ...
    a. allow public comment on items not on the agenda
    b. allow the public to request inclusion of an item on a future agenda
9. Adjourn Meeting

VIII. Adoption of Rules & Procedures

These Rules and Procedures shall not become operative until adopted by an affirmative vote of two-thirds (2/3) of the members of the SWPC.

Oakland County Solid Waste Planning Committee

Attendance Record

Member Name	Category	#1 10-14-93	#2 10-28-93	#3 11-11-93	#4 12-2-93	#5 12-16-93	#6 2-17-94	#7 3-10-94	#8 4-14-94	#9A * 4-21-94	#9B * 4-28-94	#11 5-26-94	#12A * 6-2-94	#12B * 6-8-94	Attendance
Bates, Nancy	Elected City Official		P			X	D	D	D	D			D	D	61.54%
Carpenter, Timothy	Environmental	X	X	X	X	X	X	X	X	X	X	X	X	X	100.00%
Druschitz, Alan	General Public	X	X	X	X	X	X	X	X	X	X	X	X	X	100.00%
Dyl, Sandra	General Public	X	X	X	X	X	X	X	X	X	X	X	X	X	100.00%
Furlong, Dawn	Environmental	X	X	X	X	X	X	X	X	X	X	X	X	X	100.00%
Izzo, Michael	Elected Twp. Official	X	X	X	X	X	X	X	X	X		X	X	X	92.31%
Jadun, Lenora	Solid Waste Industry				X	X	X	X	X	X	X		X	X	69.23%
Leininger, Robert	Solid Waste Industry	X	X		X	X			X	X	X	X	X	X	76.92%
Levin, Yale	Solid Waste Industry	X	X	X	X	X		X	X	X	X	X			76.92%
Line, Robert	Solid Waste Industry	X	X	X	X	X	X		X	X		X			69.23%
Powers, Dennis	County Commissione	X	X	X	X	X	X	X	X	X	X	X	X	X	100.00%
Regan, Ardath	SEMCOG	X	X	X	X	X	X	X	X	X	X	X	X	X	100.00%
Seabright, Samual	Industrial Generator	X	X		X							X	X	X	46.15%
Waffen, Thomas	General Public	X	X		X	X	X	X	X	X	X		X	X	84.62%
Members Attending		12	13	9	13	13	11	11	13	13	10	11	12	12	11.77
Percent Attending		85.71%	92.86%	64.29%	92.86%	92.86%	78.57%	78.57%	92.86%	92.86%	71.43%	78.57%	85.71%	85.71%	84.07%
Advisory Members															
Conners, Pete			X	X		X		X	X	X	X	X	X	X	83.33%
Filler, Claudia			X	X	X	X		X	X	X	X	X	X	X	91.67%
Justin, Robert			X	X	X	X		X	X	X	X	X	X	X	91.67%
Kresnak, Patrick				X	X	X		X	X						41.67%
Pirrotta, Rich			X			X	X								25.00%
Schlaf, Gerald			X	X			X	X	X	X	X	X			66.67%
Schutte, George										X	X	X	X	X	41.67%
Shay, Al			X	X											16.67%
Starbuck, Ted					X	X	X	X				X			41.67%
Strang, Jerry				X	X	X			X	X					41.67%
Toby, Daryl			X	X	X	X	X	X			X				58.33%
Tyler, Michael			X		X	X									25.00%
Wesson, Lawrence				X		X	X								25.00%
Advisory Members Attending			8	9	7	10	5	7	6	6	6	6	4	4	6.50
Percent Attending			61.54%	69.23%	53.85%	76.92%	38.46%	53.85%	46.15%	46.15%	46.15%	46.15%	30.77%	30.77%	50.00%
Total, Members and Advisory Members		12	21	18	20	23	16	18	19	19	16	17	16	16	
Percent of Total Possible Attendence		85.71%	77.78%	66.67%	74.07%	85.19%	59.26%	66.67%	70.37%	70.37%	59.26%	62.96%	59.26%	59.26%	68.34%
Elected Offical's Designees															
Bates	Biasell, Thomas 1-24-94	X					D	D	D	D			D	D	
Izzo	None named														
Powers	Kaczmar, Eugene 12-21-93	X	X	X	X	X	X	X	X	X	X	X			
Attendance by the Public															Average/Meeting
Approximate number in audience		7	25	15	27	40	40	23	30	22	18	21	12	9	22.23

Legend: X - indicates attendance
P - indicates attendance by predecessor
D - indicates representation by Designee

Notes: SWPC Members originally appointed to two year terms ending on 9-22-95 by the Board of Commissioners on September 23, 1993.
SWPC Advisory Members originally appointed to two year terms ending on 9-22-95 by the Board of Commissioners on October 21, 1993.
Nancy Bates was appointed to replace Ben Marks (who lost a local election in 11-93) by the Board of Commissioners on December 9, 1993.

* The 4-21-94 meeting was recessed to 4-28-94 and the 6-2-94 meeting was recessed to 6-8-94.

RJS, PE
06/14/94