

# Regional Solid Waste Management Plan



February 2005

# REGIONAL SOLID WASTE MANAGEMENT PLAN UPDATE

## MARICOPA ASSOCIATION OF GOVERNMENTS

February 2005

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A Voluntary Association of Local Governments in Maricopa County

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City of Apache Junction ▲ City of Avondale ▲ Town of Buckeye ▲ Town of Carefree ▲ Town of Cave Creek ▲ City of Chandler ▲ City of El Mirage ▲ Town of Fountain Hills ▲ Town of Gila Bend ▲ Gila River Indian Community ▲ Town of Gilbert ▲ City of Glendale ▲ City of Goodyear ▲ Town of Guadalupe ▲ City of Litchfield Park ▲ Maricopa County ▲ City of Mesa ▲ Town of Paradise Valley ▲ City of Peoria ▲ City of Phoenix ▲ Town of Queen Creek ▲ Salt River Pima Maricopa Indian Community ▲ City of Scottsdale ▲ City of Surprise ▲ City of Tempe ▲ City of Tolleson ▲ Town of Wickenburg ▲ Town of Youngtown ▲ Arizona Department of Transportation

Maricopa Association of Governments

REGIONAL SOLID WASTE MANAGEMENT PLAN UPDATE

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## **ACKNOWLEDGMENTS**

The completion of a complex project such as the Maricopa Association of Governments (MAG) Regional Solid Waste Management Plan requires the participation and assistance of many agencies and individuals. The following individuals and agencies contributed to the success of this endeavor.

### **ADVISORY GROUPS**

Throughout the project, various advisory groups and organizations assisted in the review and development of the plan. These groups and organizations include:

#### **MAG Regional Council**

The MAG Regional Council serves as the governing body of MAG and is responsible for establishing and directing all MAG policies and activities. Membership is composed of one elected official, appointed from each member agency.

#### **MAG Management Committee**

The MAG Management Committee serves as the primary advisory body to the Regional Council. Membership is composed of the chief administrator from each member agency.

#### **MAG Solid Waste Advisory Committee**

The MAG Solid Waste Advisory Committee provides recommendations to the MAG Management Committee and Regional Council on solid waste management issues that affect the MAG region such as the update of the MAG Regional Solid Waste Management Plan. MAG serves as the designated regional planning agency for solid waste management planning in the Maricopa County area.

#### **Other Agency Participation**

Other agencies who provided personnel, review and guidance on the project are:

- Arizona Department of Environmental Quality.
- Arizona Department of Health Services.
- Maricopa County Environmental Services Department.
- Pinal County Department of Public Works.
- U.S. Environmental Protection Agency.

Funding was provided to the program through the Maricopa Association of Governments.

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## **EXECUTIVE SUMMARY**

The members of the Maricopa Association of Governments (MAG) have voluntarily come together to create a regional solid waste management plan to guide the future development of programs and facilities in the MAG region. This regional planning function was authorized by the federal Resource Conservation and Recovery Act of 1976. Pursuant to this act, the Maricopa Association of Governments was designated in 1979 by the Governor as the regional solid waste planning agency for the MAG region. This document is a comprehensive revision of the December 15, 1993 MAG Regional Solid Waste Management Plan.

Generally, the plan, which constitutes a regional plan developed under the State of Arizona Solid Waste Plan, contains:

- Historical background.
- Goals.
- Description of the regional waste stream.
- Evaluation of waste problems.
- Review of financing options.
- Description of current solid waste programs and facilities.
- Identification of future needs and strategies for integrated solid waste management.
- New and innovative solid waste facility technologies.

### **MAJOR CHANGES SINCE THE 1993 MAG PLAN**

Numerous changes have occurred since the 1993 MAG Plan was prepared, including:

- Major population growth in the metropolitan Phoenix area.
- Adoption of new State and Federal regulations affecting solid waste management systems, planning and programs including medical waste, incineration, waste tires, used oil, lead acid batteries, nonhazardous liquid waste, voluntary remediation, brownfields cleanup and redevelopment and special waste.
- A Maricopa County shift away from the proposed regional role as landfill developer and lead agency for solid waste programs. An alternate trend evolved in which the private sector companies developed landfills and cities and towns developed their own individual solid waste programs. The County provides for waste transfer for the unincorporated areas and waste tire recycling services for all areas of the County, and protects public health under the Maricopa County Health Code.
- Private sector development of regional landfills along the urbanized fringe to service multiple municipalities rather than landfill development by Maricopa County as anticipated. In addition to private regional landfills, several publicly owned landfills

provide service to a particular city or town. It is anticipated that this trend will continue.

- An increase in the number and complexity of integrated waste management programs that divert materials from the landfill including programs for waste reduction, recycling, backyard composting, green waste mulching, white goods, and household hazardous waste.
- A limited movement toward mulching and backyard residential composting to divert materials from the landfill. Large scale municipal composting was originally envisioned to divert waste from landfills, but several municipalities found it not to be economical due to high production costs and poor or no market for the mulch/compost. Some large scale composting operations are still active in the region.
- A shift to private sector ownership and data tracking of nonhazardous liquid waste disposal sites. The October 9, 1993 U.S. Environmental Protection Agency prohibition of liquid waste co-disposal in solid waste landfills led to the end of County and municipal liquid waste disposal site ownership and comprehensive data tracking through a manifest record system.
- A discontinuation of medical waste incineration, primarily due to enactment of more stringent EPA air quality regulations regarding emissions from incineration facilities. Medical waste in Maricopa County is treated through alternative technologies, such as steam sterilization.
- A goal shift from evaluating waste combustion with energy recovery to evaluating landfill gas to energy. Waste combustion can impact air quality since it involves burning solid waste to create heat and converting it to electricity. Due to the EPA designation of Maricopa County as a nonattainment area for certain air quality constituents, landfill gas to energy is more desirable. Rather than allowing landfill gas to escape into the air, the gas is captured and converted to energy.

## **HISTORICAL BACKGROUND**

The plan development process was formally initiated in 1990 with a regional waste stream study. The waste stream study was followed by an assessment of local and regional waste management needs completed in 1991. Subsequently, the MAG Regional Council established a scope of work for producing the MAG Regional Solid Waste Management Plan in July 1991. Following this action, the planning process was undertaken by the MAG Solid Waste Coordinating Committee, the MAG Solid Waste Technical Advisory Committee and two MAG solid waste working groups. These groups, respectively, were made up of elected officials representing MAG member agencies, solid waste management professionals representing MAG member agencies, and individuals for the public and

private sectors with technical expertise in solid waste management.

## **DEVELOPMENT OF CURRENT PLAN UPDATE**

The MAG Solid Waste Advisory Technical Committee has been renamed the MAG Solid Waste Advisory Committee, and the MAG Solid Waste Coordinating Committee no longer exists. The MAG Solid Waste Advisory Committee, comprised of representatives from local government agencies, economic and environmental interests, and private citizens, provides technical expertise and makes recommendations on solid waste issues and plan updates to the MAG Management Committee. The MAG Management Committee, composed of the chief administrator for each member agency, makes recommendations to the MAG Regional Council. The Plan revision development process culminates with approval of the Plan by the MAG Regional Council, the official decision making body of MAG. Following local review and adoption, the Plan will be transmitted to the Arizona Department of Environmental Quality (ADEQ) and the U.S. Environmental Protection Agency (EPA).

For the current plan update, the MAG Solid Waste Advisory Committee reviewed and commented on critical points in plan development, including the Scope of Work and the Survey of MAG Member Agencies. In January 2003, a major survey was sent to all MAG cities and towns, Maricopa County, and Indian Communities. Through the survey and follow up interviews, MAG member agencies provided input on key elements of the plan. Private solid waste service providers were also requested to provide information. At the request of member agencies, new sections were added to the plan to describe new and innovative technologies and brownfields cleanup and redevelopment programs.

Jurisdictional review was an important component of plan development and each MAG member agency directly reviewed and indicated their preferences regarding plan elements prior to MAG Regional Council action. Public review of the plan was conducted through public meetings, public notice, and a public hearing conducted in accordance with federal level requirements.

## **IMPLEMENTATION OF THE PLAN**

Various aspects of the plan are implemented by the cities, towns, Maricopa County, Maricopa Association of Governments, the State of Arizona, and the private sector. An annual plan review process will include consideration of changes in the solid waste programs and facilities in the region, the effects of new legislation, rules and best management practices, and new or innovative technologies.

## **REGIONAL SOLID WASTE GOALS**

The overall goal of the Plan is the prevention of adverse effects on public health and environment resulting from improper solid waste collection, processing or disposal, and the

encouragement of methods for cost efficient recovery, treatment and disposal. There has been a trend in the region, by both public and private sectors, toward development of highly capitalized solid waste facilities serving regional constituencies.

In development of the initial MAG Plan, the MAG Solid Waste Committees evaluated regional waste problems and management options and derived goals for each integrated waste management component. For the current plan update, MAG member agencies were requested to indicate whether these goals are still appropriate and identify any new regional goals.

Arizona State Law requires each county, city or town to provide or contract for public facilities for the safe and sanitary disposal of solid waste generated within its jurisdiction. Local agencies in the region are also required to provide residents the opportunity to engage in recycling and waste reduction. The State of Arizona has not mandated numeric waste stream goals but State policy recommends waste minimization through source reduction, recycling and reuse.

The regional goal for integrated waste management is based on State and Federal level policy. The regional goal for waste reduction and recycling is to continue current practices with local agencies developing achievement targets consistent with local programs and conditions, and to encourage public education and market development for recycled items.

The regional goal for landfilling in the region is to proceed with continuing operations at several existing regional or sub-regional landfills and new development of at least two planned landfills. At least one landfill is planned in nearby Pinal County. Transfer stations associated with regional landfills could be developed on the basis of local or sub-regional needs. Operation will continue at multiple existing transfer stations and six new transfer stations/combined materials recovery transfer facilities are anticipated in the planning period.

## **DESCRIPTION OF THE REGIONAL WASTE STREAM**

In the MAG 1991 Regional Waste Stream Study, six classes of nonhazardous wastes were identified as part of the regional solid waste stream. These classes are: residential waste, commercial and industrial waste, liquid and semisolid waste, construction waste, medical waste, and landscape waste. Two subclasses have been established under the residential waste class: household hazardous waste and white goods waste.

For the most part, residential household waste from single family structures is collected by municipal public works departments and disposed of in public or private landfills. Wastes from multifamily complexes is typically collected by private haulers as part of their commercial waste collection service, although there are some exceptions. The amount of residential household waste generated in a municipality is primarily driven by its population size and secondarily influenced by population density, income and level of urbanization.

In Maricopa County, for the period of 1989 to 2002, the estimated average residential waste generation rate decreased from 2.5 pounds per capita per day to approximately 2.36 pounds per capita per day. These rates were based on the amount of residential waste generated as reported by jurisdictions and population levels. At the national level, efforts to reduce waste generation increased through the 1990's as the nation realized the value of its financial and material resources, according to the U.S. EPA.

The nation made steady progress in waste prevention between 1990 and 2000 based on economic and waste data in the *U.S. EPA Municipal Solid Waste in the United States: 2000 Facts and Figures Executive Summary*. Yard trimmings made up almost half of the total national waste prevented in year 2000. EPA attributes the waste prevention achievements to bans on landfilling of yard trimmings, successful composting campaigns, the use of mulching lawn mowers, and reductions in containers and packaging.

In Maricopa County, the estimated generation rate for commercial and industrial waste is based on the amount of waste generated as reported by jurisdictions and the employment level. In 2002, the Maricopa County average commercial waste generation rate was estimated at 2.02 pounds per employee per day. This rate varied significantly among jurisdictions due to the differences in their commercial and industrial base.

For each jurisdiction, the estimated amount of residential and commercial/industrial waste generated in year 2002 is shown in Table 4.1. These estimates were derived based on data reported by jurisdictions. In 2002, approximately 1,996,176 tons of residential and commercial/industrial waste were generated within Maricopa County. Of this total, approximately 71 percent was generated by residential sources and 29 percent was generated by commercial/industrial sources.

Nonhazardous liquid waste (NHLW) includes waste from septic tanks, chemical toilets, food processing operations, water softening processes, cooling towers, restaurant grease traps, and car wash sump sludges. Since this waste class includes many different sources, estimations of quantities are best determined by the amount disposed at privately owned sites and wastewater treatment plants. The amount of nonhazardous liquid waste generated in Maricopa County has increased from about 23.1 million gallons per year in 1991 to 44.7 million gallons per year in 2002. Nonhazardous liquid waste disposal options in Maricopa County include five privately owned sites and two publicly owned wastewater treatment plants.

Construction debris is generated as a byproduct of construction, demolition, or maintenance of residential, commercial, industrial and infrastructure. Approximately 923,208 tons of construction debris was disposed in Maricopa County between March 2002 to March 2003, according to ADEQ waste disposal tipping fee data. There are five construction and demolition debris landfills in Maricopa County. This waste type is also accepted at some solid waste landfills, such as Butterfield Station Landfill.

Medical waste is generated by hospital sources and nonhospital sources such as physicians and dentists. About 10,337 tons of medical waste was generated in Maricopa County in 1989. In year 2002, this total increased to 16,683 tons, based on data from the Arizona Department of Health Services and the U.S. Census Bureau. There are two medical waste transfer stations in Maricopa County and one medical waste treatment facility which uses autoclaving as an alternative to incineration, according to ADEQ.

Landscape waste is organic waste material produced in the maintenance of home and business lawns, gardens, parks and open spaces. In year 1990, about 413,000 tons of landscape waste was generated in Maricopa County. In year 2002, about 623,593 tons of landscape waste was generated by five municipalities in Maricopa County. This total was estimated based on yard trimmings data reported by the Cities of Chandler, Glendale, Mesa, Phoenix and Scottsdale. These municipalities have developed green waste collection programs and frequently encourage backyard composting at the residential level.

Approximately 296,130 tons of recyclable materials were collected within seven cities and towns in year 2002 as reported by Carefree, Chandler, Gilbert, Glendale, Mesa, Phoenix, and Scottsdale. The newspaper category made up the largest portion of the total collected on a percent by weight perspective. This category was followed by yard trimmings, tires, cardboard, paper, plastic and glass. The remaining categories, including phone books, steel cans, aluminum cans, steel/iron scrap, nonferrous scrap, woodwaste, pulp substitutes, used oil and textiles, comprised a minimal part of the total collected.

In regard to household hazardous waste generation, data reported by the City of Phoenix Batteries, Oil, Paint and Antifreeze (BOPA) Collection Program was used for the current Plan. The latex based paint category made up the largest category of the total on a percent by weight basis. The oil based paint category was the second largest, followed by recycled oil. Electronic waste, tires, antifreeze, white goods, and bulk pack were also collected.

## **SOLID WASTE MANAGEMENT FACILITIES AND PROGRAMS**

The Plan describes existing and planned solid waste facilities and programs by jurisdiction. The description was compiled using information reported by MAG member agencies and private solid waste service providers. A matrix detailing the member agencies' solid waste facilities, programs, services and studies (collectively called plans) is shown in Table ES-1. Table ES-2 provides a list of private and public solid waste management facilities and facility information. Figure ES-1 provides a map depicting the locations of existing and planned solid waste facilities in Maricopa County.

Landfilling is anticipated to continue as the primary means of solid waste management in the MAG region. In Maricopa County, it is anticipated that there will be adequate overall landfill and transfer station capacity to meet the solid waste management needs through the current twenty year planning period and beyond, according to the *Draft March 2003*

*MAG Regional Growing Smarter Implementation Solid Waste Report (Appendix E)*. The draft study was one of a series investigating the relationship between transportation and community systems preservation under the Transportation and Community Systems Preservation Pilot Program. In February 2003, the MAG Solid Waste Advisory Committee reviewed the study and comments received were incorporated.

The study compared the amount of landfill and transfer station capacity required to the amount of capacity available in Maricopa County through year 2050. Generally, the study approximated that there would be adequate overall landfill and transfer station capacity through 2050, although future landfill capacity may not be evenly distributed from a geographic perspective, and shifting to alternative landfills may result in a need for more transfer stations.

**TABLE ES-1  
MEMBER AGENCY SOLID WASTE MANAGEMENT PLAN**

ENTITIES		COMPONENTS																											
		APACHE JUNCTION	AVONDALE	BUCKEYE	CAREFREE	CAVE CREEK	CHANDLER	EL MIRAGE	FOUNTAIN HILLS	GILA BEND	GRIC	GILBERT	GLENDALE	GOODYEAR	GUADALUPE	LITCHFIELD PARK	MARICOPA COUNTY	MESA	PARADISE VALLEY	PEORIA	PHOENIX	QUEEN CREEK	SRPMIC	SCOTTSDALE	SURPRISE	TEMPE	TOLLESON	WICKENBURG	YOUNGTOWN
SOURCE REDUCTION	Goals																												
	Studies												E					E			E			E					
	Programs						E						E					E			E				P				
	• Waste reduction education						E					E	E	E				E			E		E	E	P	E			
	• Other													E															
RECYCLING	Goals																	E			E		E	E	E	E			
	Studies						E					E	E					E			E		E	E	E	E	E		
	Programs		E	C	E	E	E					E	E	E		C		E		E	E	C	E	E	P	E			
	• Buyback center																												
	• Curbside recycling		E		E	E	E		E			E	E	C				E	E	C	E		C	E	P	E	C		C
	• Drop-off recycling	E		C	E	E	E	C		E		E	E	E	E	E		E		E	E		E	E	P	E	C		E
	• Education		E		E	E	E			E		E	E	E	E	E		E			E		C	E	P	E	P		P
	• Landscape waste composting				C					C								E					E		P				
	• Landscape waste mulching				C			E		C								E		C	E		E	E	P				
	Facilities																												
• Combined materials recovery transfer facility																					E								
• Materials recovery facility												E									E		E						
WASTE ENERGY GAS	Goals																												
	Studies																					E							
	Waste-to-Energy facility																					C		E					
	Landfill gas to Energy facility												C									C		E					
LANDFILLING	Goals																												
	Studies (for landfills or transfer stations)						E															E		E			E		
	Facilities																												
	• Landfill	E					E					E					C				E	E	E						
• Transfer station		E			E	E				E			C			E				E			E				E		
• Permanent household hazardous waste collect ctr						P					P															E			
OTHER	• Sludge waste study						E									E	E				E			E	E	E		E	
	• Liquid waste study																	E			E			E	E	E			
	• Household hazardous waste collection	E	C		E	E	E	P		E	E	E	E	E	E		E		E	E		C	E	P	E			P	
	• Brownfields cleanup & redevelopment activity		E				E										E				E						E		

Source: MAG Solid Waste Information Collection Survey 2003, MAG Member Agency Interviews and Web sites and publications 2003.

**TABLE ES-2  
MAG SOLID WASTE MANAGEMENT FACILITIES SUMMARY  
2002**

<b>OPERATING SOLID WASTE LANDFILLS</b>						
LANDFILL NAME	REMAINING CAPACITY (Million Cubic Yards)	REMAINING YEARS	ANTICIPATED YEAR OF CLOSURE	OWNER	LOCATION	OTHER COMPONENTS
Apache Junction		10	2012	Allied Waste Industries, Inc.	Tomahawk & Baseline. 4050 Tomahawk Road Apache Junction, Arizona	
Butterfield Station		108	2110	Waste Management, Inc.	One mile north of 238 on 99th Ave. 40404 South 99 <sup>th</sup> Avenue Mobile, Arizona 85239	Generally accepts MSW, C & D debris, special wastes, non-hazardous de-watered sludges, green waste, NHLW.
Chandler	13,888 (250,000 tons) Assuming 1,800 lbs = 1 ton	2.5	June 2005	City of Chandler	Northwest corner of Ocotillo Road & McQueen Road. 3200 South McQueen Road Chandler, Arizona	Life Cycle. Current last cell is Subtitle D.
Glendale	39	43	2046	City of Glendale	115 <sup>th</sup> Ave & Glendale Ave (½ mile east of Agua Fria River). 11480 West Glendale Avenue Glendale, Arizona	Landscape waste grinding was discontinued July 2002.
Northwest Regional	85	99	2102	Waste Management Inc.	Deer Valley Road & 195 <sup>th</sup> Avenue. 19401 West Deer Valley Road Surprise, Arizona 85387	Waste tire collection center.
Queen Creek		2	2003-2005	Allied Waste Industries, Inc.	½ mile south of Chandler Heights Road on Hawes Road.	Local concerns; availability of new Southeast regional facility. Planned site for composting of NHLW. Potential consideration of expansion.
Salt River Landfill		12	2015	Salt River Pima Maricopa Indian Community (SRPMIC)	SR 87 & Gilbert Road. 13602 East Beeline Highway Scottsdale, Arizona	Life Cycle. Green waste mulching and composting, white goods program.

