

DATA BASE

Identification of sources of waste generation within the county, total quantity of solid waste generated to be disposed, and sources of the information. (Attach additional pages as necessary)

The Waste Stream is comprised of four categories of waste:

- (1) Municipal Solid Waste (**MSW**),
- (2) Construction and Demolition Debris (**CDD**),
- (3) Industrial Special Wastes (**ISW**),
- (4) and Ash.

MSW consists of residential waste, commercial waste and industrial waste. CDD is comprised of construction and/or demolition debris. Ash, which is generated during the coal-burning processes of energy production, consists of bottom ash, economizer ash and fly ash. ISW are wastes that do not fit into other categories. These include treatment of sludge, bulky items, tires, foundry sand, sawdust, agricultural waste, and contaminated soils.

The following database is derived from four sources:

- Fiscal Year 1998 MDEQ *Report of Solid Waste Landfill in Michigan*,
- Volumes reported by waste haulers operating in St. Clair County,
- 1994 state-wide waste stream estimates calculated by Oakland County Solid Waste Planning, and
- Detroit Edison reported amounts of ash generated annually at their St. Clair, Belle River, and Marysville power plants.

Average Generation per Resident/Commercial employee¹/Industrial Employee²

Residential – 3.77 lbs per day (365 days/year) – generated

Commercial – 8.07 lbs per working day (260 days/year) – generated

Industrial – 10.6 lbs per working day (260) days/year) – generated

CDD – 0.7 lbs per capita per day (365 days/year) – generated

ISW – ISW and CDD together comprise 20% of the statewide waste stream or 25% of MSW

Ash – Ash volumes are reported as estimated by Detroit Edison³

¹ Commercial employees are defined as those who are occupied in Standard Industrial Classification (SIC) Codes 40-97.

² Industrial employees are defined as those who are occupied in Standard Industrial Classification (SIC) Codes 1-39.

³ The ash volumes reported by Detroit Edison represent only quantities to be disposed of at their Range Road Property (Type III) and they include some small amounts of ash generated by Cargill Salt. Some ash is site-separated and sold for recycling.

Waste Type	Current Annual Volume	Five-Year Annual Volume	Ten-Year Annual Volume
Residential Waste	115,229 tons	120,438 tons	125,748 tons
Commercial Waste	53,422 tons	58,203 tons	61,395 tons
Industrial Waste	18,923 tons	19,174 tons	19,209 tons
CDD	21,102 tons	22,363 tons	23,348 tons
ISW	25,792 tons	27,091 tons	28,240 tons
Ash	230,000 tons	230,000 tons	230,000 tons
Total Waste Generated	464,468 tons	477,269 tons	487,940 tons

TOTAL QUANTITY OF SOLID WASTE GENERATED:

464,468 Tons or Cubic Yards in 2000 (identify unit of time)

TOTAL QUANTITY OF SOLID WASTE NEEDING DISPOSAL:

430,946 Tons or Cubic Yards in 2000 (identify unit of time)

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Inventory and description of all solid waste disposal areas within the County or to be utilized by the County to meet its disposal needs for the planning period.

Definitions and Kinds of Disposal Areas

Sanitary Landfill: The Part 115 of the NREPA, 1994 PA 451, as amended, definition of "Sanitary Landfill" is a type of disposal area consisting of one or more landfill units and the active work areas associated with these units. Sanitary landfills shall be classified as one of the following types of landfills:

- Type II Landfill: a municipal solid waste landfill and includes a municipal solid waste incinerator ash landfill.
- Type III Landfill: any landfill which is not a municipal solid waste landfill or hazardous waste landfill and includes any of the following:
 - Construction and demolition landfills
 - Industrial waste landfills
 - Landfills which accept waste other than household waste, municipal solid waste incinerator ash, or hazardous waste from conditionally exempt small quantity generators.

Transfer Facility: The Part 115 of the NREPA, 1994 PA 451, as amended, definition of "Solid Waste Transfer Facility" is 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.

- "Type A" Transfer Facility is designed and operated to receive solid waste primarily from mechanically unloaded vehicles.
- "Type B" Transfer Facility is designed and operated to receive domestic and commercial solid waste from vehicles unloaded by hand.

Processing Plant: The Part 115 of the NREPA, 1994 PA 451, as amended, definition of "Solid Waste Processing Plant" is 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.

Solid Waste Disposal Areas

The 1998 Facility Survey identified three disposal areas within the County that were being used by the County to meet its disposal needs:

Smiths Creek Landfill: St. Clair County has owned and operated Smiths Creek Landfill as

a Type II landfill since 1969. The Smiths Creek Landfill is operated as a profit/loss center where the daily activities and operations are managed to receive and dispose of residential, commercial and industrial waste. The Smiths Creek Landfill is a Type II site and is prohibited from receiving and disposing of hazardous materials. The landfill is located in a sparsely populated area of Kimball Township (and part of St. Clair Township) on Smiths Creek Road. The total area of the facility property is 364.5 acres, of which 157 acres are currently permitted for disposal. This plan recognizes future expansion of the facility that would include vertical expansion as well as a small amount of lateral expansion. Possible future expansion does not involve increasing the total area of the facility property. Current projected remaining capacity of the landfill is estimated to be 5,700,000 in-place cubic yards. Possible future expansions at the Smiths Creek Landfill would result in an additional 9,100,000 cubic yards of capacity and an increase from 15 years of estimated lifetime to 35.9 years of landfill lifetime.

Range Road Property (Type III) Detroit Edison Co.: The coal-burning electric power plants of Detroit Edison generate large quantities of ash as a by-product of burning coal. The company owns and operates a Type III landfill for disposal purposes. The site is known as the Detroit Edison Ash Disposal Area or Range Road Property, Type III Landfill. The site is located in China Township, Section 12, at 366 Range Rd. south of Bree. The site area is 456.67 acres with an estimated available capacity (as of 1999) of 18,750,000 cubic yards. Annual usage is at a rate of 250,000 cubic yards per year. Apparent remaining life for this landfill dedicated to ash disposal is 75 years. The major contributors of ash to the Detroit Edison Ash Disposal Area are the large St. Clair and Belle River power plants located nearby. Detroit Edison contracts with a private hauler to transport ash from the plants to the disposal site.