**TABLE ES-2  
MAG SOLID WASTE MANAGEMENT FACILITIES SUMMARY  
2002**

LANDFILL NAME	REMAINING CAPACITY (Million Cubic Yards)	REMAINING YEARS	ANTICIPATED YEAR OF CLOSURE	OWNER	LOCATION	OTHER COMPONENTS
Skunk Creek	1 million cubic yards as of September 2004.	1.5	January 2006	City of Phoenix	1/4 mile west of I-17 on Happy Valley Road. 3165 West Happy Valley Road Phoenix, Arizona	
Southwest Regional	26	48	2051	Allied Waste Industries, Inc.	8 miles south of Buckeye, east of State Highway 85. 24427 South Highway 85 Buckeye, Arizona 85326	

<b>PLANNED SOLID WASTE LANDFILLS</b>						
LANDFILL NAME	PLANNED CAPACITY (YEARS)	PLANNED SIZE (ACRES)	EXPECTED YEAR OF OPENING	OWNER	LOCATION	ADDITIONAL COMPONENTS (Conceptual)
SR 85	Approx. 50	2,652	2006	City of Phoenix	West of Southern Route (SR) 85 & south of Patterson Road.	
Southpoint Environmental				Southpoint Environmental Services	In Maricopa County, approx. 200 feet from Pinal County line, north side of SR 238. Mobile, Arizona	
Cactus Waste			Under construction 2004	Capital Environmental Resources, Inc./Waste Services, Inc.	22841 E Deepwell Road Florence, Arizona (In Pinal County)	

**TABLE ES-2  
MAG SOLID WASTE MANAGEMENT FACILITIES SUMMARY  
2002**

<b>CLOSED SOLID WASTE LANDFILLS</b>				
LANDFILL NAME	YEAR OF CLOSURE	OWNER	LOCATION	REMARKS ON CLOSURE
Cave Creek	1999	Maricopa County	3 miles west of Cave Creek Road, south side of Carefree Highway.	Life Cycle. Transfer station constructed.
Gila Bend	1997	Maricopa County	50252 South Old US 80.	RCRA regulations. Closed.
Gila River Indian Community (GRIC) District 6	1995	GRIC	Between 51 <sup>st</sup> Avenue & the Gila River.	Life Cycle. Closed.
Hassayampa	1997	Maricopa County	Salome Highway & Ward Road/ Baseline Road.	RCRA regulations. Closed.
New River	1997	Maricopa County	3½ miles west of I-17 on New River Road.	Closed. Transfer station constructed.
Sacaton	N/A	GRIC	South of the City limits of Chandler & East of I-10 in Pinal County.	Life Cycle. Closed, transfer station constructed.
Tri-City	N/A	SRPMIC	11630 East Beeline Highway. Scottsdale, Arizona 85256 South side of State Highway 87	Closed. Gas to energy conducted at capped landfill.
27 <sup>th</sup> Avenue	1995	City of Phoenix	27 <sup>th</sup> Avenue & Lower Buckeye Road. 3060 South 27 <sup>th</sup> Avenue Phoenix, Arizona	Closed. City developing end use master plan for Center for Environmental Learning and Enterprise.
Wickenburg	1997	Town of Wickenburg	NE quarter, Section 7, township 7N, range 5W.	Closed October 1, 1997.

**TABLE ES-2  
MAG SOLID WASTE MANAGEMENT FACILITIES SUMMARY  
2002**

<b>INACTIVE LANDFILLS</b>				
LANDFILL NAME	YEAR BECAME INACTIVE	OWNER	LOCATION	REMARKS ON INACTIVITY
Sierra Estrella	Unknown	Waste Management Inc.	22087 N Ralston Road Maricopa, Arizona (In Pinal County)	Reportedly still a permitted facility.

<b>EXISTING TRANSFER FACILITIES</b>				
TRANSFER FACILITY NAME	OWNER/OPERATOR	LANDFILL FOR DISPOSAL	TYPES OF WASTE ACCEPTED	TRANSFER STATION LOCATION
Aguila	Maricopa County	Northwest Regional	Residential	3 miles west of Aguila on State Highway 60. 48848 North 531 <sup>st</sup> Avenue Aguila, Arizona 85320
Avondale	City of Avondale	Glendale	Residential	South of Lower Buckeye Road & 4 <sup>th</sup> Street, adjacent to old treatment plant site. 395 East Lower Buckeye Road Avondale, Arizona 85323
Chandler	City of Chandler		(Mini facility)- Accepts approximately 20 percent of Chandler residential waste.	McQueen & Queen Creek Roads 3200 McQueen Road Gilbert , Arizona
Cave Creek	Maricopa County	Northwest Regional	Residential	8.3 miles east of I-17 on S Side State Highway 74. 3955 East Carefree Highway Carefree, Arizona 85331
Deer Valley	Waste Management, Inc.	Northwest Regional	Generally accepts: MSW, C & D debris, site cleanup, paper products, landscape trimmings, commercial hauling.	½ mile north of Deer Valley Road, just east of I-17. 2120 West Adobe Drive Deer Valley, Arizona 85027
Lone Butte	Waste Management, Inc.	Butterfield Station	Generally accepts: C & D debris, site cleanup, paper products, landscape trimmings.	On Kyrene, south of Chandler Boulevard. 1000 South Kyrene Road Chandler, Arizona 85226
Morristown	Maricopa County	Northwest Regional	Residential	North of 60-89-93 by Morristown Overpass 40135 North Highway 60 Morristown, Arizona 85342

**TABLE ES-2**  
**MAG SOLID WASTE MANAGEMENT FACILITIES SUMMARY**  
**2002**

TRANSFER FACILITY NAME	OWNER/OPERATOR	LANDFILL FOR DISPOSAL	TYPES OF WASTE ACCEPTED	TRANSFER STATION LOCATION
New River	Maricopa County	Northwest Regional	Not available.	3 ½ miles west of I-17 on New River Road. 41835 North Lake Pleasant Road New River, Arizona
Paradise	Allied Waste Industries, Inc.	Not available.	Not available.	South of Lower Buckeye Road, east of 51 <sup>st</sup> Avenue. 4845 West Lower Buckeye Road Phoenix, Arizona 85043
Rainbow Valley	Maricopa County	Southwest Regional	Residential	3 miles south of Ray Road on Rainbow Valley Road. 17795 South Rainbow Valley Road Goodyear, Arizona 85338
Sacaton	GRIC	Butterfield	Residential	2 miles south of Casa Blanca Road (BIA#1) on Casa Grande Highway (BIA#7). South of Chandler city limits & east of I-10 in Pinal County
Scottsdale	City of Scottsdale	SRPMIC	Residential, Commercial & Recyclables.	West of Pima on Union Hills. 8417 East Union Hills Scottsdale, Arizona 85255
Skunk Creek	City of Phoenix	Transferred to MRF	City of Phoenix residential commingled recyclables.	1/4 mile west of I-17 on Happy Valley Road. 3165 West Happy Valley Road Phoenix, Arizona
Sky Harbor	Waste Management, Inc.	Not available.	Generally accepts: Municipal, commercial haulers, general public.	North of University Drive, east of 40 <sup>th</sup> Street. 2425 South 40 <sup>th</sup> Street Phoenix, Arizona 85034

**TABLE ES-2  
MAG SOLID WASTE MANAGEMENT FACILITIES SUMMARY  
2002**

TRANSFER FACILITY NAME	OWNER/OPERATOR	LANDFILL FOR DISPOSAL	TYPES OF WASTE ACCEPTED	TRANSFER STATION LOCATION
Wickenburg	Maricopa County	Northwest Regional	Residential	NE quarter, section 7, township 7N, range 5W. 3305 Sabine Brown Road Wickenburg, Arizona 85390
<b>PLANNED TRANSFER FACILITIES</b>				
TRANSFER FACILITY NAME	OWNER/OPERATOR	LANDFILL FOR DISPOSAL	TYPES OF WASTE ACCEPTED	TRANSFER STATION LOCATION
Cactus Waste	Capital Environmental Resources, Inc. (formerly owned by Cactus Waste Systems)	Planned landfill in Pinal County, near Picacho Peak area.		Pecos Road & Mountain Road (on Mesa side of Meridian Line).
East Valley	Waste Management Inc.	Butterfield	Planned design capacity 12,000 tons per day, planned to open 2004.	80 <sup>th</sup> Street & Warner Road.
Gila River Indian Community District 6	GRIC	Butterfield	Residential	On Riggs Road, approx. 3 miles east of 51 <sup>st</sup> Avenue.
West Valley	Waste Management Inc.	Northwest Regional	Planned design capacity 12,000 tons per day, planned to open 2004.	Perryville & McDowell Roads.
Name undetermined (East Valley)	Undetermined			Elliott & 88 <sup>th</sup> Street (Hawes).
<b>CLOSED TRANSFER FACILITIES</b>				
TRANSFER FACILITY NAME	OWNER/OPERATOR	LANDFILL FOR DISPOSAL	TYPES OF WASTE ACCEPTED	TRANSFER STATION LOCATION
Glendale	City of Glendale	Glendale	Residential	6210 W Myrtle Glendale, Arizona.

**TABLE ES-2  
MAG SOLID WASTE MANAGEMENT FACILITIES SUMMARY  
2002**

<b>RECYCLING/MATERIALS RECOVERY FACILITIES (MRFs)</b>						
<b>FACILITY NAME</b>	<b>STATUS</b>	<b>OWNER/OPERATOR</b>	<b>AREAS SERVED</b>	<b>MATERIAL RECOVERY CAPACITY</b>	<b>LANDFILL FOR REJECTS</b>	<b>MRF LOCATION</b>
Abitibi (f.k.a. Valley Recycling)	Operating	Abitibi	Chandler, Mesa, Gilbert	8,580 Tons per Year. (33 tons per day x 5 days per week)	Salt River	Ray Road & Chandler Blvd.
Glendale	Operating	City of Glendale	Glendale	65,000 Tons per Year. (250 Tons per day x 5 days per week)	Glendale	6210 West Myrtle Glendale, Arizona
19 <sup>th</sup> Street & University (f.k.a. Hudson Baylor)	Operating	Hudson Baylor	Phoenix (south), Scottsdale	78,000 Tons per Year. (300 Tons per day x 5 days per week)	Skunk Creek	19 <sup>th</sup> Street & University. 1919 E University Drive Phoenix, Arizona
Salt River MRF	Operating	SRPMIC	Mesa, Scottsdale, SRPMIC	74,880 Tons per Year. (288 Tons per day x 5 days per week)	Salt River	13602 East Beeline Hwy Scottsdale, Arizona 85256
Western Organics-27 <sup>th</sup> Avenue	Operating	Western Organics	Phoenix	17,420 Tons per Year. (67 Tons per day x 5 days per week)	Skunk Creek	2807 South 27 <sup>th</sup> Avenue Phoenix, Arizona 85009
Recycle America Phoenix I	Operating	Waste Management, Inc.	Tempe, Fountain Hills, Tucson	Not available.	Butterfield Station	3115 East Madison Phoenix, Arizona 85034
Recycle America Phoenix II	Operating	Waste Management, Inc.	Not available.	250 Tons per day x??= ??	Butterfield Station	3060 South 7 <sup>th</sup> Avenue Phoenix, Arizona 85041
<b>PLANNED MATERIALS RECOVERY FACILITIES (MRFS)</b>						
N/A						

**TABLE ES-2  
MAG SOLID WASTE MANAGEMENT FACILITIES SUMMARY  
2002**

<b>COMBINED MATERIALS RECOVERY FACILITIES/TRANSFER FACILITIES</b>							
FACILITY NAME	STATUS	OWNER/OPERATOR	AREAS SERVED	(TONS/DAY) CAPACITIES TRANSFER	(TONS/DAY) RECOVERY	LANDFILL FOR DISPOSAL	FACILITY LOCATION
27 <sup>TH</sup> Avenue Transfer Station/MRF	Operating	City of Phoenix	Phoenix (south)	4,500	320 Residential.	Skunk Creek (will switch to SR85 when open).	27 <sup>th</sup> Avenue & Lower Buckeye Road.

<b>PLANNED COMBINED MATERIALS RECOVERY FACILITIES/TRANSFER FACILITIES</b>							
FACILITY NAME	STATUS	OWNER/OPERATOR	AREAS SERVED	(TONS/DAY) CAPACITIES TRANSFER	(TONS/DAY) RECOVERY	LANDFILL FOR DISPOSAL	FACILITY LOCATION
North Gateway Transfer/ Recycling Station	Planned 2006	City of Phoenix	North portion of Phoenix	4,000	320	SR85	3 miles north of Happy Valley Road, east of I-17.

<b>RUBBISH/CONSTRUCTION &amp; DEMOLITION DEBRIS LANDFILLS</b>				
LANDFILL/OWNER NAME	SIZE (ACRES)	REMAINING CAPACITY	REMAINING YEARS	LOCATION
Bradley 40 <sup>th</sup> Street/Bradley Corporation	Not available.	Not available.	Not available.	North Side of Magnolia Street, 1/4 mile east of 40 <sup>th</sup> Street. 4346 East Magnolia
CalMat/Vulcan	Not available.	Not available.	Not available.	11923 W Indian School Rd.
Deer Valley Landfill (f/k/a Knuoechel Brothers)/Waste Management, Inc.	Not available.	Not available.	Not available.	24802 N 14 <sup>th</sup> Street, at 14 <sup>th</sup> Street and Alameda.
Glenn Weinberger Rainbow Valley/Weinberger	Not available.	Not available.	Not available.	3410 S 39 <sup>th</sup> Avenue (39 <sup>th</sup> Avenue & Lower Buckeye Road).
Lone Cactus (f/k/a Arizona Crushers) Current owner. Waste Management, Inc.	Not available.	Not available.	Not available.	Northwest corner of 7 <sup>th</sup> Street & Beardsley Road. 21402 N 7 <sup>th</sup> Street Phoenix, Arizona 85024

**TABLE ES-2  
MAG SOLID WASTE MANAGEMENT FACILITIES SUMMARY  
2002**

<b>COMPOSTING FACILITIES</b>			
FACILITY NAME	OWNER/OPERATOR	MATERIALS ACCEPTED	LOCATION
Western Organics	Private	Green wastes, biosolids, agricultural wastes, solid wastes.	2807 S 27 <sup>th</sup> Avenue, Phoenix.
Urban Forest Products	Private	Green wastes, wood wastes, agricultural wastes.	3330 W Broadway Road, Phoenix.
Salt River Landfill Mulching/Composting	SRPMIC	Green wastes.	SR 87 & Gilbert Road. Scottsdale, Arizona

<b>PLANNED MUNICIPAL SOLID WASTE COMPOSTING FACILITIES</b>			
FACILITY NAME	OWNER/OPERATOR	MATERIALS ACCEPTED	LOCATION
N/A			

<b>COMMERCIAL MEDICAL WASTE TREATMENT FACILITIES</b>			
FACILITY NAME	OWNER/OPERATOR	MATERIALS ACCEPTED	LOCATION
Stericycle	Stericycle, Inc.	Generally treats waste from hospitals, medical and dental offices, mortuaries, and research institutes. Stopped incinerating in November 2002. Currently uses autoclaving technology.	Gila River Indian Community on northern edge of Reservation in Lone Butte Business Park.

<b>COMMERCIAL MEDICAL WASTE TRANSFER STATIONS</b>			
FACILITY NAME	OWNER/OPERATOR	MATERIALS ACCEPTED	LOCATION
Envirosolve	Envirosolve LLC	Not available.	2844 West Broadway Road Phoenix, Arizona 85041
Milum Textile Services	Milum	Not available.	2600 South 7 <sup>th</sup> Avenue Phoenix, Arizona 85007

**TABLE ES-2  
MAG SOLID WASTE MANAGEMENT FACILITIES SUMMARY  
2002**

<b>OPERATING PERMANENT HOUSEHOLD HAZARDOUS WASTE COLLECTION FACILITIES</b>				
FACILITY NAME	OWNER/OPERATOR	SERVICE AREA	MATERIALS ACCEPTED	LOCATION
Tempe Household Hazardous Products Collection Center	City of Tempe	Tempe, Guadalupe	Generally accepts household and automotive waste.	1320 East University Drive Tempe, Arizona

<b>PLANNED PERMANENT HOUSEHOLD HAZARDOUS WASTE COLLECTION FACILITIES</b>				
FACILITY NAME	OWNER/OPERATOR	SERVICE AREA	MATERIALS ACCEPTED	LOCATION
Chandler Hazardous Household Waste Collection Center	City of Chandler	Chandler	Plans to generally accept household and automotive waste.	Not available.
Gilbert Household Hazardous Waste Collection Center	Town of Gilbert	Gilbert	Plans to generally accept household and automotive waste.	Gilbert South Area Service Center NW corner of Queen Creek & Greenfield Rd.