Detroit Edison has increased the recycling of coal ash from its Belle River-St. Clair complex over the past 10 years, consequently reducing its disposal needs. The 1990 St. Clair County Solid Waste Management Plan identified an annual volume usage at this facility to be 320,000 cubic yards. Current annual usage recognizes a decrease 70,000 cubic yards annually since 1990. In order to assure minimal environmental impact and to preserve the availability of this site for at least the next seventy-five (75) years, Detroit Edison is committed to maximize the recycling and minimize the land filling of its coal ash. In order to insure that this commitment continues, Detroit Edison agrees to place the following conditions on the Range Road ash facility:

- Utilization of the facility shall be limited to ash generated at coal burning facilities located within St. Clair and Huron Counties.
- Ash imported from Huron County shall be limited to that generated at Edison's Harbor Beach Power Plant and shall also be limited to an annual average of one truckload per day.
- Edison shall make its best efforts to sell for recycling at least twice the amount of ash from the Belle River/St. Clair complex as it disposes from the Harbor Beach plant.

Howard's Solid Waste Transfer and Reclamation Center: The Howard Solid Waste Transfer and Reclamation Facility is located on the north side of Dove Rd., west of

Michigan Rd., in Port Huron Township. This Plan designates Howard's Solid Waste Transfer and Reclamation Center as a licensable transfer facility and processing plant. A proposed expansion approved by the Solid Waste Management Planning Committee (2/27/89) includes: a 55' x 100' addition to the first transfer/processing building, a compost area, and a recycling drop-off center. Approximately 45,000 cubic yards of refuse was deposited at the transfer station in 1998. Waste is hauled to Smiths Creek Landfill for final disposal. Scrap metal and other recyclable materials obtained from on-site reclamation are sold on the recycling market.

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FACILITY DESCRIPTIONS

Facility Type: Type II Landfill

Facility Name: Smiths Creek Landfill

County: St. Clair Location: Kimball and St. Clair Twps. Town: T6N Range: R16E Section(s): 32
(Kimball Twp.) and 5 (St. Clair Twp.)

Map identifying location included in Attachment Section: Yes No

If facility is an Incinerator or a Transfer Station, list the final disposal site and location for Incinerator ash or Transfer Station wastes: N./A.

Public Private Owner: St. Clair County

Operating Status (check)

- open
- closed
- licensed
- unlicensed
- construction permit
- open, but closure pending

Waste Types Received (check all that apply)

- residential
- commercial
- industrial
- construction & demolition
- contaminated soils
- special wastes *
- other: _____

* Explanation of special wastes, including a specific list and/or conditions:

Sludge, Foundry Sand, Coal slag dust, Asbestos, Lime Slurry, Salt brine and Medical Waste.

Site Size:

Total area of facility property:	<u>364.5</u>	acres
Total area sited for use:	<u>264.5</u>	acres
Total area permitted:	<u>157.0</u>	acres
Operating:	<u>63.8</u>	acres
Not excavated:	<u>37.0</u>	acres
Current capacity:	<u>5,700,000</u>	<input type="checkbox"/> tons or <input checked="" type="checkbox"/> yds ³ (Remaining future capacity 14,800,000 yd ³)
Estimated lifetime:	<u>15</u>	years (Future expansion 35.9 years)
Estimated days open per year:	<u>312</u>	days
Estimated yearly disposal volume:	<u>768,000</u>	<input type="checkbox"/> tons or <input checked="" type="checkbox"/> yds ³
(if applicable)		
Annual energy production:		
Landfill gas recovery projects:	<u>N./A.</u>	megawatts
Waste-to-energy incinerators:	<u>N./A.</u>	megawatts

FACILITY DESCRIPTIONS

Facility Type: Type III Landfill

Facility Name: Range Road Property (Type III) Detroit Edison Co.

County: St. Clair Location: China Twp. Town: 4N Range: 16E Section(s): 12

Map identifying location included in Attachment Section: Yes No

If facility is an Incinerator or a Transfer Station, list the final disposal site and location for Incinerator ash or Transfer Station wastes: N./A.

Public Private Owner: Detroit Edison Co.

Operating Status (check)

- open
- closed
- licensed
- unlicensed
- construction permit
- open, but closure pending

Waste Types Received (check all that apply)

- residential
- commercial
- industrial
- construction & demolition
- contaminated soils
- special wastes *
- other: _____

* Explanation of special wastes, including a specific list and/or conditions:

Ash produced from the burning of coal

Site Size:

Total area of facility property: 456.47 acres
Total area sited for use: 456.47 acres
Total area permitted: 456.47 acres
Operating: 456.47 acres
Not excavated: N./A. acres

Current capacity: 18,750,000 tons or yds³
Estimated lifetime: 75 years
Estimated days open per year: 300 days
Estimated yearly disposal volume: 250,000 tons or yds³

(if applicable)

Annual energy production:
Landfill gas recovery projects: N./A. megawatts
Waste-to-energy incinerators: N./A. megawatts

FACILITY DESCRIPTIONS

Facility Type: Transfer Facility/Processing Plant

Facility Name: Howard Solid Waste Transfer & Reclamation Facility

County: St. Clair Location: Port Huron Twp. Town: 6N Range: 17E Section(s): 18

Map identifying location included in Attachment Section: Yes No

If facility is an Incinerator or a Transfer Station, list the final disposal site and location for Incinerator ash or Transfer Station wastes: Smiths Creek Landfill

Public Private Owner: Aberdeen Howard

Operating Status (check)

- open
- closed
- licensed
- unlicensed
- construction permit
- open, but closure pending

Waste Types Received (check all that apply)

- residential
- commercial
- industrial
- construction & demolition
- contaminated soils
- special wastes *
- other: _____

* Explanation of special wastes, including a specific list and/or conditions:

Site Size:

Total area of facility property:	<u>15</u>	acres
Total area sited for use:	<u>7</u>	acres
Total area permitted:	<u>3.5</u>	acres
Operating:	<u>N./A.</u>	acres
Not excavated:	<u>N./A.</u>	acres
Current capacity:	—	<input type="checkbox"/> tons or <input type="checkbox"/> yds ³
Estimated lifetime:	—	years
Estimated days open per year:	<u>286</u>	days
Estimated yearly disposal volume:	<u>45,000</u>	<input type="checkbox"/> tons or <input checked="" type="checkbox"/> yds ³

(if applicable)

Annual energy production:		
Landfill gas recovery projects:	<u>N./A.</u>	megawatts
Waste-to-energy incinerators:	<u>N./A.</u>	megawatts

DATA BASE

**SOLID WASTE COLLECTION SERVICES
AND TRANSPORTATION INFRASTRUCTURE**

The following describes the solid waste collection services and transportation infrastructure that will be utilized within the County to collect and transport solid waste.