<b>WASTE TIRE COLLECTION SITES</b>			
FACILITY NAME	OWNER/OPERATOR	SERVICE AREA	LOCATION
Queen Creek Waste Tire Collection Site	Maricopa County Solid Waste Department	Not available.	Entrance of Riggs Road, 1/4 mile west of Ellsworth Road. 26402 South Hawes Road
Defense Reutilization and Marketing Office at LAFB	Defense Reutilization & Marketing Office.	Luke Air Force Base.	North of Glendale Avenue, 2 miles east of Luke Air Force Base. 7011 North El Mirage Road Glendale, Arizona 85307
City of Chandler Waste Tire Collection Site	City of Chandler Solid Waste Management.	Chandler	3200 South McQueen Road Chandler, Arizona
City of Glendale Waste Tire Collection Site	City of Glendale Municipal Solid Waste.	Glendale	11480 West Glendale Avenue Glendale, Arizona 85307
27 <sup>th</sup> Avenue Waste Tire Collection Site	City of Phoenix Department of Public Works.	Phoenix	South of Buckeye Road. 3060 South 27 <sup>th</sup> Avenue Phoenix, Arizona 85009

**TABLE ES-2  
MAG SOLID WASTE MANAGEMENT FACILITIES SUMMARY  
2002**

FACILITY NAME	OWNER/OPERATOR	SERVICE AREA	LOCATION
Skunk Creek Waste Tire Collection Site	City of Phoenix Department of Public Works.	Phoenix	One half mile west of I-17. 3165 West Happy Valley Road Phoenix, Arizona 85027
EnviroTech Industries International Waste Tire Collection Site	EnviroTech Industries International LLC.	Not available.	6.5 miles west of Mobile, Arizona on SR 283 (Maricopa Gila Bend Road).
USMX, Inc. Waste Tire Collection Site	USMX, Inc.	Not available.	1/4 mile east of 35 <sup>th</sup> Ave, on Broadway Road. 3106 West Broadway Road Phoenix, Arizona 85041
Recovery Technologies of Arizona, Inc. - Buckeye Waste Tire Collection Site	Recovery Technologies Group.	Not available.	½ mile west of Oglesby Road (SR 85) on Baseline Road.
All Mighty Metals Processing Waste Tire Collection Site	All Mighty Metals Processing.	Not available.	East of 35 <sup>th</sup> Avenue, on Broadway Road. 3408 West Broadway Road Phoenix, Arizona 85041
Weinberger Rainbow Valley Waste Tire Collection Site	GMW Enterprises, Inc.	Not available.	On SR 283 (Maricopa Gila Bend Road). 39500 South 99 <sup>th</sup> Avenue Mobile, Arizona
Pep Boys #747 Waste Tire Collection Site	Ronald Knopf	Phoenix	Northwest corner of 35 <sup>th</sup> Ave & Cactus Rd. 3528 West Cactus Road Phoenix, Arizona 85029
Pep Boys #779 Waste Tire Collection Site	Davis Marentes	Glendale	Southwest corner of 63 <sup>d</sup> Ave & Bell Road. 6311 West Bell Road Glendale, Arizona 85308

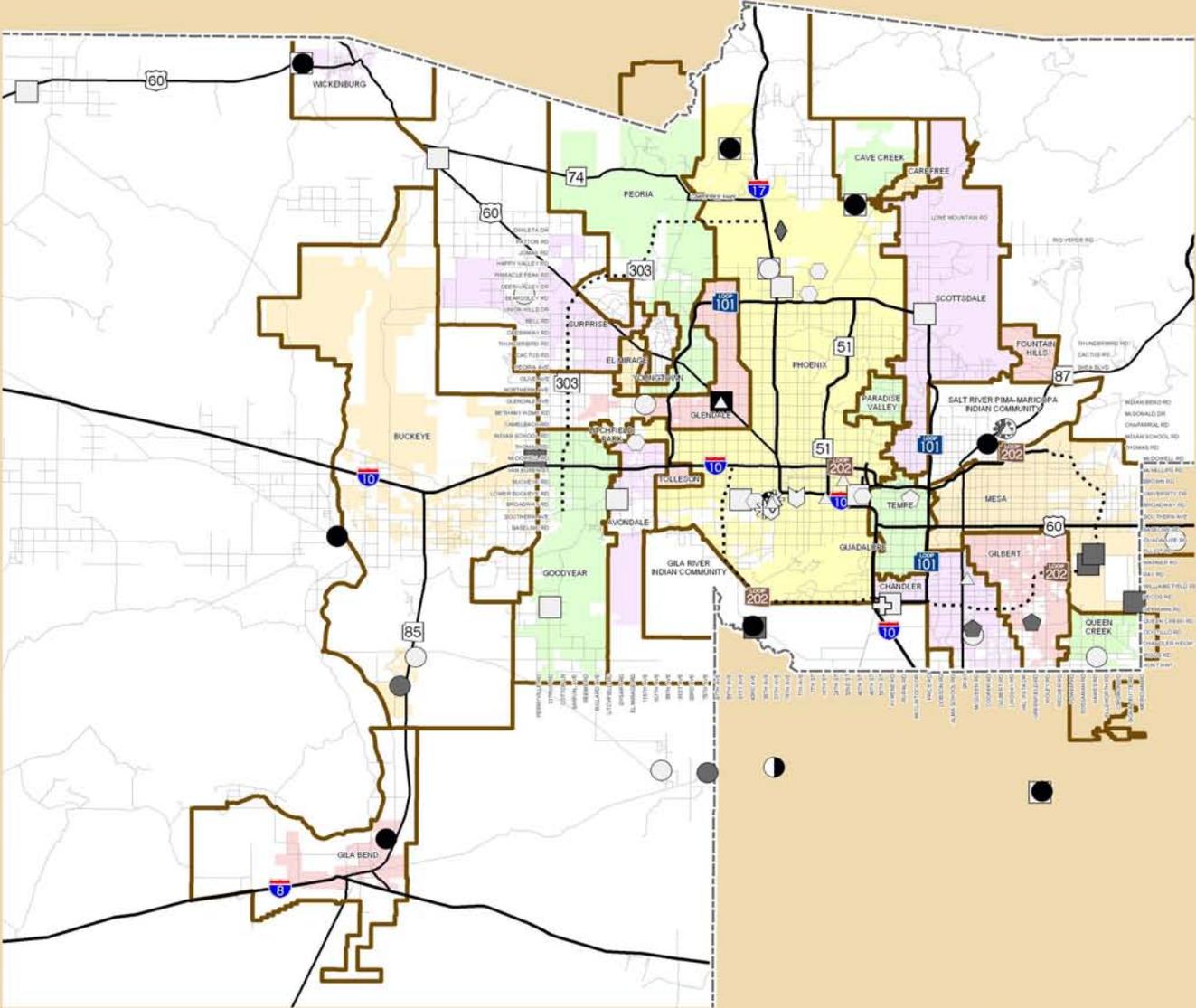
Sources: 1991 MAG Regional Waste Stream Study; MAG Solid Waste Information Collection Efforts: 1998, March 2001 and January 2003; MAG Member Agency Interviews and Web sites; ADEQ Directory of Arizona's Waste Tire Collection Sites January 2003; ADEQ Directory of Arizona Bichazardous Medical Waste Handlers.

# Solid Waste Management Plan

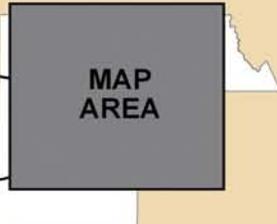
Fig. ES-1



## Solid Waste Management Facilities



- |  |  |
|--|--|
| <b>Landfill</b>  | <b>Rubbish/ Construction &amp; Demolition Debris Landfill</b>  |
| ○ Open   | ○ Open   |
| ● Planned  |  |
| ● Closed   |  |
| ◐ Inactive   |  |
| <b>Transfer Station</b>  | <b>Permanent Household Hazardous Waste Collection Facility</b> |
| □ Open   | □ Open   |
| ■ Planned  | ■ Planned  |
| ■ Closed   |  |
| <b>Materials Recovery Facility</b>                                 | <b>Composting Facility</b>                                     |
| △ Open   | ⊙ Open   |
|  | ⊙ Planned  |
| <b>Combined Transfer Station &amp; Materials Recovery Facility</b> | <b>Medical Waste</b>   |
| ◇ Open   | ⊕ Open Treatment Facility                                      |
| ◇ Planned  | ⊕ Open Transfer Station  |
|  | <b>Other Features</b>  |
|  | ▭ Municipal Planning Area                                      |
|  | --- County Boundary  |
|  | — Existing Freeway   |
|  | ⋯ Planned Freeway  |
|  | — Other Roads  |



Source: Maricopa Association of Governments

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Three privately owned regional landfills, each servicing several municipalities in the region, are anticipated to remain open well beyond the current twenty year planning period. The Northwest Regional Landfill, which services Aguila, El Mirage, Morristown, Peoria, Surprise, Sun City, Wickenburg, and Youngtown, will remain open until year 2102, and surrounding vacant land is available for expansion. Butterfield Station Landfill, which services Carefree, Cave Creek, Chandler, Gila River Indian Community and Tempe, will remain open until year 2110. Southwest Regional Landfill, which services Avondale, Buckeye, Gila Bend, Goodyear and Litchfield Park, is scheduled to remain open until year 2051. The City of Glendale Landfill, which services Glendale, is anticipated to remain open until year 2046. The Skunk Creek Landfill, which services Phoenix, is anticipated to remain open until January 2006.

The new City of Phoenix Southern Route (SR) 85 Landfill is anticipated to open in year 2006 with a capacity of over 50 years. A private company has proposed a new landfill in the southern portion of Maricopa County. Four new transfer stations are planned within Maricopa County including the Waste Management West Valley, Waste Management East Valley, Cactus Waste, and a proposed unnamed east valley facility. In addition, the City of Phoenix North Gateway Combined Materials Recovery Transfer Facility is planned to open in 2006, the same year as the anticipated Phoenix Skunk Creek Landfill closure and Phoenix SR 85 Landfill opening.

The SRPMIC Salt River Landfill, which services Gilbert, Mesa and Scottsdale, will remain open until year 2015 and SRPMIC is considering potential transfer station options upon closure. The Apache Junction Landfill, which services within both Maricopa and Pinal Counties, is anticipated to close in 2012. The Queen Creek Landfill, which services Queen Creek, will close in 2005 and a possible replacement landfill in Maricopa or Pinal County is being considered.

There are several existing transfer stations in the region which generally service within the jurisdiction for which they are named. For recyclable materials sorting, there are several material recovery facilities and combined materials recovery transfer facilities in Maricopa County. In regard to household hazardous waste (HHW), there is one permanent collection facility owned by the City of Tempe which accepts HHW from Tempe and Guadalupe residents. The City of Chandler plans to open a permanent facility in 2004 for its residents, and the Town of Gilbert plans to open a permanent facility for its residents in 2006. In several other cities, household hazardous waste disposal opportunities are provided through municipal HHW collection events.

Various waste collection programs have been implemented by local agencies to provide residents with solid waste collection and disposal in a manner that prevents public health hazards or nuisances. Agencies use municipal or private collection services as appropriate for local conditions. Recycling collection programs are implemented by individual agencies, each in a way that is responsive to local needs and conditions.

Since the 1993 MAG Plan, the region has seen an increase in both the quantity and

complexity of local recycling collection programs. The number of municipalities with a curbside recycling collection program in the MAG region has increased from three in 1993 to twelve in 2002. In addition, five other municipalities are planning or considering a curbside recycling collection program.

In 1993, nine jurisdictions had a drop off recycling program, and today this number has increased to seventeen. Another four municipalities are planning or considering a drop off recycling program. Recycling programs in the region range from well developed curbside collection programs that include drop off locations and public education to once per year drop off collection events. Joint efforts and partnerships among cities were a key component in establishing recycling programs and public education programs.

During the last several years, the number of municipal white goods (large appliance) collection programs in the region has increased. In order to help divert items such as large appliances and electronics from the waste stream, nine municipalities in the region offer curbside collection and drop off opportunities for residential white goods. Four others provide annual white goods drop off opportunities.

The opportunities for diverting green waste from the landfill waste stream has also become more common. In 1993, one city had a landscape mulching program, and this number has increased to six jurisdictions with residential curbside green waste collection programs in 2002.

Since 1993, the number and sophistication level of municipal household hazardous waste collection programs has greatly increased. In 1993, five jurisdictions participated together to conduct one annual household hazardous waste collection event. Since that time, each of these municipalities have developed their own program and increased the frequency of collection events. Fifteen jurisdictions now have a household hazardous waste collection program. Of these, seven offer multiple collection events throughout the year, and eight offer a once per year collection event. Five other municipalities are planning or considering a program.

## **EVALUATION OF WASTE PROBLEMS AND SELECTED STRATEGIES**

During the MAG Plan development process, MAG member agencies identified illegally dumped wastes, electronic wastes, and white goods containing regulated substances as problem wastes or wastes that present special management challenges. Technically and economically feasible strategies for problem wastes were evaluated and selected using criteria in Table 8.1. In the MAG region, local governments or private sector providers develop and implement solid waste management programs based on evaluation of local conditions.

Illegal dumping is considered a persistent problem waste due to lacking funds for cleanup and monitoring, lacking authority to cite illegal dumpers, and hurdles in prosecuting illegal dumpers. Several cities and towns have ordinances or codes prohibiting illegal dumping. Selected management strategies for this waste type include developing ordinances that strengthen agency powers, developing public education programs, developing volunteer watch programs for target areas, and supporting legislation to grant citation authority to city and County staff.

In 1993, the illegal placement of hazardous or restricted wastes (such as antifreeze, used oil, and batteries), into commercial waste collection bins was considered a problem. Today, there are more household hazardous waste collection programs with more disposal opportunities for these waste types. Other selected management strategies include placing locks or signs on commercial collection bins.

Electronic wastes are a newly emerging waste problem due to their hazardous components such as lead, chromium, cadmium and mercury. According to EPA, this waste type will be the fastest growing portion of America's trash due to millions of computers becoming obsolete in the next few years. The EPA encourages reuse of electronic items and recycling of valuable materials they contain such as steel, glass, plastic and precious metals. In the MAG region, selected e-waste recycling strategies include investigating restrictions on certain products or materials, encouraging business and industry to develop voluntary source reduction and recycling plans, investigation of variable fee structures and product taxes, and developing public education programs.

White goods present a challenge when the appliances contain regulated substances, such as Chlorofluorocarbons or refrigerants. Federal regulations require refrigerant removal from appliances prior to disposal/recycling and prohibit appliance disposal in a way that permits the regulated substance to enter the environment. Seven municipalities in the region have white goods/appliance curbside collection and drop off programs. The regulated substance is properly removed from appliances and recyclable materials are then taken to a scrap metal dealer. Residents pay a minimal fee to help recover regulated substance reclamation costs. Some cities request that residents have regulated substances removed prior to collection. For the future, six jurisdictions are planning or considering a white goods collection program.

The Maricopa Association of Governments serves as the designated Regional Solid Waste Management Planning Agency for the Maricopa County area. This plan was produced by the Maricopa Association of Governments to fulfill a need for systems level regional solid waste management planning.

## **1.1 HISTORICAL BACKGROUND**

In Arizona, six Councils of Government were designated by the Governor as regional solid waste planning agencies (see Figure 1-1). This action was taken in 1979, pursuant to Section 4006 (b) of the Resource Conservation and Recovery Act (RCRA) of 1976 (Public Law 94-580). Criteria for designating MAG as the regional solid waste planning agency are codified in RCRA, 40 CFR Part 255.11 and are summarized in Table 1.1.

Solid waste management planning in the region began with a 1968 Solid Waste Disposal Report for Maricopa County, produced by John Carollo Engineers. The study outlined solid waste disposal programs for the period from 1970 to 2000. Throughout the program period, disposal by sanitary landfill was expected to be the basis of waste management.

In 1980, MAG prepared the *MAG Solid Waste Needs Assessment* in an effort to address the needs of the region. The needs assessment was used by the State to prepare the *1981 State of Arizona Solid Waste Management Plan*. This initial statewide solid waste management plan was designed to address the activities and policies of the State Solid Waste Management Program for a period of five years. The State plan has not been updated.

In 1987, the MAG Solid Waste Disposal Task Force completed *An Assessment of Solid Waste Disposal Practices in the MAG Region*. The assessment was conducted to determine the feasibility of establishing a regional authority to manage the disposal of solid wastes in the MAG area. The report included an assessment of existing practices and needs, alternate disposal methods, management organizations, and funding mechanisms. The report summarized solid waste disposal practices in cities throughout the region, and forecasted future needs using population projections.

In 1988, the MAG Regional Council established the MAG Solid Waste Coordinating Committee and the MAG Solid Waste Technical Advisory Committee. These committees were established to begin the process of regional plan development. The impetus for developing the MAG Regional Solid Waste Management Plan resulted from several factors that had become apparent in 1989 -1990. There were pressures of proposed Federal and State regulations, concern with landfill capacity, and a need for effective management of problem wastes.

Solid Waste Management Plan

Fig. 1-1



Arizona Council of Governments

- Maricopa Association of Governments (MAG)
- Central Arizona Association of Governments (CAAG)
- Pima Association of Governments (PAG)
- Northern Arizona Council of Governments (NACOG)
- Southeastern Arizona Governments Association (SEAGO)
- Western Arizona Council of Governments (WACOG)
- County Boundary



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**Table 1.1**  
**CRITERIA FOR DESIGNATING**  
**REGIONAL SOLID WASTE PLANNING AGENCIES**

- Majority representation of local government elected officials.
- Planning jurisdiction for the entire planning region.
- Capability to have the planning process underway within one year.
- Have established procedures for adoption, review, and revision of plans and resolution of major issues, including public participation.
- Experience and skills to perform all of the assigned responsibilities.
- Designate the 208 Regional Water Quality Planning Agency as the Regional Solid Waste Planning Agency.
- Coordinate among 208 water quality management, solid waste management planning and air quality planning.

*Source: Section 4006(b) of the Resource Conservation and Recovery Act of 1976 (Public Law 94-580); 40 CFR 255.11 as revised July 1, 2002.*

## **1.2 COMPLIANCE WITH SOLID WASTE REGULATIONS**

Federal, State and local regulations affect the management of solid wastes in Maricopa County. The primary federal regulations pertaining to solid waste management are contained in the Resource Conservation and Recovery Act (RCRA) of 1976 [Public Law 94-580] and the Hazardous and Solid Waste Amendments of 1984 [Public Law 98-616]. Other federal laws with potential impacts on solid waste management include the Comprehensive Environmental Response, Compensation, Liability Act of 1980 (CERCLA), commonly known as Superfund, and the Superfund Amendments and Reauthorization Act of 1986, the Clean Air Act, and the Small Business Liability Relief & Brownfields Revitalization Act of 2002 [Public Law 107-188 HR 2869].

On October 9, 1991, the U.S. Environmental Protection Agency (EPA) published regulations establishing standards for the location, design and operation of solid waste landfills. The rules established groundwater monitoring and corrective action requirements, and specify landfill closure requirements and financial assurance capability requirements for closure and post closure activities. The majority of these regulations, including prohibition of liquid waste disposal in solid waste landfills, became effective October 9, 1993. In 1992, Arizona legislation to comply with the EPA regulations was signed into law. Compliance with these Federal and State requirements has caused a significant cost increase and resulted in premature closure of some landfills in the region.

In Arizona, the Arizona Department of Environmental Quality (ADEQ) has primary responsibility for assuring compliance with both State and Federal regulations. State activities include development of administration of the State Solid Waste Plan, promulgation of waste definitions and rules, and inspection and permit administration for solid waste management facilities. The Department has been mandated or authorized by legislation to develop rules for the following areas of solid waste management:

- Storage
- Collection
- Transportation
- Disposal
- Reclamation
- Source Separation
- Processing
- Treatment
- Biohazardous Medical Waste
- Nonbiohazardous Medical Waste
- Tracking of Biohazardous Medical Wastes and Sharps
- Medical Waste Incineration
- Transfer Facilities
- Recycling Facilities
- Solid Waste Facilities Not Open to the Public
- Land Application of Wastewater Treatment Plant Sludge
- Waste Tires
- Financial Assurance Mechanisms
- Political Subdivision Financial Test
- Definition of Substantial Change in Facility Design or Operation
- Special Waste
- Lead Acid Batteries
- Used Oil
- Recycling Program
- Pollution Prevention
- Voluntary Remediation
- Brownfields Cleanup Revolving Loan Fund/ Brownfields Assistance/Brownfields Targeted Site Assessment

Title 49 of the Arizona Revised Statutes (A.R.S.) encompasses State regulations pertaining to the environment. Regulations concerning solid waste management are contained in the Arizona Revised Statutes under Title 49, Chapter 4. The statute assigning responsibility for solid waste collection to local municipal or county governments is A.R.S. §49-741. The Voluntary Remediation Program is encompassed in Arizona Revised Statutes under Title 49, Chapter 1, and the Brownfields Cleanup Revolving Loan Fund is contained in Chapter 2 of that Title.

### **1.3 LANDFILL CAPACITY**

Generally, landfilling is anticipated to continue as the primary means of solid waste management in the MAG region. In Maricopa County, it is anticipated that there will be adequate overall landfill and transfer station capacity to meet the solid waste management needs through the current twenty year planning period and beyond, according to the *Draft March 2003 MAG Regional Growing Smarter Implementation Solid Waste Report* (Appendix E). The draft study was one of a series investigating the relationship between transportation and community systems preservation under the Transportation and Community Systems Preservation Pilot Program. In February 2003, the MAG Solid Waste Advisory Committee reviewed the study and comments received were incorporated.

The draft study compared the amount of landfill and transfer station capacity required to the amount of capacity available in Maricopa County through year 2050. Generally, the study approximated that there would be adequate overall landfill and transfer station capacity through 2050, although future landfill capacity may not be evenly distributed from a geographic perspective, and shifting to alternative landfills may result in a need for more transfer stations. The draft report noted that the amount of waste stream projected to flow to landfills in the region may be significantly impacted by two factors: the rate of recycling and the potential future use of alternative waste diversion technologies. The draft report assumed an increase in recycling rates in the region for the future.

Three existing regional landfills are expected to remain open until year 2051 or well beyond, including the Southwest Regional, Northwest Regional, and Butterfield Station landfills. The Northwest Regional Landfill is anticipated continue servicing several cities in the region until year 2102. Two additional privately owned regional landfills, Southwest Regional and Butterfield Station, have opened and currently service several cities in the region with anticipated closure in years 2051 and 2210, respectively.

In addition, the Glendale Landfill, which services the Glendale Municipal Planning Area (MPA), is anticipated to remain open until 2046. Two new landfills are anticipated to open in Maricopa County. These include the City of Phoenix State Route (SR) 85 Landfill, with a capacity of over 50 years, and a proposed landfill in the southern area of the region.

In addition, six new transfer stations or combined materials recovery facility/transfer stations are planned to open during the twenty year planning period. During this period, five existing landfills are anticipated to close due to life cycle factors, including the Queen Creek, Chandler, Skunk Creek, Apache Junction, and Salt River Landfills. For several of these landfill closures, a new transfer station, combined materials recovery facility/transfer station or landfill is planned to follow to help accommodate solid waste needs.

For example, the City of Phoenix Skunk Creek Landfill is expected to close in approximately 2006 and the North Gateway Combined Materials Recovery Facility/Transfer Station is planned to open in approximately 2006.

Since the 1993 MAG Plan, some changes have occurred in regard to the anticipated regional role for Maricopa County. In 1993, Maricopa County had opened the Northwest Regional Landfill and was anticipated to open another three planned regional landfills. Since that time, the County has reduced its role in landfilling and ownership of the Northwest Regional has shifted to a private service provider. Two other regional landfills, Southwest Regional and Butterfield Station, have opened and are privately owned.

In the past decade, landfill closure has generally occurred as anticipated in the 1993 MAG Plan. As anticipated in the 1993 Plan, two small Maricopa County landfills, Hassayampa and Gila Bend, have closed prematurely due to regulatory pressures from Resource Conservation Recovery Act (RCRA) regulations.

It was anticipated in the 1993 Plan that life cycle factors would result in closure of five municipal solid waste landfills over the planning period. A total of seven landfills in the region have closed due to life cycle factors, including the Cave Creek, 27<sup>th</sup> Avenue, Gila River Indian Community District 6, New River, Sacaton, Tri-City and Wickenburg Landfills. Each of these landfill closures were followed with construction of a new transfer facility, except Tri-City Landfill. This landfill has stopped accepting solid waste, but gas to energy options have been implemented, and the new Salt River Landfill and Materials Recovery Facility has opened to service the Gilbert, Mesa, and Scottsdale MPAs.

## **1.4 PROBLEM WASTES**

During the process of the initial 1993 plan development, several wastes which presented management problems in the region were identified. At that time, nonhazardous liquid wastes, medical wastes, wastewater treatment plant biosolids (sludges), illegally dumped wastes, commercial and industrial wastes, and household hazardous wastes were identified as problem wastes in the region. For the current Plan update, MAG member agencies were surveyed to identify which of these wastes are still considered a problem and to identify any new problem wastes.

Illegally dumped wastes have been identified as still a problem waste across the region. Household hazardous waste (HHW) has been identified as a problem waste for the unincorporated areas and smaller municipalities with minimal or no existing HHW collection program. Also, electronic wastes and white goods containing regulated substances have emerged as problem wastes in the region. Municipalities in the MAG region report seeing an increase in the amount of electronic wastes and white goods containing regulated substances, and an increase in the problems associated with their disposal.

### **1.4.1 Waste Types Still Considered a Problem Waste**

Illegal dumping is still considered a problem waste in the MAG region, mainly due to the associated cleanup costs, lacking city and County funds for cleanup and monitoring, lacking city and County authority to cite illegal dumpers, and hurdles in attempting to

prosecute illegal dumpers. In 1993, the MAG Plan adopted a recommendation for development of an illegal dumping education program for the public, and member agencies were encouraged to establish volunteer watch programs for areas continually used by illegal dumpers. In the 1993 MAG Plan, the Pima County Model Ordinance to Control Illegal Dumping was provided to assist any local governments wishing to develop an ordinance. Currently, several cities and towns have some type of ordinance or code prohibiting illegal or indiscriminate dumping of solid waste.

Previously, household hazardous waste (HHW) was identified as a problem waste due to the potential for improper disposal and significant disposal costs. Presently, the potential for improper disposal is generally not considered a problem for larger municipalities with established HHW collection programs. However, this waste type is still a concern in the unincorporated County areas and smaller jurisdictions with minimal or no HHW collection program.

Previously, it was anticipated that Maricopa County would act as the lead agency for regional HHW collection and management. However, the County has reduced their role in solid waste management since that time. In 1993, a HHW management strategy was adopted to evaluate efficient and cost effective strategies, collection systems, and the potential for permanent HHW collection sites. To date, 15 of the 27 member agencies have developed HHW collection programs on an individual or subregional basis. In addition, one permanent HHW collection facility has been developed by the City of Tempe and one is planned the City of Chandler and one is planned by the Town of Gilbert. Generally, these facilities are designed to accept HHW from within the respective jurisdiction.

Currently, member agency suggestions for possible ways to address HHW include investigation of the potential for cities to assist with safe HHW disposal opportunities in unincorporated areas through Intergovernmental Agreements. The possible investigation of a regional effort to develop more HHW public education and evaluate ways to encourage HHW recycling and reuse markets was suggested.

#### **1.4.2 Newly Emerging Waste Problems**

Some MAG member agencies indicate that electronic wastes have recently emerged as a problem waste, primarily because their hazardous components, such as lead, chromium, and mercury, can make their disposal in large quantities an issue. According to the U.S. Environmental Protection Agency (EPA), electronics waste will be the fastest growing portion of America's trash due to millions of computers becoming obsolete and going to landfills in the next five years. The EPA encourages e-waste reuse and recycling since electronic products can include valuable materials for recovery at the end of their useful life such as steel, glass, plastic and precious metals.

At the local level, several municipalities currently have programs to address electronic waste such as household hazardous waste collection programs with computer drop off opportunities and curbside collection by appointment. The City of Phoenix and the Town of Gilbert also work to help encourage computer reuse through the Arizona Students Recycling Used Technology, a non-profit partnership between schools and businesses founded by Intel and Motorola.

At the national level, the EPA “Plug-In To E-Cycling Campaign” works with partners to encourage reuse, recycling, and safe management of electronic waste and safe e-waste management guidelines have been developed. The EPA program also includes a product stewardship component which highlights businesses participating in e-waste reuse and recycling.

White goods containing regulated substances, such as chlorofluorocarbons (CFCs), are emerging as a problem waste, primarily due to a Clean Air Act requirement to remove refrigerants from appliances and prohibiting their disposal in a way that permits entrance into the environment. Currently, several MAG jurisdictions have established white goods/appliance collection programs in which a minimal service fee is charged to the resident to help recover refrigerant removal costs. Through these programs, household appliances with refrigerants or CFCs have the regulated substance removed at a reclaiming facility and take recyclable materials to a scrap dealer/metal recycling facility.

#### **1.4.3 Waste Types No Longer Considered a Waste Problem**

Previously, nonhazardous liquid waste (NHLW) was a concern due to a possible shortage of disposal sites resulting with the October 1993 EPA regulations prohibiting co-disposal of liquid wastes in solid waste landfills. Currently, member agencies indicate that this waste type is generally not considered a problem waste. Several disposal sites have been approved by Maricopa County and the County regulates NHLW storage, transport and disposal under Chapter 2 of the Maricopa County Health Code.

Since 1993, ownership of NHLW disposal sites has largely shifted from the local governments to the private sector. Two cities in the region accept septage, a specific type of NHLW, at their wastewater treatment facilities. With the shift to private ownership, this waste type is no longer tracked on a comprehensive level. Data on NHLW amounts for the current Plan update were provided by individual private and public facility owners.

Previously, medical waste was identified as a problem waste due to the lack of a legal definition, lack of determination of infectious portion and associated risks, and potential impacts from incinerator emissions and residual ash. Currently, MAG member agencies indicate that this waste type is no longer a problem since the State has adopted rules for the management, transport and storing of biohazardous waste. The concern regarding potential incinerator emissions and residual ash has been eliminated due to stricter federal regulations and the discontinuation of medical waste incineration in Maricopa County.

In the 1993 MAG Plan, wastewater treatment plant biosolids (sludge) were a problem waste due to the unknown impact of a projected increase in biosolids generated by small facilities outside the Multi-City Subregional Operating Group (SROG) Facility. Currently, MAG member agencies indicate that this waste type is no longer considered a problem due to the ADEQ Biosolids Rules (A.A.C. 9, Article 10), which regulate biosolids disposal, treatment, transportation, land application and management.

## **1.5 MAG REGIONAL SOLID WASTE MANAGEMENT PLAN DEVELOPMENT**

In 1990, MAG initiated a three-step regional plan development process. The first step was a comprehensive profile of the solid waste stream in the MAG region. In January 1990, MAG contracted with the consulting firm of Coopers and Lybrand to undertake a waste stream study. The objective of the study was to characterize the individual constituents in wastes that are generated in order to evaluate the extent to which source reduction is possible, and gauge waste minimization and risk reduction efforts.

The *MAG Regional Waste Stream Study* was finalized in May 1991. Components of the study include the size of the waste stream, the rate of waste generation, and the methods used to collect, recycle, and dispose of wastes. As a part of the study, a regional database, the Solid Waste Information Management System (SWIMS), was established. The SWIMS database identified the components of the waste stream in the Maricopa County area.

The second phase of plan development was initiated on September 26, 1990, when the MAG Regional Council granted authorization for MAG to begin the effort to develop the Regional Solid Waste Management Plan. Efforts consisted of assessing the local and regional solid waste needs, facilitating the sharing of solid waste management information among MAG member agencies, and identifying areas where additional work was needed. Information sharing was accomplished by means of a MAG Solid Waste Workshop conducted on April 15, 1991. Other plan activities during this phase included a review of pertinent literature and a survey and summary of state and regional plans.

Second phase efforts resulted in the July 2, 1991 *Assessment of Local and Regional Solid Waste Needs in the MAG Region*. The summary assessment included a matrix listing MAG member agency solid waste management plans. Areas where additional work was needed were consolidated to form a Revised Scope of Work for the remainder of the planning process. A Scope of Work was developed for producing the *MAG Regional Solid Waste Management Plan* and was approved by the MAG Regional Council in July 1991.

In the third phase of the plan development process, the tasks in the Scope of Work were undertaken within MAG. Tasks were undertaken by the MAG Solid Waste Coordinating Committee, Solid Waste Technical Advisory Committee and two working groups. The working groups were composed of individuals from public and private sectors with technical expertise in solid waste management. The SWIMS database produced earlier in the plan

development process was used to complete many of the technical analyses required for waste stream assessments and evaluation of management options.

Public workshops on the *Draft MAG Regional Solid Waste Management Plan* were held on October 26, November 4, and November 6, 1993. On November 23, 1993, a public hearing was conducted on the *Draft MAG Regional Solid Waste Management Plan* and the MAG Solid Waste Technical Advisory Committee made a recommendation to the MAG Solid Waste Coordinating Committee for adoption.

On November 30, 1993, the MAG Solid Waste Coordinating Committee concurred with the Solid Waste Technical Advisory Committee and made a recommendation for adoption of the draft plan to the MAG Regional Council. The MAG Solid Waste Coordinating Committee made a series of recommendations regarding waste management issues, waste management strategies, and plan maintenance provisions. The *MAG Regional Solid Waste Management Plan* was officially approved by the MAG Regional Council on December 15, 1993.

Since adoption of the Plan, the MAG Solid Waste Coordinating Committee has disbanded and the MAG Solid Waste Technical Advisory Committee has been modified into the current MAG Solid Waste Advisory Committee. This Committee consists of representatives of public agencies, representatives of public interest groups, private citizens, and representatives of organizations with substantial economic interest in the outcome of the solid waste planning process.

Presently, the MAG Solid Waste Advisory Committee serves in an advisory capacity to the MAG Management Committee and Regional Council on solid waste management matters affecting the region. The Committee participated in key stages of the current revision of the *MAG Regional Solid Waste Management Plan*, such as development of the Scope of Work, evaluation of current and future solid waste management needs in the region and plan maintenance provisions.

Major updates have been conducted in years 1998 and 2001 to some data components of the *MAG Regional Solid Waste Management Plan* including the Breakdown of Residential and Commercial Waste, the Solid Waste Facilities Summary, the Solid Waste Plans Table, and the Solid Waste Service Area Map. For these updates, solid waste information was collected from MAG member agencies and private waste service providers and the information was used to update the MAG Solid Waste Information Management System database.

## **1.6 MAJOR SECTIONS OF PLAN**

The current update of the *MAG Regional Solid Waste Management Plan* includes the following major sections:

**Chapter 2: General Description of the Study Area-** Includes information on the MAG solid waste planning area, population growth, employment growth, planning area boundaries, current and projected population, general land use, and potential impacts of current and planned land use. A twenty year planning horizon is used.

**Chapter 3: Establishment of Goals and Objectives-** Includes the overall plan goal and general goals and objectives for waste management system components.

**Chapter 4: Description of the Waste Stream for the MAG Region-** Contains a summary of the waste stream, waste generation rates and projections by waste type, and a waste characterization assessment.

**Chapter 5: Evaluation of Waste Problems by Type and Volume-** Includes a summary of waste problems identified by MAG member agencies and by the MAG Solid Waste Advisory Committee.

**Chapter 6: Current and Planned Solid Waste Management Facilities and Programs-** Includes an inventory and description of existing and planned public and private solid waste facilities and programs, an assessment of current facilities and programs, and discussion of their ability to meet future needs.

**Chapter 7: Identification of Future Regional Solid Waste Management Needs-** Includes an assessment of solid waste management needs over the twenty year planning horizon based upon integrated waste management concepts, and a needs assessment.

**Chapter 8: Solid Waste Management Strategies-** Includes discussion of technically and economically feasible management strategies for identified waste problems and for integrated solid waste management, and discussion of new and innovative technologies in the solid waste management industry.

**Chapter 9: Possible Methods to Finance Solid Waste Management Facilities and Programs-** Includes discussion of conventional financing mechanisms, and possible funding sources for specific management strategies targeting specific wastes.

**Chapter 10: Implementation of the Regional Solid Waste Management Plan-** Includes implementation responsibilities of MAG member agencies, MAG and the State, and a plan and timeline for implementation.

**Chapter 11: Public Participation Process-** Includes public participation process and public meeting process for plan maintenance and updates.

**Chapter 12: MAG Approval of the Regional Solid Waste Management Plan-** Includes description of plan development and approval process, the process regarding continual plan evaluation, and MAG coordination with State and Federal agencies.

**Appendix A: Definitions for Reference-** Includes definition of key terms used in solid waste management industry and in the Plan.

**Appendix B: Literature Review-** Lists sources and references used for development of the plan update.

**Appendix C: Pima County Model Ordinance to Control Illegal Dumping**

**Appendix D: Public Participation Documents**

**Appendix E: Draft MAG Regional Growing Smarter Implementation Solid Waste Report**

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**DESCRIPTION OF THE STUDY AREA**

The purpose of this chapter is to describe the study area for the MAG Regional Solid Waste Management Plan. In year 2002, Maricopa County (the area encompassed in this report), contained approximately 60 percent of the population in Arizona, as well as eight of the nine Arizona cities with populations greater than 100,000 people. The MAG region is geographically situated in the south-central interior region of the State of Arizona and encompasses an area of approximately 9,223 square miles. The MAG region contains 25 incorporated cities and towns, five Native American Communities and a large area of unincorporated land. The region is located in the Sonoran Desert with elevations generally ranging from 500 to 2,500 feet above sea level.

This chapter includes the following elements: population growth, employment growth, planning area boundaries, current and projected population, overall land use, and potential impacts of current and planned land use.

**2.1 POPULATION GROWTH**

Maricopa County is the seat of government for the State of Arizona, and is an economic and financial hub for the southwestern United States. For the past several decades, the MAG region has been one of the fastest-growing metropolitan areas in the United States, among those with populations of more than one million people. In April of 2000, Maricopa County had a resident population of approximately 3,096,600. For the period of 1990 to 2000, the County experienced a population growth of approximately 45 percent.

MAG Interim Socioeconomic Projections indicate that this high growth rate is expected to continue. By year 2030, Maricopa County is projected to double in population over the year 2000 base population, with an anticipated 6,140,000 million people. This means that the region will experience a growth of approximately one million people during each decade. Over the 30 year period (2000-2030), nine Municipal Planning Areas are projected to grow by more than 100,000 persons. These areas include Phoenix, Buckeye, Surprise, Goodyear, Mesa, Gilbert, Peoria, Avondale and Chandler. Another three Municipal Planning Areas are projected to experience population growth greater than 50,000 persons: Scottsdale, Glendale, and the Maricopa County portion of Queen Creek.

**2.2 EMPLOYMENT GROWTH**

By year 2025, Maricopa County is projected to nearly double its reported year 2000 employment total. This means that employment within the region will grow by approximately 575,000 jobs each decade. Compared to year 2000, it is projected that there will be a more even distribution of jobs by place of work among Municipal Planning Areas throughout the MAG region. Between years 2000 and 2050, total job growth in

Maricopa County is projected to be 1.4 million jobs. During the twenty year solid waste planning period of 2000 to 2020, a growth of 1,140,000 jobs is projected for Maricopa County.

### **2.3 PLANNING AREA BOUNDARIES**

For the purposes of the MAG Regional Solid Waste Management Plan Revision, the boundaries of the study area primarily coincide with the boundaries of Maricopa County. The MAG regional solid waste management planning boundary is the Maricopa County boundary and jurisdictions or portions of jurisdictions outside Maricopa County are within other planning areas for all solid waste planning purposes and processes.

The regional planning area is divided by MAG into Municipal Planning Areas (MPAs). The 27 MPAs generally correspond to the jurisdictions for which they are named. Minimally, the planning area for each city or town includes all of its incorporated area plus portions of the County surrounded by strip annexation. The Municipal Planning Areas are shown on Figure 2-1. The MPAs are further split into 145 Regional Analysis Zones (RAZs). Each RAZ is further subdivided into Traffic Analysis Zones (TAZs). There are currently 1,862 TAZs in the MAG Solid Waste Management Planning Area.

### **2.4 CURRENT AND PROJECTED POPULATION**

The most recent MAG population projections are the July 2003 MAG Interim Projections of Population, Housing and Employment. The projections were officially approved for use by the MAG Regional Council on June 25, 2003. Current resident population by municipality data is presented in Table 2.1.

The twenty year planning period is approximately 2000 to 2020. Population projections by Municipal Planning Area (MPA) for the planning period are provided in five year increments in Table 2.2. Overall regional growth during this period is projected to be approximately 60 percent, with the total population increasing from 3,096,600 in year 2000 to 5,164,100 in year 2020. The fastest growing area in terms of percent increase during the twenty year period is anticipated to be the southwest part of the region.