Collection:

While most of the County's seven cities and two villages have their residential waste collection provided for under municipal contracts with private haulers, the residents in the rural townships rely on a "free market" system that requires residents to arrange for collection on an individual basis. The exceptions are the townships of: China, Clay, Cottrellville, East China, Greenwood and Ira.

The following table indicates which firms contract directly with communities for collection of residential waste. There are no municipal contracts for collection of commercial or industrial waste.

COMMUNITIES	HAULERS		
	BFI	Waste Management	World Waste
City of Algonac		X	
City of Marine City	X		
City of Marysville		X	
City of Port Huron		X	
City of St. Clair		X	
City of Yale		X	
Village of Capac	X		
Village of Emmett			
Berlin Twp.			
Brockway Twp.			
Burtchville Twp.			
Casco Twp.			
China Twp.		X	
Clay Twp.		X	
Clyde Twp.			
Columbus Twp.			
Cottrellville Twp.		X	
East China Twp.		X	
Emmett Twp.			
Fort Gratiot Twp.			
Grant Twp.			

Greenwood Twp.		X	
Ira Twp.			X
Kenockee Twp.			
Kimball Twp.			
Lynn Twp.			
Mussey Twp.			
Port Huron Twp.			
Riley Twp.			
St. Clair Twp.			
Wales Twp.			

The nine hauling companies responsible for most residential and commercial collection were identified in the 1998 Hauler's Survey:

- BFI/Great Lakes
- Howard's
- JR's Trash Removal
- Marcotte Disposal
- Metro Sanitation
- Sterling Sanitation
- Total Commercial Waste
- Waste Management
- World Waste

There are several other hauling firms operating in St. Clair County that collect industrial waste, building and demolition waste, and roofing materials. The amounts of waste collected by these small haulers are negligible when compared to the waste quantities collected by the hauling firms listed above.

Transportation:

In St. Clair County either the County Road Commission or local units of government (cities and villages) maintain roads totaling 1,311 miles. Of that, 275 miles are within the cities and villages, and 1,036 are found in the townships.

Expressway: I-94 serves as the principle route between Port Huron and Detroit. I-69 serves as the principal route between Port Huron and Flint and continues to Lansing, Battle Creek and Indianapolis. These routes cover 52 miles within the County.

Major Arterial: The Pine Grove and Gratiot Avenue corridors are key roadways through St. Clair County. Prior to the development of I-94, Gratiot Avenue roadway served as the highway between Detroit and Port Huron. This roadway still serves a vital function as it connects the various communities along its length through the County. M-19 traverses the western part of the country north and south between Macomb and Sanilac counties. The communities of Memphis, Emmett and Yale as well as I-69 are destination points.

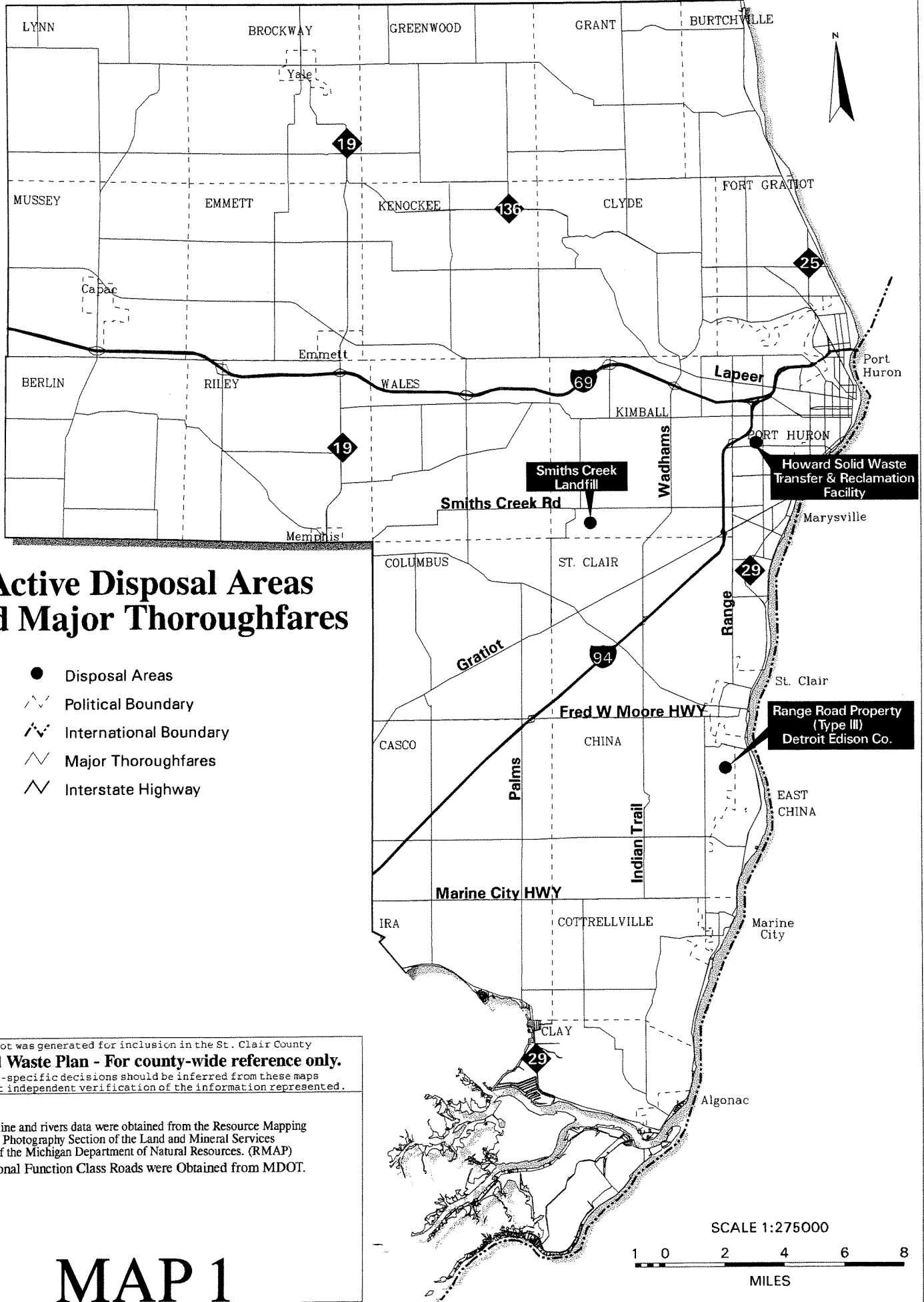
Arterial: There are a number of roadways that move traffic throughout the County and provide connections between adjacent communities. M-29 is a key roadway as it provides the principal means of access between the various communities along the St. Clair River. The primary function of these roads is to move traffic. Access to these roads must be properly managed in order to maintain safe and effective movement.