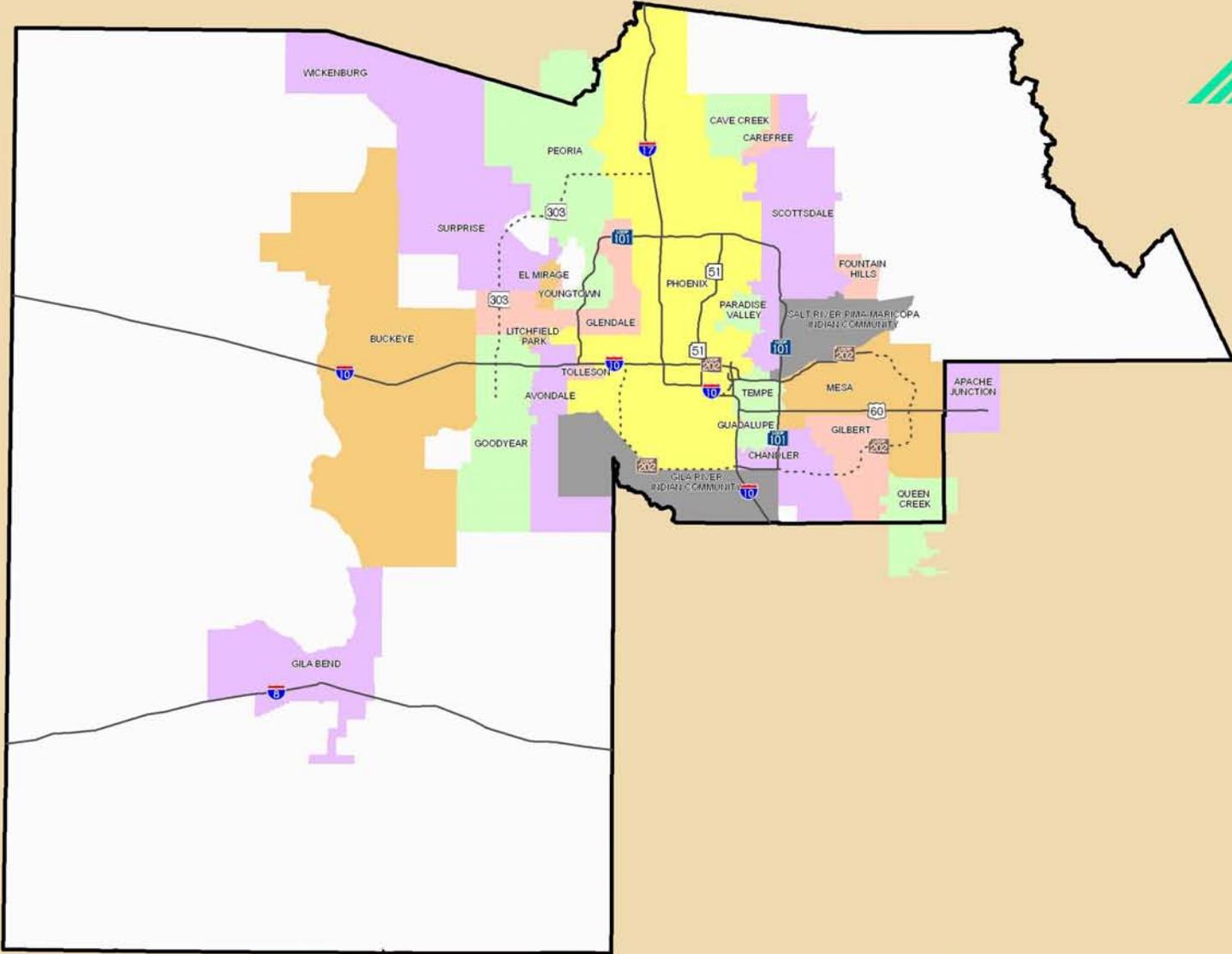
Solid Waste Management Plan

Fig. 2-1



MAG Municipal Planning Areas

- MPA's are shaded
- Maricopa County
- Existing Freeway
- Planned Freeway



MAP AREA



While every effort has been made to ensure the accuracy of this information, the Maricopa Association of Governments makes no warranty, expressed or implied, as to its accuracy and expressly disclaims liability for the accuracy thereof.



**TABLE 2.1**  
**MUNICIPALITY POPULATION**

Municipality	Total Residential Population				
	(Census) April 1, 2000	July 1, 2000	July 1, 2001	July 1, 2002	July 1, 2003
Avondale	35,883	36,395	40,445	47,610	53,925
Buckeye	6,537	6,655	10,650	11,955	13,030
Carefree	2,927	2,965	3,095	3,150	3,220
Cave Creek	3,728	3,765	3,900	4,025	4,150
Chandler	176,581	178,655	186,875	194,390	208,450
County Areas	202,219	204,460	207,600	216,335	220,380
El Mirage	7,609	8,385	11,915	20,645	25,330
Fountain Hills	20,235	20,490	21,190	21,740	22,105
Gila Bend	1,980	1,990	2,000	2,015	2,025
Gila River	2,699	2,700	2,700	2,740	2,740
Gilbert	109,697	111,600	122,360	133,640	151,290
Glen dale	218,812	219,625	224,970	227,495	230,610
Goodyear	18,911	19,605	22,820	26,715	30,290
Guadalupe	5,228	5,230	5,230	5,325	5,330
Litchfield Park	3,810	3,820	3,845	3,850	3,870
Mesa	396,375	401,180	414,075	427,550	434,215
Paradise Valley	13,664	13,725	13,915	14,090	14,215
Peoria	108,363	110,015	117,200	122,655	126,410
Phoenix	1,321,045	1,326,080	1,344,775	1,365,675	1,387,670
Queen Creek	4,197	4,300	4,820	5,435	7,360
Salt River	6,405	6,405	6,490	6,730	6,735
Scottsdale	202,705	204,195	209,960	214,090	217,555
Surprise	30,848	32,460	38,400	45,125	51,585
Tempe	158,625	158,825	159,435	159,425	159,615
Tolleson	4,974	4,995	5,040	5,050	5,415
Wickenburg	5,082	5,095	5,265	5,500	5,685
Youngtown	3,010	3,010	3,155	3,295	3,670
Maricopa County Total	3,072,149	3,096,625	3,192,125	3,296,250	3,396,875

Source: Year 2000 Census and MAG Annual Population Updates.

**TABLE 2.2**  
**MUNICIPAL PLANNING AREA POPULATION**

Municipal Planning Area	Total	Resident	Population	
	Base 2000	Projection		
		2010	2020	2030
Avondale	37,800	82,100	122,500	161,400
Buckeye	16,700	58,600	153,400	380,600
Carefree	3,000	4,000	4,800	4,900
Cave Creek	3,900	5,100	5,800	12,900
Chandler	185,300	260,000	286,600	288,600
County Areas	85,300	92,900	109,900	138,000
El Mirage	8,700	29,700	31,400	33,100
Fountain Hills	20,500	24,700	30,400	30,700
Gila Bend	2,300	2,800	6,000	17,800
Gila River	2,700	3,200	4,200	5,200
Gilbert	119,200	202,800	280,300	290,500
Glendale	230,300	290,400	308,100	312,200
Goodyear	21,200	61,300	161,100	330,400
Guadalupe	5,200	5,200	5,500	5,600
Litchfield Park	3,800	7,000	13,700	14,200
Mesa	441,800	537,900	617,800	647,800
Paradise Valley	14,100	15,200	15,700	15,900
Peoria	114,100	160,800	206,600	253,400
Phoenix	1,350,500	1,700,300	2,022,500	2,187,500
Queen Creek	7,400	18,900	58,300	88,100
Salt River	6,500	7,400	7,500	7,500
Scottsdale	204,300	253,100	287,300	292,700
Surprise	37,700	115,200	213,300	395,500
Tempe	158,900	176,400	189,200	196,700
Tolleson	5,000	6,100	6,200	6,300
Wickenburg	7,400	7,700	10,000	16,000
Youngtown	3,000	5,400	6,200	6,600
Maricopa County Total	3,096,600	4,134,400	5,164,100	6,140,000

Source: MAG Interim Projections of Population, Housing and Employment - July, 2003.

### **2.4.1 MAG Caveats for Interim Projections**

1. The interim projections by Municipal Planning Area (MPA) and Regional Analysis Zone (RAZ) were prepared to be consistent with the April 1, 2000 Census and have been prepared for July 1 of the following years: 2010, 2020, 2025 and 2030.
2. The interim population projections are for resident population only and do not include nonresident seasonal or transient population.
3. Because the Arizona Department of Economic Security has not yet developed or approved new county population control totals, MAG has developed these interim projections using interim Maricopa County population and employment control totals. These control totals are based upon work done by Arizona State University and the University of Arizona to develop a long-range economic strategy for the State, augmented by information from the regional model from Regional Economic Models, Inc. (REMI). These control totals were accepted by the MAG Population Technical Advisory Committee (POPTAC) in March 2003 and the MAG Management Committee and MAG Regional Council in April 2003. The control totals have been modified for these interim projections to reflect the reduction in population in one MPA based on water availability.
4. Official MAG population projections will be developed subsequent to DES approval of official population control totals.
5. The interim projections by MPA and RAZ were recommended for acceptance by the MAG Population Technical Advisory Committee on April 29, 2003. The interim projections were recommended for acceptance by the MAG Management Committee on June 11, 2003, and were accepted by the MAG Regional Council on June 25, 2003.
6. The interim projections include the Maricopa County portion of Peoria, Queen Creek and the Gila River Indian Community only.
7. The interim projections were based upon each MAG member agency's latest version of its future land use plan. Where jurisdictions have not yet adopted their land use plan, or have amendments to their plan, changes may result in and require changes to the projections.
8. The databases and assumptions upon which the interim projections are based have been reviewed by the MAG member agencies, revised by MAG staff based on input received and approved by members of the MAG Population Technical Advisory Committee.
9. The interim projections are based upon previous review and local insight by members of the MAG Population Technical Advisory Committee.

10. The “other” employment category includes work-at-home and construction employment. Because construction employment follows development, employment projections may show declines in future years.
11. The interim projections should be used with caution. They are subject to change as a result of fluctuation in economic and development conditions, local development policies and updated data.

## **2.5 OVERALL LAND USE**

The total land area of Maricopa County is approximately 9,223 square miles. The MAG Regional Solid Waste Management Plan includes all cities, towns and areas within Maricopa County. Development continues to favor a low-density urban form, with much of the urban growth occurring as a result of the retirement of agricultural lands. Physical and political boundary features have contained growth in relatively few areas; namely Indian Community boundaries, mountain ranges, and regional parks. However, a movement toward growth management has arisen. The recent Growing Smarter Legislation and voter initiatives are designed to manage urban sprawl with the goals of preserving open space and improving the quality of life in the Valley.

According to data compiled by MAG in year 2000, approximately 29 percent of all Maricopa County lands were under private ownership; 28 percent of lands were under the direct ownership of the Bureau of Land Management; 14 percent of lands were under the jurisdiction of the U.S. Military; 11 percent of lands were held within State trust; 11 percent of lands were under the direct ownership of the U.S. Forest Service; 5 percent of land was comprised of Indian Communities, (Tohono O’Odham, Gila River, Salt River Pima-Maricopa, and Gila Bend Indian Communities); and the remaining 2 percent of lands in the County were classified as “other” public lands.

For urban planning and statistical purposes, the urban core includes all of the MPAs except Gila Bend, Gila River Indian Community and Wickenburg. The future development of the urban core will include mostly private lands within the urban core of the planning area. The majority of growth is projected to occur to the north, west, and southeast of the urban core. Much of the urban development in the southeast and western areas will occur on retired agricultural lands, as has been the trend for much of the Valley’s history.

The far north and northeast portions of the planning area are expected to develop into low-density residential areas with large areas of open space. Nearly all of the other residential area developments will be at densities greater than one unit per acre. Much of the residential development will occur in large scale housing developments (those developments greater than 1,000 acres). Nearly all of the active and planned large scale housing developments in the urban core are outside the existing urban area where such large tracts of land are still available.

Industrial land use is anticipated to grow in the vicinity of airports and major transportation corridors such as Interstate-10 in the West Valley, Interstate-17 in North Phoenix, Grand Avenue (US 60) and proposed freeway alignments in Scottsdale and the East Valley.

Commercial development is anticipated to spread in a similar fashion to historic patterns; most will occur along arterial streets and intersections of arterial streets. Commercial development is generally closely associated with residential development, providing retail, services and employment to the surrounding neighborhoods.

A significant portion of developed lands will be designated as open space and recreational uses. These open space areas include county and city parks, mountain preserves, and recreational areas. The planned land use includes about 23 percent open space in the MAG urban core alone.

## **2.6 POTENTIAL IMPACTS OF CURRENT AND PLANNED LAND USE**

Large tracts of undeveloped land are available on the periphery of the urban area. One implication is that land is available for landfill development. A portion of the total land area is not suitable for landfill development because of geological, hydrological, State environmental permitting criteria, and other technical and socioeconomic considerations.

However, landfill planning and development progress continues in the region with a total of four existing landfills, one planned landfill, and one proposed landfill with anticipated closure dates well after the MAG Solid Waste Plan 20 year planning horizon. The existing Butterfield Station, Glendale, Northwest Regional and Southwest Regional landfills are anticipated to remain open for approximately 108, 43, 99 and 48 years, respectively. The planned City of Phoenix SR 85 Landfill is expected to open in year 2006 with a planned capacity of over 50 years. A possible landfill has been proposed by a private company. These landfills generally are or would be located in remote areas along the urban periphery.

According to the Draft March 2003 *MAG Regional Growing Smarter Implementation: Solid Waste Report*, these landfills are anticipated to provide adequate capacity to meet the needs of area residents and businesses throughout the 20 year planning period and beyond. The report concluded that, from a geographic perspective, landfill capacity will not be evenly distributed across Maricopa County and some shifting may be needed to accommodate the needs of all the region's cities and towns.

For example, after Year 2015 when the Salt River Landfill is projected to close, there will be no more landfills in the Southeast Valley. Sufficient capacity may exist in western and southern Maricopa County to absorb the waste from Mesa, Scottsdale, Chandler and Gilbert, although there will likely be costs to these communities for transfer station construction and long haul operations. The report concluded that these economic factors may provide incentive for development of an eastern or southeastern regional landfill.

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**ESTABLISHMENT OF GOALS AND OBJECTIVES**

According to Section 4001 of the Resource Conservation and Recovery Act, Regional Solid Waste Plans should be designed to assist in developing and encouraging methods for the disposal of solid waste which are environmentally sound and which maximize the utilization of valuable resources and to encourage resource conservation. The MAG Regional Solid Waste Management Plan is designed to provide for systems level regional solid waste management planning.

The overall goal of the MAG Plan is the prevention of adverse effects on public health and the environment resulting from improper solid waste collection, processing or disposal, and encouragement of methods for cost efficient recovery, treatment and disposal services for the public, business and industry. This general goal includes protection of surface and groundwater quality, air quality and the land. The current Plan update is designed to serve as a planning guidance tool for solid waste management systems in the region.

Arizona State Law requires each county, city or town to provide or contract for public facilities at such intervals and as conveniently as the governing body deems necessary for the safe and sanitary disposal of solid waste generated within its jurisdiction. In addition, cities, towns and counties must provide residents with the opportunity to engage in recycling and waste reduction. Numeric waste stream reduction goals have not been mandated by the State of Arizona. However, it is State policy that waste minimization, including source reduction, recycling and reuse, is the most preferred step in the hierarchy of integrated waste management.

Overall, the MAG region can be characterized as one composed of a diverse group of local jurisdictions. The jurisdictions vary in size, development and culture. Local government agencies are responsible for waste collection, recycling and other solid waste management programs. For these local functions, each community develops programs and associated goals consistent with local conditions and preferences. The private sector has also developed and maintained significant capital investments in the area of collection, recovery, treatment and disposal of solid waste in the region. There has been a trend in the region, on the part of both the public and private sectors, toward development of highly capitalized solid waste facilities serving regional constituencies.

In development of the 1993 MAG Plan, the MAG Solid Waste Committees evaluated regional waste problems and management options. Following development of the appropriate waste management strategies, the member agencies and the Committees derived goals for each of the components of integrated waste management. For the current Plan update, MAG member agencies were surveyed to identify the regional goals for the current twenty year planning period. The goals are discussed below.

### **3.1 GOALS FOR INTEGRATED WASTE MANAGEMENT**

The regional goal for integrated waste management is based on the Federal and State level policy of waste minimization through reduction, recycling and reuse. The U.S. Environmental Protection Agency (EPA) has set a national objective of increasing municipal solid waste recycling from 31 percent in year 2002 to 35 percent by year 2008. The U.S. EPA waste reduction and recycling goal includes an objective to maintain the national average municipal solid waste generation at 4.5 pounds per person per day by year 2008.

According to the EPA, in year 2000, 28 percent of the nation's solid waste was recovered and recycled or composted, 15 percent was burned at combustion facilities, and the remaining 57 percent was landfilled. The EPA strategy for reducing waste generation and increasing recycling is based on partnerships with businesses, industries, states, communities and consumers to stimulate infrastructure development, encourage product stewardship and new technologies, and provide technical assistance and education.

At the State level, the Arizona Department of Environmental Quality (ADEQ) Recycling Program, funded by landfill disposal fees, encourages Arizonans to reduce, reuse, recycle and buy recycled products as an alternative to solid waste disposal in landfills. The program provides local communities and businesses with funding programs, technical assistance, and recycling education and outreach.

In the MAG region, the number of municipal recycling programs has increased and previously existing programs have significantly expanded since the 1993 MAG Plan. Currently, 21 of the 27 MAG member agencies (78 percent), have established a source reduction and/or recycling program, and 2 jurisdictions are planning or considering a future program. Today's number of programs is up from only 12 (46 percent) programs existing in 1993.

Presently, municipal recycling programs in the region range from large scale curbside collection and drop off sites with extensive public education, to smaller scale programs with one or two drop off events each year. The extent of recycling, reuse and reduction public education and outreach has increased over recent years through the efforts of individual local governments and the Valleywide Recycling Partnership, which is composed of several municipalities and ADEQ.

### **3.2 GOALS FOR WASTE REDUCTION**

Waste reduction, or source reduction, generally involves altering the design, manufacture or use of products and materials to reduce the amount and toxicity of what gets thrown away. The regional goal for waste reduction is to continue current practices with local agencies developing achievement targets consistent with local programs and conditions. The encouragement of market development for recycled items is also included in the goal.

The majority of the waste reduction strategies adopted in this plan are implemented by local government agencies.

The waste reduction strategies in this plan include investigation of product bans, encouragement of local government procurement policies that promote the purchase of recycled materials, and encouragement of voluntary source reduction and recycling plans by the commercial and industrial sector. In addition, solid waste collection implementing entities are to continually evaluate fee structures for their potential to discourage waste production. Other waste reduction measures include investigation of the development of product taxes, development of public education programs, and development of backyard landscape waste management and composting promotional campaigns.

For each of the waste reduction strategies adopted, local conditions need to be evaluated in order to develop realistic achievement targets. The local implementing agencies are best qualified to develop this type of information. Numeric goals, in terms of resulting waste stream reduction, could be difficult to adopt for specific waste reduction strategies, including public education and voluntary commercial recycling. Locally established goals reflect realistic expectations for waste reduction strategies and recycling programs.

In the 1993 MAG Plan, market development was recognized as a regional need, and Maricopa County was identified as the lead agency for development of recycled materials markets. However, since 1993, Maricopa County has largely reduced its role in solid waste management to consist mainly of administrating the Arizona Waste Tire Program and operating transfer stations in outlying County areas.

### **3.3 GOALS FOR RECYCLING AND COMPOSTING**

Recycling generally diverts items such as paper, glass, plastic and metals, from the solid waste stream. The regional goal adopted for recycling and composting is to continue current practices, with local agencies developing achievement targets consistent with local programs and conditions. An additional part of the goal is to encourage regional cooperation in market development for recycled items and public education efforts.

Local governments need flexibility in the development and implementation of recycling programs. For recycling programs, local conditions need to be evaluated, often using extensive pilot programs. The local implementing agencies are best qualified to develop realistic achievement targets, if appropriate. This type of achievement goal can be used internally by the implementing agency, as a criterion for program planning and evaluation. Internal goals can be easily adjusted to reflect market conditions and other program considerations.

There is no regional implementing agency for recycling programs. In the 1993 MAG Plan, it was envisioned that regional activities would include cooperation in market development and public education efforts with Maricopa County acting as the lead agency in conjunction

with the Arizona Department of Commerce (ADOC) and ADEQ. However, since 1993, the Maricopa County has reduced their role in solid waste management activities. Presently, the ADOC and ADEQ efforts in recycling assistance generally center on the State Recycling Grant Funding Program.

During the 1990's, several municipalities within the MAG region supported market development for recycled materials through membership in the Southwest Public Recycling Association (SPRA). The mission of this nonprofit corporation was to strengthen the recycling markets infrastructure in the southwestern U.S. and provide technical assistance for a variety of recycling issues. Through time, SPRA efforts have shifted to focus primarily on recycling and market activities in smaller outlying rural communities.

Composting can be characterized as a component of recycling. Composting decomposes organic waste, such as food scraps and yard trimmings, with microorganisms (mainly bacteria and fungi), producing a humus-like substance. For the current twenty year planning period, MAG member agencies have suggested a regional goal that focuses on encouraging backyard composting at the individual resident level rather than large scale composting programs.

Generally, municipalities in the region have tested large scale composting programs and found them to be not economical due to high production costs and poor market value. The City of Phoenix has a large scale mulching operation and has found mulching to be a positive program at the large scale level. For backyard composting, the City of Phoenix sells composters to residents. Also, there is a large scale composting program currently operating at the Salt River Landfill. In addition to the City of Phoenix program, several jurisdictions encourage and provide assistance for backyard composting at the individual residential level.

The U.S. EPA indicates that challenges associated with developing and operating successful large scale composting programs include: developing markets and new end uses; inadequate or nonexistent standards for finished composts; inadequate design data for composting facilities; lack of experienced designers, vendors, and technical staff available to many municipalities; and potential problems with odors and controlling contaminants.

### **3.4 GOAL FOR WASTE COMBUSTION WITH ENERGY RECOVERY**

Waste to energy, or combustion, is the burning of solid waste to create heat which may be converted to electricity. The regional goal for waste to energy conversion is to conduct an evaluation of the waste to energy option as needed, and during periodic evaluations of the MAG Plan. Presently, MAG member agencies indicate that consideration of waste combustion in the region is a complex issue due to the U.S. EPA designation of Maricopa County as a air quality nonattainment area for certain constituents. For the current twenty year planning period, the goal allows for continuous evaluation of changing conditions,

such as technologic advances in combustion systems that would not negatively impact air quality.

### **3.5 GOAL FOR LANDFILL GAS TO ENERGY RECOVERY**

For the current Plan update, member agencies suggested that a new regional goal be added for evaluation of landfill gas to energy options as needed and during periodic evaluations of the MAG Plan. Landfill gas is created when organic waste in a landfill naturally decomposes. Instead of allowing landfill gas to escape into the air, it can be captured, converted, and used as an energy source. Landfill gas can be converted and used to generate electricity, heat, or steam or as an alternative vehicle fuel to fuel fleets like school buses, taxis, and mail trucks. Landfill gas can also be converted and used in niche applications such as microturbines, fuel cells and greenhouses. Current U.S. EPA regulations under the Clean Air Act require many larger landfills to collect and combust landfill gas using options such as flaring the gas or installing a landfill gas use system.

### **3.6 GOALS FOR LANDFILLING AND WASTE TRANSFER STATIONS**

Landfills are engineered areas where waste is placed into the land. The landfills have liner systems and other safeguards to prevent groundwater contamination. The goal for landfilling in the MAG region is to proceed with continuing operations at several existing regional or subregional landfills and development of one planned landfill and one proposed landfill. It is anticipated that three existing regional landfills, Southwest Regional, Northwest Regional, and Butterfield Station, will remain open until years 2051, 2102, and 2110, respectively. The City of Glendale Landfill is anticipated to remain open until year 2046. The planned City of Phoenix State Route (SR) 85 Landfill is anticipated to open in approximately 2006. There is also the potential for a proposed privately owned landfill south of the urban core.

Transfer stations associated with regional landfills could be developed on the basis of local or sub-regional needs. For the current twenty year planning period, planned transfer stations include Cactus Waste, East Valley, Gila River Indian Community District 6, West Valley, and a potential, yet unnamed facility in the east valley. In addition, the City of Phoenix North Gateway Transfer/Recycling Station is planned.

According to the Draft March 2003 *MAG Regional Growing Smarter Implementation Solid Waste Report*, projected landfill and transfer station capacity in the region is sufficient to meet the projected solid waste disposal requirements during the twenty year planning period. However, that capacity will not be evenly distributed from a geographic perspective. An uneven capacity distribution may require some shifts to alternative landfills which may result in a need for additional transfer stations. The draft solid waste study was one of a series investigating the relationship between transportation and community systems preservation under the Transportation and Community Systems Preservation Pilot Program. In February 2003, the MAG Solid Waste Advisory Committee reviewed the study

and comments received were incorporated.

Landfilling is anticipated to continue as the primary solid waste management strategy for the MAG region. This is largely because tracts of relatively inexpensive, suitable acreage are currently available within a reasonable distance from the centers of waste generation. In addition, continuing to select sites and use 50 year or greater landfills during the planning period could help avoid potential future siting problems. Landfilling is consistent with the overall goal of the MAG Regional Solid Waste Management Plan: the prevention of adverse effects on public health and the environment resulting from improper solid waste collection, processing or disposal.

Currently, waste transfer stations and combined material recovery transfer facilities are implemented by private companies or local governments. In consideration of transfer facilities and combined recovery transfer facilities, the costs for operation of collection and transportation systems are evaluated. In addition, other waste management programs including composting, material recovery, or diversion programs could be integrated with transfer facilities.

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**DESCRIPTION OF THE WASTE STREAM FOR THE MAG REGION**

In the MAG 1991 Regional Waste Stream Study, six classes of nonhazardous wastes were identified and defined as part of the regional solid waste stream. The classes of wastes are: residential waste, commercial and industrial waste, liquid and semisolid waste, construction waste, medical waste, and landscape waste. Not all of the waste classes are mutually exclusive. In development of the current Plan update, the member agencies indicated that these classification rates are still adequate, effective and appropriate. It was suggested that a white goods waste subclass be added to the residential waste class to help focus attention on increasing appliance recycling opportunities.

This chapter contains information extracted from the MAG Regional Waste Stream Study. Information is provided on each of the six classes of wastes identified in the waste stream study. General data on the composition of waste classes is included in the discussion of each waste classification. Descriptive information is provided on sources and factors affecting generation. Following each waste class description, current and project generation rates are provided. A more detailed characterization assessment is provided for waste stream categories which are of special interest in the MAG region.

Specific waste characterization assessments follow the description of the waste classification and estimated generation rates. Each characterization assessment provides a more detailed evaluation of a specific waste stream component. Characterizations include information on the amounts of recyclable materials, landscape wastes, restaurant grease trap wastes, and household hazardous wastes. These components are of special interest because of potential impacts on the management of solid wastes in the MAG region.

**4.1 WASTE STREAM CLASSIFICATION AND GENERATION RATES**

***4.1.1 Justification for Waste Stream Classification***

A classification system was developed in conjunction with the MAG 1991 Regional Waste Stream Study which would be compatible with locally collected waste stream data and would have application to local planning needs. With the exception of a request for adding a new “white goods” subclass of residential waste, this classification system was deemed still appropriate and effective by member agencies.

The separation of wastes into classes, for example, would facilitate analyses regarding recycling and reuse of the wastes. Specific classes can be further broken down to determine quantities of categorical wastes in order to identify problems inherent in waste subclasses. A broad-based classification system could allow for the evaluation of markets for specific types of waste in recycling plans. Information on the generation of specific

waste classes could facilitate the management of specific problem wastes.

For example, information on the generation characteristics of liquid wastes and the pattern of disposal can be used to identify potential problem areas and to assess alternative disposal needs and capacity requirements. If liquid wastes had been incorporated into a generic category of “industrial waste,” the specific detail needed to identify particular management needs would not be observed. Therefore, although liquid waste can be assigned to a broad category of commercial and industrial waste, it is classified within the liquid and semisolid wastes category.

The breakdown of the waste stream into broadly defined classes also permits waste stream comparisons across municipalities in the region. Data is provided that could facilitate the management of categorical or problem wastes at local levels. Additionally, the separation of the solid waste stream into classes allows for the application of projection methodologies and assumptions that are specific to individual waste types in order to develop estimates of future amounts of solid waste.

The waste stream classes include the following: residential household waste; commercial and industrial waste; liquid and semisolid waste; construction and demolition wastes; medical waste; and landscape waste. A subclass of the residential waste class for household hazardous waste was established in the 1993 MAG Plan. A new additional residential waste subclass for white goods/appliance waste has been added during development of the current Plan update. Each of these subclasses are characterized in the Section 4.2 of this chapter.

#### **4.1.2 Residential Waste: Classification**

Residential household waste is the waste disposed of by both single family residences and multifamily residences. For the most part, residential household waste from single family structures is collected by municipal public works departments and disposed of in public or private landfills. Waste from multifamily complexes is typically collected by private haulers as part of their commercial waste collection service. There are some exceptions; jurisdictions such as Avondale, Gila Bend, Gilbert, Glendale, Mesa, Phoenix, Scottsdale, Tempe, and Tolleson collect waste from some multifamily residences.

Table 4.1 shows the amount of residential and commercial solid waste generated by municipality in 2002. The amount of residential household waste generated in a municipality is primarily driven by the size of the population. Studies have shown that other factors which influence the generation of residential waste include population density, income, and level of urbanization. These factors can affect the rate at which residential waste is produced.

Residential household waste also includes landscape waste generated at individual homes or apartment/townhouse complexes. As part of the classification system, landscape waste generated from homes, apartments and public spaces is also grouped separately as “landscape waste”.

**Table 4.1  
RESIDENTIAL AND COMMERCIAL BREAKDOWN OF SOLID WASTE GENERATION  
(Number of Tons 2002)**

CITY	RESIDENTIAL	MULTI-FAMILY	TOTAL RESIDENTIAL	ASSUMPTIONS	COMMERCIAL/ INDUSTRIAL	ASSUMPTIONS
APACHE JUNCTION†						
AVONDALE	24,767		24,767	Based on actual landfill tipping fee reports received monthly. All solid waste is delivered to the same landfill, which provides the city with a monthly report of tonnages and fees, by vehicle. City does not include multi-family solid waste in residential calculation. (Data available prior to July 2002 only includes total amount landfilled. Assume 80 percent of total is single family residential and 20 percent is commercial to estimate the residential/commercial tons for portion of 2002 prior to July.)	6,158	Based on 20 percent of total from Jan-Jun. From Jul-Dec, based on actual landfill tipping fee reports received monthly. All solid waste is delivered to the same landfill, which provides the city with a monthly report of tonnages and fees, by vehicle. All multi-family materials are included in commercial calculation. (Assume 20 percent is commercial waste).
BUCKEYE†	5,143		5,143	Based on 2.36 pounds/capita/day and population of 11,955.	2,615	Based on 2.02 pounds/employee/day and employment of 7,100.
CAREFREE†	1,355		1,355	Based on 2.36 pounds/capita/day and population of 3,150.	552	Based on 2.02 pounds/employee/day and employment of 1,500.
CAVE CREEK†	1,731		1,731	Based on 2.36 pounds/capita/day and population of 4,025.	295	Based on 2.02 pounds/employee/day and employment of 800.
CHANDLER	85,165.55 FY 2001-02 (July 1, 2001- June 30, 2002)		85,165.55 FY 2001-02 (July 1, 2001-June 30, 2002)	All multi-family collected by private sector and not recorded by City. Private hauler-Waste Management. Information as of 3/17/2003.	25,331.29 FY 2001-02 (July 1, 2001-June 30, 2002)	Only a portion of commercial is brought to Chandler Landfill. Majority collected by private sector.  The multi-family portion of the waste stream is collected by the private sector.
EL MIRAGE†	8,881		8,881	Based on 2.36 pounds/capita/day and population of 20,645.	700	Based on 2.02 pounds/employee/day and employment of 1,900.
FOUNTAIN HILLS†	9,352		9,352	Based on 2.36 pounds/capita/day and population of 21,740.	1,584	Based on 2.02 pounds/employee/day and employment of 4,300.
GILA BEND†	867		867	Based on 2.36 pounds/capita/day and population of 2,015.	442	Based on 2.02/pounds/employee/day and employment of 1,200.

**Table 4.1  
RESIDENTIAL AND COMMERCIAL BREAKDOWN OF SOLID WASTE GENERATION  
(Number of Tons 2002)**

CITY	RESIDENTIAL	MULTI-FAMILY	TOTAL RESIDENTIAL	ASSUMPTIONS	COMMERCIAL/ INDUSTRIAL	ASSUMPTIONS
GILA RIVER INDIAN COMMUNITY†	1,179		1,179	Based on 2.36 pounds/capita/day and population of 2,740.	1,363	Based on 2.02 pounds/employee/day and employment of 3,700.
GILBERT	FY2002-2003 Total 72,005.6 Refuse 52,976 Bulk tsh 5,130 Recycle 13,285 Green wst 615  CY2002 Total 67,541.2 Refuse 49,631 Bulk tsh 4,773 Recycle 12,581 Green wst 557		FY2002-2003 Total 72,005.6 Refuse 52,976 Bulk tsh 5,130 Recycle 13,285 Green wst 615  CY2002 Total 67,541.2 Refuse 49,631 Bulk tsh 4,773 Recycle 12,581 Green wst 557	Amount from multi-family not tracked separately.  Green Waste Collection Program (a separate uncontained service) was implemented Town-wide in March 2000.	FY2002-2003 Total 21,808.9 Refuse 21,397 Recycle 412  CY 2002 Total 21, 939.5 Refuse 21,510 Recycle 429	Amounts shown reflect tonnages collected and disposed of by the Town of Gilbert, but not by private solid waste haulers. Roll-off service (20- and 40- cubic yard containers) was initiated in January 2001.
GLENDALE	FY2001-2002 86,185	FY2001-2002 26,981	FY2001-2002 113,166	Source of information from landfill data and reports from reciprocal agreement with Phoenix. Includes single family homes collected by City of Glendale and residents disposing at the landfill.  FY data includes 11,590 tons uncontained waste collection and 8,834 tons delivered to landfill by Glendale residents.  Residential tonnage landfilled decreased due to City implemented phased curbside recycling program July-November 2000.	FY2001-2002 40,472	Commercial/Industrial wastes from Glendale taken from landfill data. Includes apartment complexes and trailer parks served by container service.  Multi-family waste factored out from Commercial/Industrial total and added to Residential total.
GOODYEAR	FY2002-2003 12,416		FY2002-2003 12,416	Residential includes 803 tons uncontained. Private hauler- Allied Waste collects the contained refuse and City forces collect the uncontained refuse.	5,119	Based on 2.02 pounds/employee/day and employment of 13,900.
GUADALUPE†	2,080		2,080	Based on 2.36 pounds/capita/day and population of 5,325.	520	Based on 2.02 pounds/employee/day and employment of 600.
LITCHFIELD PARK†	1,656		1,656	Based on 2.36 pounds/capita/day and population of 3,850.	442	Based on 2.02 pounds/employee/day and employment of 1,200.
MESA	FY 2002 135,902	FY 2002 44,679	FY 2002 180,581	Residential waste is 80 percent of total.	64,418	Commercial waste is 20 percent of total.
PARADISE VALLEY†	6,061		6,061	Based on 2.36 pounds/capita/day and population of 14,090.	1,989	Based on 2.02 pounds/employee/day and employment of 5,400.

**Table 4.1  
RESIDENTIAL AND COMMERCIAL BREAKDOWN OF SOLID WASTE GENERATION  
(Number of Tons 2002)**

CITY	RESIDENTIAL	MULTI-FAMILY	TOTAL RESIDENTIAL	ASSUMPTIONS	COMMERCIAL/ INDUSTRIAL	ASSUMPTIONS
PEORIA†	52,763		52,763	Based on 2.36 pounds/capita/day and population of 122,655.	10,496	Based on 2.02 pounds/employee/day and employment of 28,400.
PHOENIX	434,215	92,745	526,961	Breakdown of multi-family tonnage based on percent of dwelling units that have City service and that are du-plex, tri-plex, and apartments.	280,472	Does not include non-profits.
QUEEN CREEK†	2,338		2,338	Based on 2.36 pounds/capita/day and population of 5,435.	626	Based on 2.02 pounds/employee/day and employment of 1,700.
SALT RIVER PIMA MARICOPA INDIAN COMMUNITY†	2,895		2,895	Based on 2.36 pounds/capita/day and population of 6,730.	2,689	Based on 2.02 pounds/employee/day and employment of 7,300.
SCOTTSDALE	111,634	19,255	130,889	Includes multi-family residential and uncontained waste. Estimated to be 50 percent of commercial tonnage.	28,406	Data from City of Scottsdale. Includes roll-off and 50 percent of commercial tonnage. Based on FY 2000/2001 budget projections for City. Does not include waste material collected by private companies.
SURPRISE	12,574		12,574	Assumes 80 percent of total waste is residential.	3,144	Collected by Waste Management and Parks & Sons. Assumes 20 percent of total waste is commercial.
TEMPE†	68,580		68,580	Based on 2.36 pounds/capita/day and population of 159,425.	60,031	Based on 2.02 pounds/employee/day and employment of 162,400.
TOLLESON†	2,172		2,172	Based on 2.36 pounds/capita/day and population of 5,050.	4,714	Based on 2.02 pounds/employee/day and employment of 12,800.
WICKENBURG†	2,366		2,366	Based on 2.36 pounds/capita/day and population of 5,500.	1,510	Based on 2.02 pounds/employee/day and employment of 4,100.
YOUNGTOWN†	1,417		1,417	Based on 2.36 pounds/capita/day and population of 3,295.	442	Based on 2.02 pounds/employee/day and employment of 1,200.
UNINCORPORATED MARICOPA COUNTY†	93,062		93,062	Based on 2.36 pounds/capita/day and population of 216,335.	11,748	Based on 2.02 pounds/employee/day and employment of 31,800.
<b>TOTALS*</b>	<b>1,234,298</b>	<b>183,660</b>	<b>1,417,958</b>		<b>578,218</b>	

Source: MAG Solid Waste Information Collection Efforts, 1998, 2001, 2003; MAG Member Agency Interviews.

† Where data was not readily available, Maricopa County average was used.

\*Totals rounded to nearest whole number.

### **4.1.3 Residential Waste: Generation Rates**

In the current Plan update, the determination of the residential waste generated includes the combined waste from single family and multifamily residences. Uncontained waste is also considered as part of the residential waste stream. Residential waste also includes wastes from landscaping activities from individual residences, open space, and parks. The residential waste generation rates are composite rates based on these generation sources.

Table 4.1 shows the amounts of residential waste generated by municipality in 2002. Data on total residential waste generated were readily available for many communities. For others, residential waste from multifamily housing units was factored out from the commercial waste stream and added to the residential waste from single family residences.

For several cities, information regarding the residential waste proportion of the total waste stream was not available. In these cases, indirect methods and assumptions were utilized to determine estimates of residential waste generation. These assumptions are provided in Table 4.1.

Generation rates for residential waste are shown in Table 4.2. These rates were based on estimates of the total amounts of residential waste disposed and the 2002 populations levels for municipalities and unincorporated areas in Maricopa County. Due to some extreme outliers in residential generation rates, a minimum generation rate of 1.9 pounds per person per day and a maximum rate of 4.3 pounds per person per day were assumed.