Collector: The collectors serve to assemble traffic from local roads and subdivision streets of residential neighborhoods and deliver it to the arterial. Collectors will also serve to provide access to abutting properties. Many individual subdivisions will contain one or more collector streets that funnel traffic from the local streets and connect them with adjacent neighborhoods.

Local Streets: Local streets serve primarily to provide access to property and homes. Roadways are generally short and discontinuous, and generally only provide connection to one or two collector streets.

Roadway Volumes and Capacity: The vast majority of roads in St. Clair County are two lane roads. Most four and five lane roads are found within the urbanized areas of Port Huron and St. Clair. A review of traffic volumes indicates that many roads in St. Clair County carry less than 8,000 vehicles per day. Much of the higher volume roadways are located around the Port Huron area and along the waterfront (M-29).

Map 1 shows the Active Disposal Areas in St. Clair County and Major Thoroughfares.



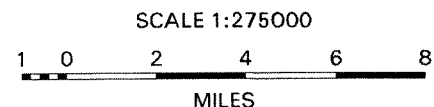
Active Disposal Areas and Major Thoroughfares

- Disposal Areas
- Political Boundary
- - - International Boundary
- ≡ Major Thoroughfares
- ≡ Interstate Highway

This plot was generated for inclusion in the St. Clair County
Solid Waste Plan - For county-wide reference only.
 No site-specific decisions should be inferred from these maps
 without independent verification of the information represented.

Sources:
 The shoreline and rivers data were obtained from the Resource Mapping
 and Aerial Photography Section of the Land and Mineral Services
 Division of the Michigan Department of Natural Resources. (RMAP)
 The National Function Class Roads were Obtained from MDOT.

MAP 1



DATA BASE

EVALUATION OF DEFICIENCIES AND PROBLEMS

The following is a description of problems or deficiencies in the existing solid waste system.

The Solid Waste Management Planning Committee formed a subcommittee to discuss and evaluate deficiencies and problems in the existing solid waste system in order to help formulate goals and objectives of the selected solid waste management system. Listed are some of the problems or deficiencies identified:

1. There is not an easy way to gather and track waste generation in the County. Efforts could be made to develop better communication between generators, haulers and solid waste facility operators.
2. Market availability and high labor costs continue to hamper recycling efforts in the County.
3. Low disposal costs discourage resource recovery.
4. Items such as batteries and used motor oil continue to enter the waste stream despite efforts of the Household Hazardous Waste Drop Off Program.
5. Lack of education programs dealing with solid waste management and resource recovery.
6. Lack of licensed Construction and Demolition Debris landfill.

DATA BASE

DEMOGRAPHICS

The following presents the current and projected population densities and centers for five and ten year periods, identification of current and projected centers of solid waste generation including industrial solid waste for five and ten year periods as related to the Selected Solid Waste Management System for the next five and ten year periods. Solid waste generation data is expressed in tons or cubic yards, and if it was extrapolated from yearly data, then it was calculated by using 365 days per year, or another number of days as indicated.

The Waste Stream is comprised of four categories of waste:

- (1) Municipal Solid Waste (**MSW**),
- (2) Construction and Demolition Debris (**CDD**),
- (3) Industrial Special Wastes (**ISW**),
- (4) and Ash.

Population projections and waste generation rates are reported in the table below. Waste generation rates have been previously noted in the Plan Section "Database."

<u>Community</u>	<u>Year</u>	<u>Waste Projections (tons per year)</u>					
		<u>Population</u>	<u>Residential</u>	<u>Commercial</u>	<u>Industrial</u>	<u>CDD</u>	<u>ISW</u>
Algonac	2000	4,923	3387	1159	174	629	551
	2005	4,970	3419	1292	192	635	591
	2010	5,010	3447	1385	207	640	620
Berlin Twp.	2000	3,174	2184	86	179	405	207
	2005	3,499	2407	118	187	447	231
	2010	3,836	2639	143	196	490	255
Brockway Twp.	2000	1,942	1336	102	174	248	155
	2005	2,083	1433	123	186	266	170
	2010	2,223	1529	138	186	284	179
Burtchville Twp.	2000	4,059	2793	313	207	519	309
	2005	4,248	2923	407	186	543	336
	2010	4,434	3051	467	187	566	360
Capac	2000	1,704	1172	604	57	218	240
	2005	1,744	1200	657	65	223	258
	2010	1,787	1230	703	63	228	271