### **4.1.4 Commercial-Industrial Wastes: Classification**

Commercial and Industrial Wastes is a broad category of solid waste generated from commercial, office, educational, institutional, and industrial sources. Waste from commercial activities includes wastes generated by restaurants, hotels, shopping centers, and other retail establishments that is usually collected by private solid waste haulers. This waste category does not include liquid wastes. Office, educational, and institutional wastes consist largely of paper products that are used in business, management, and educational activities.

Substantial amounts of other wastes are also disposed of as part of the commercial waste stream. For example, wastes from medical offices include office paper wastes and medical wastes that are currently defined as part of a larger commercial waste class. Medical wastes are part of the commercial and industrial class of wastes but these waste area also treated as a separate category in the plan because of special handling or disposal problems. Commercial and industrial wastes are most often collected by private hauling companies, but there are some municipalities that collect a portion of the commercial waste generated in their jurisdiction.

**Table 4.2  
RESIDENTIAL WASTE GENERATION RATES  
(Year 2002)**

<b>Jurisdiction</b>	<b>Residential Generation Rate (pounds per capita per day)</b>
Avondale	2.85
Buckeye	2.36
Carefree	2.36
Cave Creek	2.36
Chandler	2.40
El Mirage	2.36
Fountain Hills	2.36
Gila Bend	2.36
Gila River Indian Community	2.36
Gilbert	2.77
Glendale	2.73
Goodyear	2.55
Guadalupe	2.14
Litchfield Park	2.36
Maricopa County Unincorporated	2.36
Mesa	2.31
Paradise Valley	2.36
Peoria	2.36
Phoenix	2.11
Queen Creek	2.36
Salt River Pima Maricopa Indian Cmty	2.36
Scottsdale	3.35
Surprise	1.90
Tempe	2.36
Tolleson	2.36
Wickenburg	2.36
Youngtown	2.36

Source: MAG Solid Waste Information Collection Effort, January 2003. Based on total residential waste as reported by jurisdictions. Where no residential waste was reported, the Maricopa County average of 2.36 pounds per capita per day was used.

#### 4.1.5 Commercial-Industrial Waste: Generation Rates

Industrial waste is generated primarily by manufacturing, wholesale, and processing firms. While industrial manufacturing firms generate most of the hazardous waste in the County, industrial activity generates substantial nonhazardous solid waste materials. Estimates of commercial and industrial waste generation by community are shown in Table 4.3. These estimates do not include wastes from multifamily residences which have been factored out of this class and allocated to the residential waste stream. Table 4.1 shows the data assumptions utilized for determining the amounts of commercial and industrial wastes.

<b>Table 4.3 COMMERCIAL-INDUSTRIAL WASTE GENERATION RATES (Year 2002)</b>	
<b>Jurisdiction</b>	<b>Commercial/Industrial Generation Rate (pounds per employee per day)</b>
Avondale	3.75
Buckeye	2.02
Carefree	2.02
Cave Creek	2.02
Chandler	1.95
El Mirage	2.02
Fountain Hills	2.02
Gila Bend	2.02
Gila River Indian Community	2.02
Gilbert	3.43
Glendale	2.62
Goodyear	2.02
Guadalupe	4.75
Litchfield Park	2.02
Maricopa County Unincorporated	2.02
Mesa	2.05
Paradise Valley	2.02
Peoria	2.02
Phoenix	2.07
Queen Creek	2.02
Salt River Pima Maricopa Indian Cmty	2.02
Scottsdale	1.40
Surprise	1.91
Tempe	2.02
Tolleson	2.02
Wickenburg	2.02
Youngtown	2.02
Source: MAG Solid Waste Information Collection Effort, January 2003. MAG Member Agency Interviews 2003. Generation rates based on total commercial waste as reported by the jurisdictions. Where no commercial waste was reported, the Maricopa County average of 2.02 pounds per employee per day was used.	

The 1991 MAG Regional Waste Stream Study found that little information on commercial and industrial wastes was available in the literature. Data that were available were inconsistent both when comparing communities or the same industrial grouping within a Standard Industrial Classification.

The difficulties in deriving consistent commercial and industrial generation rates are due to several factors. There is a general lack of consistency in the definition of this class of waste. For example, waste collected from multifamily residences is often found to be incorporated within this class. In addition, private haulers use accounting systems that do not make clear distinctions between waste classes. There have been serious inconsistencies in the definition of the rate itself. For example, several studies have derived rates based on commercial and industrial generation per capita, while other studies have considered rates on a weight per employee basis.

Table 4.3 shows the generation rates derived for the commercial and industrial waste category in Maricopa County. These rates were based on the amounts of waste generated in each municipality and levels of 2002 employment in each Municipal Planning Area (MPA). Commercial and industrial rates varied significantly among communities in Maricopa County. Variation in generation rates for this broad category is expected given the differences among cities in their commercial and industrial base. Because there were several extreme outliers in commercial generation rates, a minimum rate of 1.4 pounds per employee per day and a maximum rate of 6.0 pounds per employee per day were assumed.

#### **4.1.6 *Liquid and Semisolid Wastes***

A separate class for liquid and semisolid waste was developed as part of the waste stream classification. These wastes constitute what is commonly referred to as sludge (semisolid waste) and nonhazardous liquid waste (NHLW). Sludge, or semisolid waste, is any solid or liquid waste generated from a wastewater treatment plant, water supply plant, air pollution control facility or various manufacturing processes. Liquid waste consists of a large number of different types of nonhazardous wastes from commercial and residential sources.

##### **4.1.6.1 *Semisolid Wastes: Classification***

Semisolid waste has been defined under the Federal Resource Conservation and Recovery Act (RCRA) regulations as a category of solid waste. The solids content and physical state can vary and may be solid, semisolid, or liquid, depending on the treatment processes employed, variables in the waste generating facility, and the drying requirements for disposal.

Water treatment plant residuals consist of sludges formed during the treatment of surface water to remove suspended clay, silt, and organic material. Currently, some water treatment plant residuals are disposed of in landfills. Under the Arizona Pollutant

Discharge Elimination System (AZPDES) Permitting Program, other facilities return solids to the raw water source, usually a multiple purpose irrigation and water supply canal.

Biosolids (sludges) have been defined as primarily originating from wastewater treatment plants and are regulated by ADEQ under the AZPDES Biosolids Requirements. Moist or wet biosolids are placed in drying beds near treatment facilities, or mechanical dewatering equipment is used. Dried or dewatered biosolids are then recycled as a soil amendment, used to produce compost, or landfilled. Most of the dried sludge produced in the MAG region is used in land application as a soil amendment.

#### **4.1.6.2 Semisolid Wastes: Generation Rates**

Previously, the projected biosolids generation from the Multi-Cities Subregional Operating Group (SROG) 91<sup>st</sup> Avenue Wastewater Treatment Plant were derived using the 1991 Wastewater Sludge Management Study by SCS Engineers. For the current Plan update, estimates from the October 2002 *MAG 208 Water Quality Management Plan* were used. According to that Plan, the SROG 91<sup>st</sup> Avenue Wastewater Treatment Plant had Total Suspended Solids of approximately 496,500 pounds per day for year 2002. Total Suspended Solids are the solids included in wastewater going to a wastewater treatment plant. The SROG cities include Phoenix, Glendale, Mesa, Scottsdale and Tempe.

For year 2020, the SROG 91<sup>st</sup> Avenue Plan is projected to have Total Suspended Solids of 723,000 pounds per day. These figures are derived through parameters that express hydraulic flow (flow capacity), loading conditions (Biochemical Oxygen Demand), and Total Suspended Solids. The Total Suspended Solids values vary from “dry weight basis” values, which would give the weight of biosolids calculated after the material has been dried at 105 degree Celsius until reaching a constant mass.

In addition to biosolids, the other major component of the semisolid wastes category is water treatment plant residual solids. Water treatment plants are operated by several cities in the region. Data on water treatment plant residual solids in the region was not readily available for the current Plan update. Previously, the *1991 Water Residual Management Program Final Report* by Brown & Caldwell indicated that the City of Phoenix facilities have historically produced an average of between 773 and 1,284 dry tons of solids per month. Residual solids production data were not available for water treatment facilities operated by other municipalities.

#### **4.1.6.3 Liquid Waste: Classification**

Liquid waste consists of a large number of different types of nonhazardous wastes from commercial, industrial and residential sources. For the purposes of this Plan, the classification of liquid waste includes general liquid wastes in the region such as septic

tank waste, chemical toilets, food processing operations, water softening processes and cooling towers. The majority of these nonhazardous liquid wastes, such as restaurant grease traps, have been disposed of in evaporation ponds and landfills in the past.

Effective October 1993, Arizona legislation prohibited disposal of liquid wastes in solid waste landfills. Municipal and County landfills that previously accepted NHLW have closed or stopped accepting NHLW for landfilling. Currently, three NHLW disposal sites are registered with Maricopa County in the region, and each are privately owned and operated: Butterfield Station Landfill, AAA Ajax, and Resource Recovery Techniques of Arizona. Certain types of NHLW are accepted at the Northwest Regional Landfill, and American Pumping sites. One type of NHLW, septic system waste, is accepted by the City of Goodyear 157<sup>th</sup> Avenue Wastewater Treatment Plant and the Superstition Mountain Community Sewer District Municipal Wastewater Treatment Plant.

#### **4.1.6.4 *Liquid Waste: Generation Rates***

Previously, in the 1993 MAG Plan, liquid waste generation rates in the region were projected using estimates from manifest records kept by municipal and County disposal facilities. Since that time, the manifest record system has been discontinued with the local governments' movement away from owning and operating NHLW disposal sites. Currently, there is no comprehensive tracking of NHLW amounts disposed in the region. For the current plan update, data for NHLW generation in the region has been provided by some privately owned disposal sites and municipal wastewater treatment systems. Table 4.4 provides a summary of nonhazardous liquid waste generated in Maricopa County in year 2002. For those disposal sites whose data was not readily available, NHLW volumes were estimated based on the actual amount collected by reporting facilities. Projected estimates of nonhazardous liquid waste generation in the future are provided in Table 4.5.

Under Chapter 2, Section 7 of the Maricopa County Health Code, the County has a permitting program to regulate NHLW haulers. However, the County does not track how much is hauled by each truck or how much is hauled in the region as whole. At the State level, the collection, transportation, and disposal of human excreta is regulated under A.A.C. R18-13-1102 through 1117.

TABLE 4.4 NONHAZARDOUS LIQUID WASTE SUMMARY (Year 2002)	
DISPOSAL FACILITY	GALLONS PER YEAR
Resource Recovery Techniques of Arizona, Inc.	25,343,539
Butterfield Station Landfill, Waste Management, Inc	2,600,000*
Northwest Regional Landfill, Waste Management, Inc	2,600,000*
AAA Ajax <sup>1</sup>	5,200,000*
American Pumping <sup>1</sup>	2,600,000*
Superstition Mountain Community Sewer District <sup>2</sup>	2,799,000 <sup>3</sup>
City of Goodyear 157 <sup>th</sup> Avenue Wastewater Treatment Plant <sup>2</sup>	3,600,000
Total Maricopa County	44,742,539
Source: Resource Recovery Techniques of Arizona, Inc.; City of Goodyear; Superstition Mountain Community Sewer District, November 2003.	
*Estimated volume based on actual amount reported by other facility in MAG region.	
<sup>1</sup> Only includes septage and grease NHLW types.	
<sup>2</sup> Only accepts certain types of NHLW (i.e: septage).	
<sup>3</sup> Only includes portion of NHLW collected in Maricopa County; facility located in Pinal County.	

TABLE 4.5 PROJECTED NONHAZARDOUS LIQUID WASTE GENERATION		
YEAR	Generation Rate (gallons per person per day) (Year 2002)	Total (Million gallons per day)
2002	13.57	44.7
2003	13.57	46.1
2010	13.57	56.1
2020	13.57	70.1
Source Resource Recovery Techniques of Arizona, Inc.; City of Goodyear, Superstition Mountain Community Sewer District, November 2003.		

#### **4.1.7 Construction Wastes: Classification**

Construction debris is a general term used to describe a large class of solid wastes usually generated as a byproduct of the construction, renovation and demolition of residences, commercial or industrial facilities and infrastructure. In Maricopa County, construction debris includes a wide array of materials such as: broken concrete, asphalt, steel, aluminum, glass, brick, tile, paper, plastics, wood products, sheet rock, street sweepings, and canal dredgings.

The disposal of these materials can, under Federal and State regulations, take place either in sanitary landfills, in rubbish landfills specifically for construction materials, or, if the materials are inert, in nonpermitted landfills. In Arizona, construction and demolition debris landfills are, at a minimum, subject to Aquifer Protection Permit (APP) requirements and the disposal requirements of Arizona Administrative Code (A.A.C.) R18-8-511 and 512 until design and operations rules are adopted by the State for each type of land disposal facility.

A checklist, revised June 1, 1996, has been established by ADEQ for non-municipal solid waste landfill facility plans which incorporate Aquifer Protection Permit requirements. Under Arizona Revised Statute §49-762, solid waste land disposal facilities, including construction and demolition debris landfill, are required to obtain solid waste facility plan approval. Rubbish landfills are much less expensive to site, operate and maintain than sanitary landfills. Since much of the waste placed in these landfills is inert, these facilities are considered by regulators to be less likely to cause environmental degradation.

In Maricopa County, rubbish and inert landfills have concentrated in areas mined for stone, gravel and sand. The excavations resulting from such mining have historically provided the locations for most of the landfills in the County. With the advent of more stringent regulations concerning sanitary landfill siting, excavations located away from stream courses and nearby groundwater are becoming the locations of choice for sanitary landfill construction. Rubbish and inert landfills, however, are still commonly sited in former mining excavations in floodplains and along water courses.

Construction debris is disposed of at landfills and, in special cases, through recycling. In some parts of the country, a large part of the asphalt and concrete debris is recycled. This is due primarily to the increasing shortage of satisfactory virgin aggregate and increasing haul distances and costs. In Arizona, governmental agencies frequently mandate the recycling of asphalt removed during street paving or overlay projects. In this case, the primary motive is said to be savings in petroleum products and energy. To date, inexpensive, high quality aggregate is available in such large quantities as to make concrete recycling unattractive.

A significant amount of construction debris generated in Phoenix is disposed of in private rubbish landfills. Communities in Maricopa County generally do not factor construction waste into their commercial waste estimates. Therefore, although the estimates for the commercial and industrial class of wastes may contain small amounts of construction debris, construction waste has, for most communities, not been incorporated into commercial waste generation estimates and can be considered as a separate category.

#### 4.1.8 Construction Wastes: Generation Rate

Construction waste in the region is mostly disposed of at rubbish and, occasionally, at inert landfills due to the higher tipping fees charges at sanitary landfills. Inert landfills do not at present require a permit from ADEQ for operation. However, inert landfills are required to submit a notice to ADEQ and to meet the Minimum Operating Standards under A.R.S.§49-762.07. Table 4.6 provides a list of the construction debris disposal facilities in Maricopa County and their respective construction and demolition debris amounts accepted for the one-year period of March 2002 to March 2003. The data was provided by the ADEQ Solid Waste Department, based on reported waste disposal tipping fees.

Demolition waste may be substantial but the amount generated varies from one year to another. No accurate records regarding the volume of demolition debris are readily available at this time. Because of substantial uncertainties regarding the amounts of demolition waste, it was not considered in the discussion of construction waste.

At the national level, the U.S. Environmental Protection Agency (EPA) indicates that C&D waste generation must be estimated because information collected by states is largely anecdotal due to the lack of a formal mechanism that documents C&D disposal, recovery or recycling activities. The EPA estimates that nationwide in year 1996, 35 to 45 percent of building related wastes were managed in C&D landfills, 20 to 30 percent were recovered for recycling, and 30 to 40 percent were disposed of in municipal solid waste landfills, unpermitted landfills or combustion facilities.

<b>TABLE 4.6</b> <b>CONSTRUCTION DEBRIS DISPOSAL SITES AND ANNUAL AMOUNTS DISPOSED</b> <b>(March 2002 - March 2003)</b>			
Facility Name/Owner	Location	Service Area	Amount Disposed (Tons per year)
Bradley 40 <sup>th</sup> Street/Bradley Corp.	4346 East Magnolia		Inactive
CalMat/Vulcan	11923 W Indian School	Avondale, Litchfield Park	96,872
Deer Valley/Waste Management, Inc.	24802 N 14 <sup>th</sup> Street At 14 <sup>th</sup> St. & Alameda		164,533
Glenn Weinberger Rainbow Valley/Weinberger	39500 S. 99 <sup>th</sup> Avenue		130,459
Lone Cactus/Waste Management, Inc.	21402 N. 7 <sup>th</sup> Street Phoenix 85024 NW corner of 7 <sup>th</sup> St & Beardsley		531,344
Total Maricopa County			923,208

Source: Arizona Department of Environmental Quality Solid Waste Department; based on waste disposal tipping fees reported for March 2002 - March 2003.

#### **4.1.9 Medical Waste: Classification**

Medical waste is a subclass of the commercial and industrial waste stream. The ADEQ has adopted rules for the management, transport and storing of commercially generated biohazardous medical waste under A.A.C. R18-13-410 et seq. Municipal Subtitle D Landfills accept only non-infectious medical wastes treated in accordance with State and Federal requirements. Currently, there are no medical waste incineration facilities operating in Maricopa County and alternative treatment technologies, such as autoclaving (steam sterilization) are used. According to ADEQ, there is one commercial waste treatment facility in Maricopa County: the Stericycle Facility, located within the Gila River Indian Community, uses autoclaving treatment technology. There are two commercial medical waste transfer stations in Maricopa County registered with ADEQ, EnviroSolve and Milum Textiles, and both are located in Phoenix.

##### **4.1.9.1 Hospital Generated Medical Waste**

Nationally, hospital medical waste accounts for approximately 85 percent of the total medical waste generated. A first step in calculating the generation of medical waste in Maricopa County was to determine the amount generated by hospitals. To accomplish this, two data estimations were needed: the number of hospital beds and the average daily occupancy rate. The number of hospital beds in Maricopa County hospitals in year 2002 was approximately 8,355, according to the Arizona Department of Health Services (ADHS).

The average daily occupancy rate for Arizona hospitals was 62 percent in year 2002, according to the *U.S. Bureau of Census Statistical Abstract of the United States 2002*. Based on these estimations and using the national generation factor of 15 pounds per patient per day, there were approximately 14,181 tons of medical waste generated by Maricopa County hospitals in 2002. Of this total, about 2,127 tons were infectious medical waste. Infectious medical waste generally includes waste from patients diagnosed as having a communicable disease and must be isolated as required by public health agencies. Table 4.7 shows the year 2002 estimates of the total medical waste generated and provides a breakdown of medical waste generated by hospitals in Maricopa County and nonhospital sources. Table 4.7 also provides estimates of infectious and noninfectious portions of the total hospital generated medical waste.

##### **4.1.9.2 Nonhospital Generated Medical Waste**

Having obtained generation amounts for hospitals in Maricopa County, the next step was to determine the amounts generated by nonhospital sources. Based on a national factor that nonhospital medical waste amounts to 15 percent of the total medical waste, an estimated 2,502 tons of nonhospital waste were generated in Maricopa County in 2002. As a proportion of commercial and industrial waste, medical waste amounts are

relatively small. Based on a year 2002 Maricopa County population of approximately 3,296,250, the annual rate of medical waste generation was 10.1 pounds per capita.

At the national level, there has been a decrease in the average length of hospital from an average 7.8 day stay in 1970 to an average 4.9 day stay in year 2001, according to the April 9, 2003 *Center for Disease Control Advance Data for Vital & Health Statistics, No. 332*. The Center attributes this decrease in average length of hospital stay to cost containment programs and technological and drug therapy advances that allow earlier diagnosis and treatment and less invasive surgical intervention. It is possible that, with the shorter average hospital stay, each patient is generating less waste than when the average stay was longer.