Casco Twp.	2000	5,263	3621	136	229	672	325
	2005	5,485	3774	230	244	701	361
	2010	5,683	3910	289	258	726	388
China Twp.	2000	3,448	2372	902	943	440	614
	2005	3,679	2531	1072	976	470	675
	2010	3,901	2684	1166	1022	498	720
Clay Twp.	2000	10,894	7495	1287	361	1392	894
	2005	11,677	8034	1497	400	1492	991
	2010	12,407	8536	1640	437	1585	1068
Clyde Twp.	2000	6,214	4275	326	176	794	400
	2005	6,608	4546	436	198	844	451
	2010	6,968	4794	501	230	890	491
Columbus Twp.	2000	3,941	2712	153	261	503	279
	2005	4,200	2890	227	277	537	312
	2010	4,498	3095	263	291	575	337
Cottrellville Twp.	2000	3,771	2595	276	260	482	301
	2005	3,997	2750	346	284	511	334
	2010	4,205	2893	388	303	537	359
East China Twp.	2000	3,547	2440	2438	99	453	791
	2005	3,659	2517	2759	117	467	881
	2010	3,818	2627	2991	132	488	950
Emmett	2000	325	224	89	0	42	36
	2005	333	229	103	0	43	40
	2010	335	230	111	0	43	42
Emmett Twp.	2000	2,158	1485	121	132	276	159
	2005	2,427	1670	161	141	310	183
	2010	2,701	1858	186	145	345	202
Fort Gratiot Twp.	2000	11,223	7722	7045	113	1434	2286
	2005	12,079	8311	8131	121	1543	2598
	2010	12,960	8917	8931	127	1656	2838
Grant Twp.	2000	1,693	1165	104	153	216	140
	2005	1,889	1300	146	176	241	165
	2010	2,075	1428	168	187	265	181
Greenwood Twp.	2000	1,403	965	67	91	179	102
	2005	1,549	1066	68	107	198	112
	2010	1,686	1160	63	117	215	120

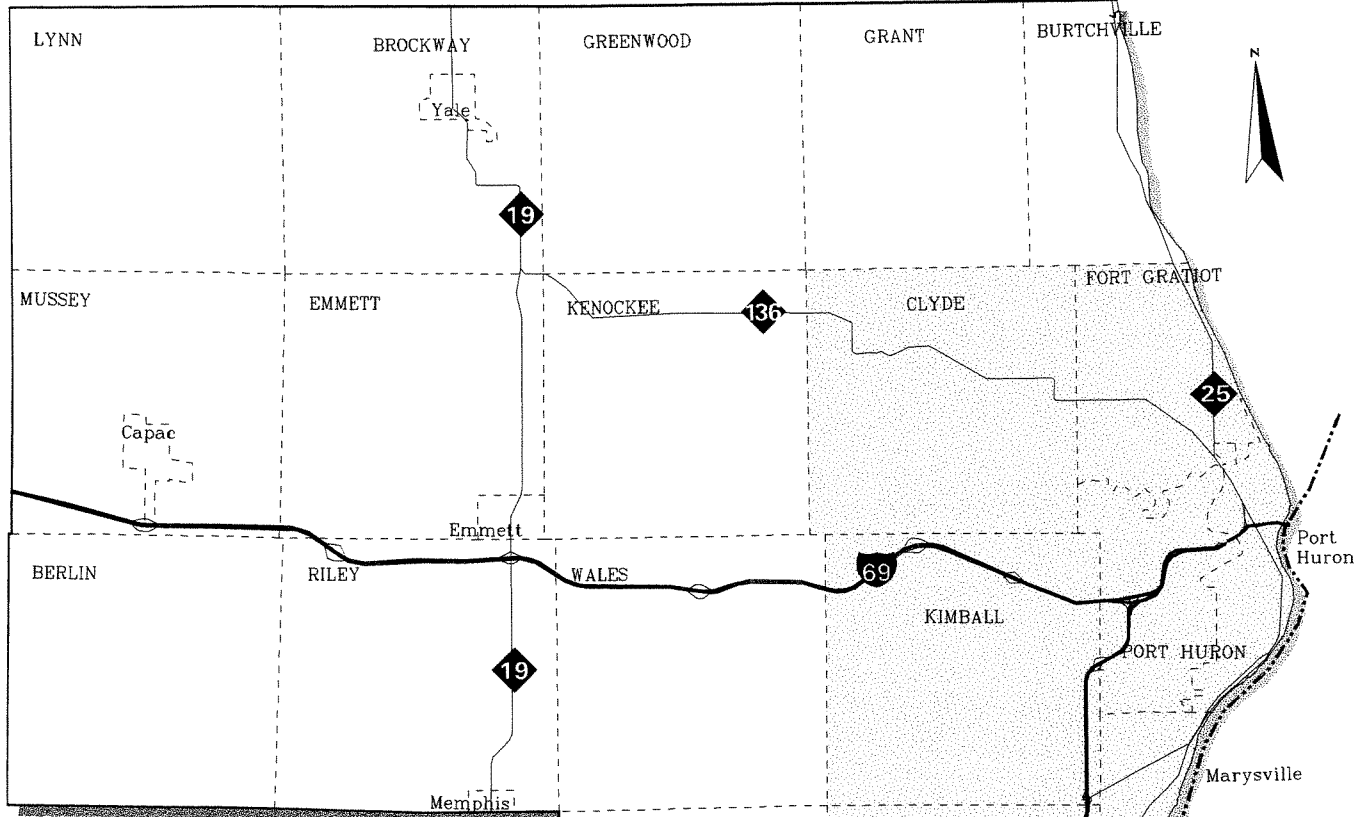
Ira Twp.	2000	6,839	4705	779	1586	874	894
	2005	7,342	5051	916	1714	938	982
	2010	7,872	5416	1004	1812	1006	1052
Kenockee Twp.	2000	2,469	1699	225	176	315	210
	2005	2,723	1873	295	189	348	241
	2010	2,966	2041	335	201	379	265
Kimball Twp.	2000	8,478	5833	1264	480	1083	811
	2005	8,951	6156	1560	546	1143	923
	2010	9,445	6498	1610	576	1207	964
Lynn Twp.	2000	967	665	39	216	124	106
	2005	981	675	64	209	125	112
	2010	993	683	79	215	127	117
Marine City	2000	5,195	3574	1937	1160	664	1004
	2005	5,282	3634	2138	1257	675	1082
	2010	5,368	3693	2251	1326	686	1132
Marysville	2000	9,505	6540	4698	3242	1214	2406
	2005	9,820	6756	5142	3496	1255	2594
	2010	10,113	6958	5441	3529	1292	2690
Memphis (part)	2000	394	271	215	32	50	80
	2005	421	290	237	34	54	86
	2010	448	308	260	33	57	93
Mussey Twp.	2000	2,133	1468	291	57	272	182
	2005	2,366	1628	390	68	302	220
	2010	2,591	1783	443	72	331	244
Port Huron	2000	33,003	22707	18757	4840	4216	7360
	2005	32,272	22204	18330	4106	4123	7037
	2010	31,745	21841	18098	3529	4055	6812
Port Huron Twp.	2000	8,743	6015	5058	1003	1117	1902
	2005	9,149	6295	5669	1076	1169	2091
	2010	9,512	6544	6082	1084	1215	2213
Riley Twp.	2000	3,150	2167	107	207	402	218
	2005	3,564	2452	157	226	455	254
	2010	3,977	2736	196	241	508	285
St. Clair	2000	6,021	4143	2414	1061	769	1136
	2005	6,382	4391	2679	1145	815	1239
	2010	6,741	4638	2876	1215	861	1321

St. Clair Twp.	2000	5,959	4100	1047	861	761	741
	2005	6,508	4478	1292	904	831	838
	2010	7,096	4882	1391	960	907	901
Wales Twp.	2000	2,848	1960	191	374	364	267
	2005	3,058	2104	272	328	391	285
	2010	3,255	2240	317	306	416	300
Yale	2000	2,092	1439	1193	18	267	396
	2005	2,105	1448	1289	19	269	420
	2010	2,117	1457	1351	21	270	437
TOTALS	2000	167,478	115229	53422	18923	21102	25792
	2005	175,050	120435	58203	19174	22363	27091
	2010	182,766	125746	61395	19209	23348	28240

The population projections and waste generation rates reported in the preceding table identify the centers of waste generation including industrial solid waste as being located in the eastern and southern parts of the County. More specifically, the center for solid waste generation is along the communities bordering the St. Clair River and Lake St. Clair. The following table provides information on the population and waste generation rates for these areas.

Community	2000 Population	% of St. Clair County Population	Total Waste Generation, TPY	% of Total Waste Generation, TPY
Port Huron	33,003	19.7	57,880	24.7
Fort Gratiot Twp.	11,223	6.7	18,600	7.9
Marysville	9,505	5.7	18,100	7.7
Port Huron Twp.	8,743	5.2	15,095	6.4
Clay Twp.	10,894	6.5	11,429	4.9
St. Clair	6,021	3.6	9,523	4.1
Kimball Twp.	8,478	5.1	9,471	4.0
Ira Twp.	6,839	4.1	8,838	3.8
Marine City	5,195	3.1	8,339	3.6
St. Clair Twp.	5,959	3.6	7,510	3.2
East China Twp.	3,547	2.1	6,221	2.7
Clyde Twp.	6,214	3.7	5,971	2.5
Algonac	4,923	2.9	5,900	2.5
China Twp.	3,448	2.1	5,271	2.2
TOTAL	123,992	74.1	188,148	80.2

These communities, which represent 74% of the population, make up the centers of waste generation in St. Clair County. Combined they represent 80% of the solid waste generated in the County. Map 2 shows the Centers of Waste Generation.



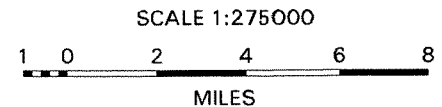
Centers of Waste Generation

- Political Boundary
- International Boundary
- Interstate Highway
- 26% of the Population
- 74% of the Population

This plot was generated for inclusion in the St. Clair County
Solid Waste Plan - For county-wide reference only.
 No site-specific decisions should be inferred from these maps
 without independent verification of the information represented.

Sources:
 The shoreline and rivers data were obtained from the Resource Mapping
 and Aerial Photography Section of the Land and Mineral Services
 Division of the Michigan Department of Natural Resources. (RMAP)
 Population Data obtained from SEMCOG 2020 Regional Development Forecast.

MAP 2



DATA BASE

LAND DEVELOPMENT

The following describes current and projected land development patterns, as related to the Selected Solid Waste Management System, for the next five and ten year periods.

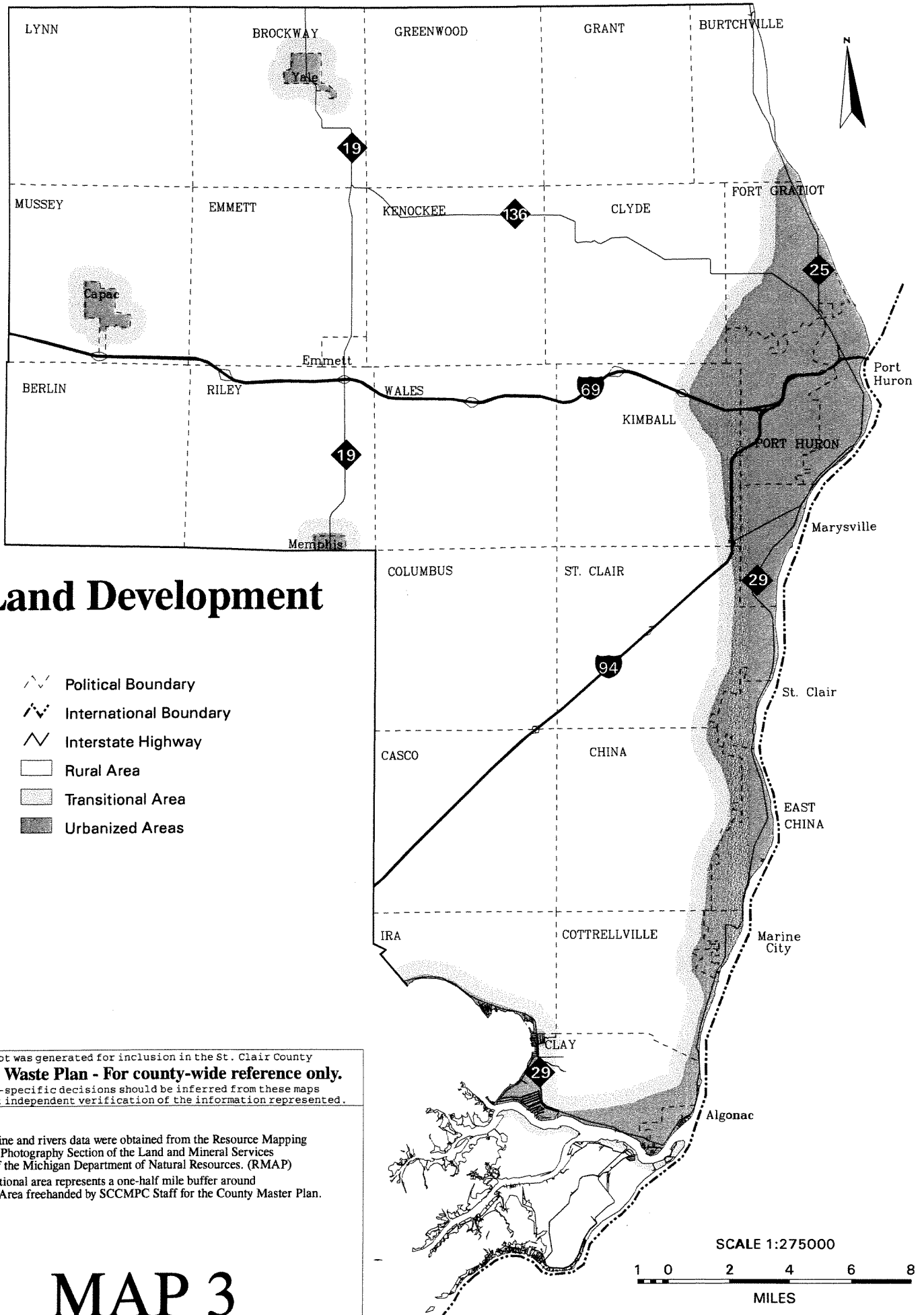
Existing Land Use:

Approximately one-third of the land within the County is presently used for farming or other agricultural use. Urbanization has occurred along the County shoreline proper. A general pattern of lineal form extends along the eastern and southern County boundaries with "nodules" of urban concentration occurring at intervals of approximately five miles. The growth of these urban concentrations is generated from in and/or around the Cities of Port Huron, Marysville, St. Clair, Marine City, Algonac and New Baltimore. As a general rule, the internal structure of these urban areas has a marked resemblance to a segmented concentric zone development pattern with the waterfront being the modifying geophysical factor. At the fringe areas of each urban concentration, development extends outward in an axial fashion along major transportation routes forming a series of development wedges. Other areas of sub urbanization within the County occur in the form of smaller satellite units that include the Cities of Memphis and Yale and the Villages of Capac and Emmett.

The residential land use of St. Clair County can also be classified into three distinct types: rural-residential/agricultural, suburbanizing and urban. The rural-residential/agricultural land use areas of the County are typically those townships that have no coastal zone. Most townships with a coastal zone also have a rural-residential/agricultural land use that begins from 1,000 to 2,000 feet landward. The suburbanizing land use occurs along State trunk lines M-25 and M-29 and is about 1,000 feet landward. A majority of the urban areas within St. Clair County are found along this County's coastal zone, the exceptions being Capac and Yale. The present non-residential land use of St. Clair County is similar to that of the residential land use. A concentration of commercial and industrial land uses are found in or near urban areas or along the coastal zone of St. Clair County.

Future Land Use:

While cities that border the coastal zone are the most heavily populated areas, it is projected that townships will far out pace growth in the cities. Approximately 1,000 new residential units have been constructed throughout the County each year since the mid-1980s. Most of this has occurred in townships and coastal and southern communities. Single-family home construction outnumbers multiple-family construction by a 10-to-1 ratio. St. Clair County had nearly 53,000 households in 1990 and 57,700 in 1995, a 10% increase in five years. Growth occurred in all county communities. SEMCOG estimates the number of households to be approximately 61,300 in 2000 and will reach 75,300 by 2020.



Land Development

- Political Boundary
- International Boundary
- Interstate Highway
- Rural Area
- Transitional Area
- Urbanized Areas

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Sources:

The shoreline and rivers data were obtained from the Resource Mapping
 and Aerial Photography Section of the Land and Mineral Services
 Division of the Michigan Department of Natural Resources. (RMAP)
 The Transitional area represents a one-half mile buffer around
 the Urban Area freehanded by SCCMPC Staff for the County Master Plan.

MAP 3

SCALE 1:275000



SOLID WASTE MANAGEMENT ALTERNATIVES (attach additional pages as necessary)

The following briefly describes all solid waste management systems considered by the County and how each alternative will meet the needs of the County. The manner of evaluation and ranking of each alternative is also described. Details regarding the Selected Alternatives are located in the following section. Details regarding each non-selected alternative are located in Appendix B.

St. Clair County's selected alternative is to retain the current solid waste management system. The solid waste management system selected is one based on self-sufficiency and in which landfill disposal continues as the primary means of disposal with increased emphasis placed on source reduction, recycling and composting.

The existing solid waste management system provides for the proper collection, transport and disposal of solid waste in the St. Clair County planning area. Recycling and composting opportunities have been developed and seem to be expanding. Minor modifications to the system may be needed to further encourage the recycling of materials from the waste stream.

Numerous studies and evaluations or alternatives to landfill disposal have been conducted by surrounding counties and all of them have concluded that their existing solid waste management systems are the most practical, cost-effective, and environmentally sound alternative. System components were evaluated in past studies by the St. Clair County Landfill Alternatives Subcommittee and the evaluations and conclusions of those planning efforts remain valid.

The current solid waste management system addresses each of the following management components as mandated by NREPA Administrative Rules. Details regarding each of these components are listed in following sections:

Waste Reduction and Pollution Prevention includes changes in manufacturing or other processes which generate solid waste as a function of the process so that a reduced amount of waste is created. Additionally, changes may be made to the waste stream to produce a waste that contains less potential environmental pollutants. Waste reduction is primarily achieved through extensive information and education efforts, as well as State and local incentives or regulations. Waste reduction and pollution prevention occurs in a number of ways. Consumers decide to purchase products with less packaging. Commercial establishments provide products in bulk or in refillable or biodegradable containers. Offices, industries, and institutions may change processing and make management improvements resulting in less waste. St. Clair County is home to many different segments of the packaging industry. These industries have all experienced changes in how they produce packaging in order to minimize bulk and volume. In addition, the County is currently undergoing studies at Smiths Creek Landfill that are aimed at increasing volume reduction by raising the compaction ratio of in-place waste. Waste reduction and pollution prevention are considered a part of the selected solid waste management system in St. Clair County, and this plan encourages residents, industries, and commercial facilities to evaluate and implement these practices wherever possible.

Resource Conservation includes reduced resource use per product, increased product life, product reuse, and decreased consumption of products that become solid waste. Implementation of resource conservation can be accomplished through voluntary action by consumers and manufacturers or through legislative measures. Local entities can best encourage voluntary action by providing public education and promotional activities and through enacting local government procurement policies. This plan encourages increased resource conservation and identifies the public education efforts of the Resource Recovery Office. This plan also encourages the adoption of environmentally sound purchasing policies by the county, townships, cities and villages in St. Clair County. Resource Conservation is considered a part of the selected solid waste management system and this plan encourages residents, industries, and commercial facilities to evaluate and implement these practices wherever possible.

Resource Recovery includes source separation or mixed waste processing and the subsequent recovery of materials, energy savings and/or production re-use potential, and market availability for recovered materials processed by each process. Source separation involves the separation of selected materials at the source of generation. This process may be practiced at residences, commercial establishments, institutions, and industries. The recovered materials may be picked up at the site or the generator may directly haul materials to a recycling center. Mixed waste processing involves the physical or mechanical separation of recoverable materials from the waste stream after the waste is collected and transported to a solid waste processing facility, often called a reclamation facility or material recovery facility. Mixed waste processing techniques include hand sorting, screening, gravity and magnetic separation, and optical separation. Resource recovery is a part of the existing St. Clair County solid waste management system. A detailed breakdown of resource recovery activities is presented in the sections of this Plan found beginning at page III-11.

Volume Reduction includes processing by compactors, balers, shredders, and incinerators. In addition to the compaction practiced by the solid waste hauling industry with their compaction trucks and their compaction dumpsters, the solid waste is further reduced at Smiths Creek Landfill during the process of compacting in-place solid waste.

Sanitary Landfill includes disposal methods such as the trench method, the area method, or the depression method. The selected solid waste management system incorporates two of these methods with the Smiths Creek Landfill and the Range Road Property (Type III) Detroit Edison Co.

Collection Processes and Transportation includes the process of transferring the waste from the point of generation to a transfer station, processing plant, resource recovery facility, or final disposal area. In addition to the nine hauling companies responsible for most residential and commercial collection identified on page II - 10, there are several other firms which handle industrial waste, building and demolition waste, roofing materials, etc.

Ultimate Disposal Area Use includes recreational or other potential uses after the facility is properly closed and maintained. A future land use report for Smith Creek Landfill was

completed some time ago and it suggested recreational/golf course use of the property. This plan recommends capture of fees from tipping fees at Smiths Creek Landfill to fund future land studies at the landfill. Because the future capacity at Range Road Property (Type III) Detroit Edison Co. is listed as at least 75 years, there are no current future land use plans for the property.

Institutional Arrangements includes the agreements and organizational arrangements and structures that provide for public and/or private operation of solid waste collection, processing, and disposal systems. They may also include multi-jurisdictional approaches in managing solid waste. The Management Responsibilities section of this plan (pgs. III-36 through III-43) describes management and institutional arrangements necessary for the implementation of the Selected Waste Management System.

Recycling and Composting Programs: Recycling is the process whereby materials which would otherwise become solid waste are collected, either source or site separated, processed, and returned for conversion into raw materials or new products. Composting involves the natural decay of organic wastes and produces a finished product that is valuable as a mulch or soil conditioner. Leaves, grass clippings, tree and shrub prunings and other yard wastes are diverted from landfill disposal by composting. Recycling and composting programs are a part of the Selected Solid Waste Management System, and are described in detail in the following sections of this Plan beginning at pages III-11.

Alternative Solid Waste Management Systems

The 1983 St. Clair County Solid Waste Management Plan and the 1990 St. Clair County Solid Waste Management Plan provided detailed descriptions of various alternative strategies for the solid waste management. These alternative strategies included waste reduction strategies, waste reuse strategies, household hazardous waste management strategies, composting strategies, recycling strategies, and incineration, with energy recovery strategies. The Alternative Strategies sections of these two documents evaluated several solid waste management components in detail. The advantages and disadvantages of the various components were discussed as well as the: technical feasibility; economic feasibility; access to land; environmental impacts and public acceptability. One alternative management system that is considered further is discussed below.

The St. Clair County Landfill Alternatives Study Committee (SCCLASC) examined the feasibility of a waste-to-energy (WTE) in both the 1983 and 1990 St. Clair County Solid Waste Management Plans. The SCCLASC reviewed the feasibility of a facility owned and operated by the county as well as a facility that would serve a larger regional area or sub portion of the state. The 1983 plan recommended a wait and see approach regarding incineration. The 1990 plan concluded that based on a comparison with landfill tipping fees, incineration is not feasible for St. Clair County as an alternative to landfill disposal.

After assessing the experiences of other communities with operating incinerators, specifically Jackson County, Kent County and Detroit, this plan maintains that WTE is not a viable alternative to landfill disposal.