<b>TABLE 4.7</b> <b>ESTIMATE OF AMOUNT OF MEDICAL WASTE GENERATED</b> <b>MARICOPA COUNTY - YEAR 2002</b> <b>(Tons per Year)</b>				
Hospital			Non-hospital	Total
Total	Non-Infectious	Infectious		
14,181	12,053	2,127	2,502	16,683
Source: Arizona Department of Health Services Healthy Hospitals:Environmental Accounting, Tellus Institute for the U.S. Environmental Protection Agency, July 2000. U.S. Bureau of the Census, Statistical Abstract of the United States, 2002.				

#### **4.1.10 Landscape Wastes: Classification**

Landscape waste consists of organic waste material produced in the care and maintenance of individual home and business lawns, gardens and open spaces. This category of solid waste is designated as a separate waste class because of the potential for mulching or composting, but landscape waste is largely a subclass of residential waste.

Landscape waste is disposed of by three major methods. Grass trimmings and other landscape debris are disposed of as part of residential household waste and are normally collected along with other household waste. Landscapers also dispose of landscape waste directly into landfills and are charged a tipping fee. The third component of landscape waste disposal is debris collected from municipal and County parks, open spaces and street cleaning. Most often, collection is undertaken by the municipalities themselves and the wastes are referred to as uncontained waste.

Since 1993, several municipalities have developed a green waste program to offer residents periodic curbside collection of yard wastes. The green waste collected through municipal curbside programs in Gilbert, Mesa and Scottsdale is taken to the Salt River Landfill large scale composting program. The City of Glendale reported green waste tonnage delivered to the landfill primarily by landscapers and residents.

This material was ground for uses such as landfill cover and bank stabilization until the wood grinding program was discontinued in July 2002. The material collected at curbside by the City of Glendale was landfilled (green waste combined with other mixed waste). For the current MAG Plan update, the Cities of Chandler, Glendale, Mesa, Phoenix and Scottsdale provided the estimated 2002 number of tons of yard trimmings collected within their jurisdiction.

**4.1.11 Landscape Wastes: Generation Rates**

The estimated quantities of landscape wastes for Maricopa County for year 2002 are provided in Table 4.8. The total estimated landscape waste of 623,593 tons per year is broken down into contained, uncontained and disposed by gardener categories. These generation rates were based on the year 2002 yard trimmings data reported by jurisdictions. A total of approximately 74,732 tons of yard trimmings were collected by these cities in year 2002. Generally, this yard trimmings total includes residential green waste such as grass and tree trimmings.

For the current plan update, methods used in the 1991 MAG Regional Solid Waste Stream Study were consulted for calculating estimated generation rates for contained, uncontained and landscape waste disposed by gardeners. A contained waste generation rate of 0.03 tons per person per year was calculated using the reported total 74,732 tons of yard trimmings (yearly) divided by the total population for the five reporting cities. The total 101,406 tons of contained waste for Maricopa County was estimated by applying the 0.03 tons per person per year generation rate to the total Maricopa County population.

The total contained and uncontained waste is estimated at 0.66 pounds per person per day. Based on this generation rate, the contained and uncontained waste was estimated to be a total of 397,033 tons per year. The uncontained waste was estimated to be 295,627 tons for year 2002. The total landscape waste disposed by gardeners for 2002 was estimated to be 226,627 tons. This estimate was calculated on a population and employment factor. For year 2002, the total landscape waste generation rate was estimated to be 1.04 pounds per capita per day.

<b>TABLE 4.8</b> <b>ESTIMATED QUANTITIES OF LANDSCAPE WASTES</b> <b>MARICOPA COUNTY - YEAR 2002</b> <b>(Tons per Year)</b>			
<b>Contained Waste</b>	<b>Uncontained Waste</b>	<b>Disposed by Gardeners</b>	<b>Total</b>
101,406	295,627	226,560	623,593

Source: MAG member agency reported 2002 yard trimmings; MAG Regional Waste Stream Study, May 1991.

## 4.2 WASTE CHARACTERIZATION ASSESSMENTS

### 4.2.1 Recyclable Materials Assessment

Residential recycling is a key component in any integrated plan for disposal of municipal solid waste. Based on data provided by Carefree, Chandler, Gilbert, Glendale, Mesa, Phoenix and Scottsdale, a significant portion of the residential waste stream is recyclable. These seven municipalities report that a total of approximately 296,130 tons of material were collected for recycling within their jurisdictions within year 2002.

Figure 4-1 shows the categories of recyclable material collected in year 2002 on an estimated percent by weight basis. It should be noted that percentages may not add up to one hundred percent in the Table due to rounding. From a percent by weight perspective, the Newspaper category made up the largest component of the estimated total material collected for recycling in the region. The remaining categories on a percent by weight basis were reported in the following proportions.

- Newspaper (32.8%)
- Yard Trimmings (26.5%)
- Waste Tires (13.6%)
- Cardboard (8.38%)
- Paper (7.78%)
- Plastic (2.88%)
- Glass (2.15%)
- Phone Books (1.49%)
- Steel Cans (1.37%)
- Woodwaste (1.19%)
- Aluminum Cans (0.87%)
- Steel/Iron Scrap (0.52%)

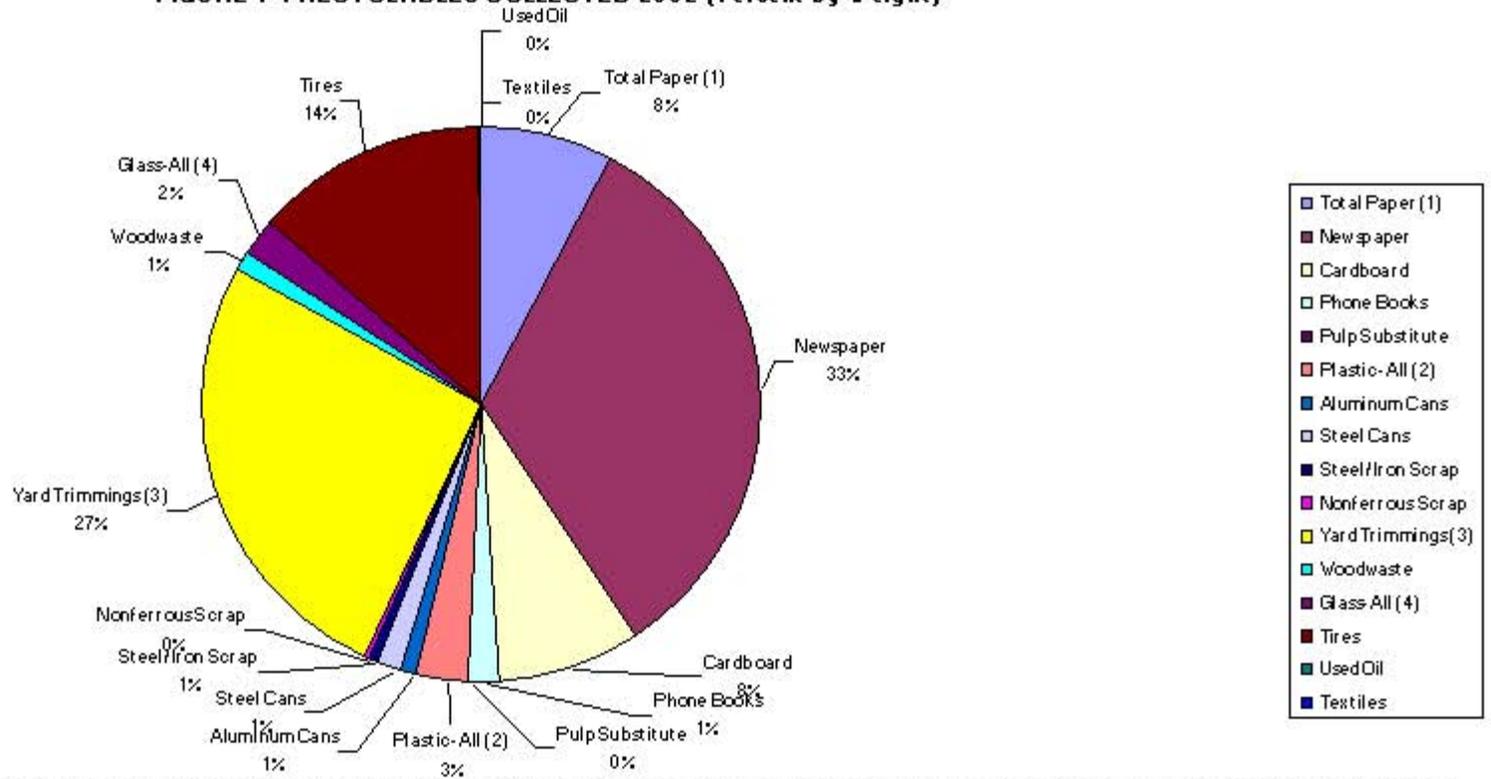
Each of the remaining categories made up less than 0.50% of the total amount of recyclable materials collected in year 2002. These categories include Nonferrous Scrap, Pulp Substitute, Textiles, and Used Oil.

This distribution of recyclable materials collected is somewhat consistent with statistics at the national level. According to the U.S. EPA, paper (including newspaper) and yard trimmings were the two largest categories of the total waste generated in the nation in year 2000 on a percent by weight basis. According the *EPA Municipal Solid Waste Generation Basic Facts 2000*, the total waste generation before recycling was distributed as follows.

- Paper (37.4%)
- Yard Trimmings (12.0%)

- Food Scraps (11.2%)
- Plastics (10.7%)
- Metals (7.8%)
- Rubber, Leather & Textiles (6.7%)
- Glass (5%)
- Other (3.2%)

**FIGURE 4-1 RECYCLABLES COLLECTED 2002 (Percent by Weight)\***



Source: MAG Survey of Material Collected for Recycling 2002. (1) Includes High Grade Paper & Mixed Paper. (2) Includes PET, HDPE, LDPE & PS Plastic. (3) Residential Green Waste such as grass and tree trimmings. (4) Includes Flint (clear), Amber (brown), Green AG Survey Glass. \*Percentages may not add up to 100% due to rounding.

#### **4.2.2 Landscape Wastes Assessment**

Landscape waste is disposed by three major methods according to the *1991 MAG Regional Waste Stream Study*. Grass trimmings and other landscape waste is disposed of with other residential waste through municipal or private waste collection. Several cities dispose of debris collected from parks and public spaces, as well as large items from households, through green waste programs and uncontained waste collection. Lastly, landscaping firms dispose of landscape wastes from their clients by taking this material directly to the landfill.

Only the brush portion of landscape waste from landscaping firms is delivered to landfills under conditions favorable to recycling by mulching. This is because waste from landscapers is known to contain a high percentage of mulchable material and is generally not mixed with other types of solid waste. Furthermore, it appears that grass and other non-grindables could be removed fairly easily from the mulchable portion of the landscape waste. Therefore, little preprocessing, such as extensive sorting or debagging of wastes, is needed.

The total quantity of residential uncontained and commercial landscape wastes generated in the region was projected to be approximately 623,593 tons in 2002. In order to determine the amount of material that may be suitable for mulching, these quantities of landscape waste have been divided into categories of brush and grass. Approximately 80 percent, or 498,874 tons of the material is assumed to be brush. Only the brush portion is considered amenable to recycling by mulching, as grass may require additional treatment to render it harmless for some reuse purposes (i.e., to kill weed seeds).

#### **4.2.3 Liquid Wastes Assessment: Restaurant Grease Traps**

For year 2002, the total nonhazardous liquid waste generated in Maricopa County was estimated to be 44,742,539 gallons. It has been estimated that approximately 20 percent of the nonhazardous liquid wastes in the region consist of materials collected from grease traps, according to data in the *1992 Brown and Caldwell Nonhazardous Liquid Wastes Management Study*. On this basis, approximately 8.9 million gallons of restaurant grease trap wastes were generated in the MAG region in 2002. At the present time, a portion of this material is collected by private companies for recycling and the remainder is generally hauled to landfills. The material has value when recycled as fuel or animal feed or when refined as raw material for a variety of products. As anticipated in the 1993 MAG Plan, following shut down of the wastewater treatment disposal option in December 1993, the practice of dewatering restaurant grease trap wastes and disposing them in solid waste landfills has become more common. As anticipated, the private sector role in restaurant grease trap waste management has expanded since 1993.

#### **4.2.4 Household Hazardous Wastes Assessment**

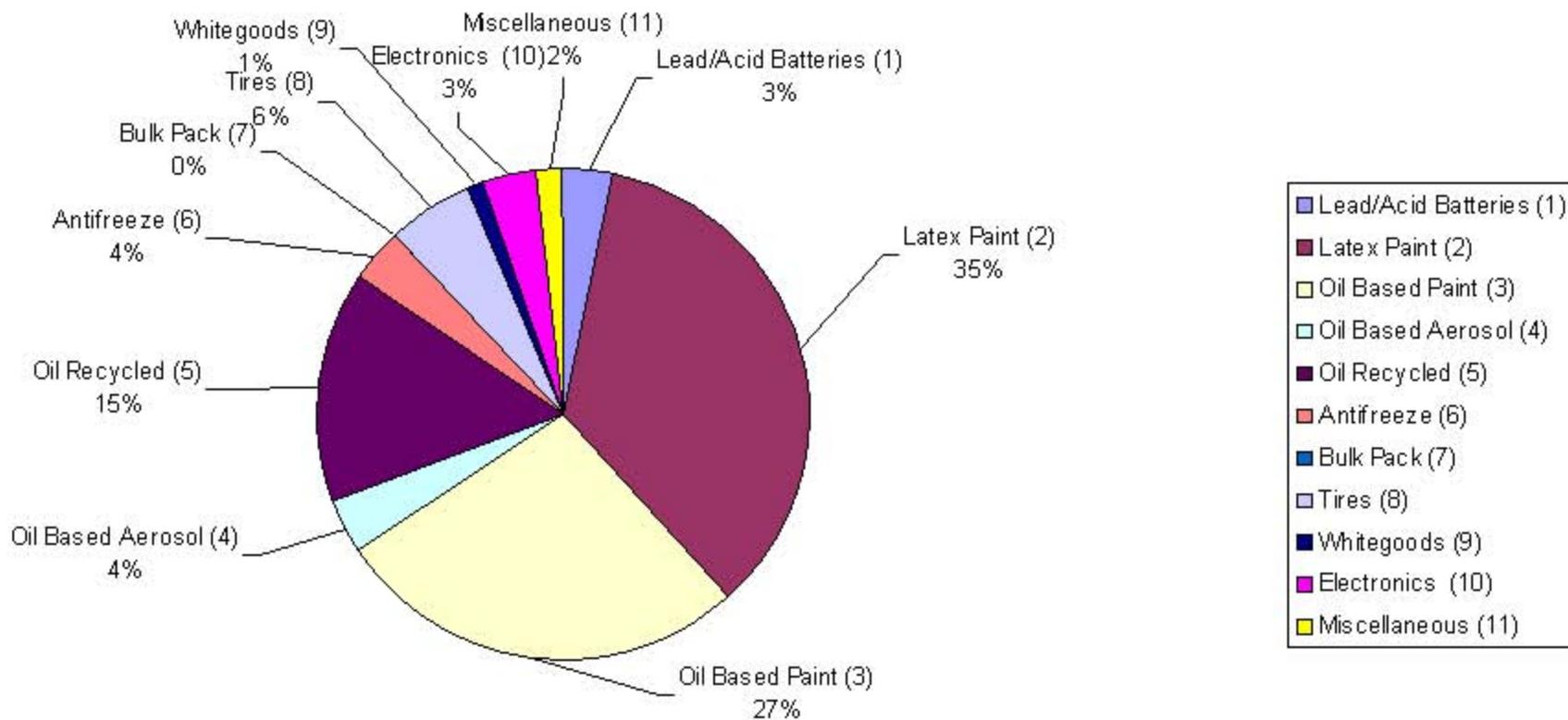
Household hazardous waste is a subclass of the residential waste stream. Since the 1993 MAG Plan, several cities have implemented new HHW collection programs or expanded existing HHW collection programs. Some cities, such as the City of Phoenix, track household hazardous waste collections separately from other waste types. The City of Phoenix conducts about ten Batteries, Oil, Paint and Antifreeze (BOPA) Collection Events per year.

Figure 4-2 shows the relative amounts in each of the major categories of household hazardous waste collected in Fiscal Year 2003-2004 through the City of Phoenix BOPA Collection Events, on a percent by weight basis. Latex Paint made up the largest portion at 35 percent by weight. The U.S. EPA indicates that, generally, leftover latex paint that is not lead or mercury based may be reused or dried and placed in a curbside refuse bin. Oil Based Paint made up the second largest portion at 27 percent by weight. The U.S. EPA considers oil based paint as a household hazardous waste and recommends that residents either reuse leftover paint or save it for the next local HHW collection event. The third largest component was made up of Recycled Oil, at 15 percent by weight.

The remaining total HHW collected by weight was made up of the following percentages:

- Tires (6%)
- Antifreeze (4%)
- Oil Based Aerosol (4%)
- Electronics (3%)
- Lead/Acid Batteries (3%)
- Miscellaneous (2%)
- Whitegoods (1%)
- Bulk Pack (>1%)

**Figure 4.2 HOUSEHOLD HAZARDOUS WASTE CHART (Percent by Weight)\***



Source: FY 2003-04 City of Phoenix BOPA Collection Table. (1) Weight 25/lbs each.  
 (2)Weight 11lbs/gallon.  
 (3)Weight 825lbs/box. (4)Weight 500lbs/box. (5)Weight 5lbs/gallon. (6)Weight 3lbs/gallon.  
 (7)Latex Water and Sludge  
 (8)Weight averages 30lbs/tire. (9)Weight averages 50lbs/item.  
 (10) Total # of computer parts, TVs, VCRs, DVDs, CD players, Stereos, and Microwaves collected.  
 (11) Includes compressed gas cylinders, fire extinguishers. Percentages may not add to 100% due to rounding.  
 \*Due to rounding, totals may not add up to 100 percent.

#### **4.2.5 White Goods Assessment**

In order to help divert items such as large appliances and electronics from the waste stream, several municipalities in the region offer curbside collection and drop off opportunities for residential white goods. The frequency of collection events and drop off opportunities varies among communities based on local considerations. Through municipal curbside collection programs, residents can make an appointment to have the appliances picked up and recycled. Generally, large appliances, such as refrigerators and air conditioners, can be recycled after removal of any regulated substances such as Chlorofluorocarbons. After regulated substance removal, the appliances are transported to a scrap metal dealer. Municipalities generally charge a minimal fee to help recover the cost of regulated substances removed from appliances prior to collection.

The City of Phoenix Appliance/Electronics Collection & Recycling Program was initiated in April 2001 with the assistance of ADEQ Waste Reduction Grant Funds for two collection vehicles and equipment. In the first ten months of the program (July 2001-May 2002), nearly 350 tons of appliances were collected and, of these, over 1,000 were refrigerant based appliances.

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**EVALUATION OF WASTE PROBLEMS BY TYPE AND VOLUME**

This chapter summarizes problems identified by the MAG member agencies. For the current Plan update, the member agencies were surveyed to inquire whether waste types that were considered a problem waste in the 1993 MAG Plan are still considered a problem. The member agencies were also requested to identify any other wastes which have become a problem since the 1993 Plan. A summary of the problem wastes identified is provided, including evaluation of waste volumes generated, and planned or implemented management solutions.

**5.1 PROBLEM WASTES****5.1.1 Biohazardous Medical Waste**

In the 1993 MAG Plan, biohazardous medical waste was identified as a problem waste due to the lack of a legal definition, lack of determination of the infectious portion and associated risks, and potential impacts from incinerator emissions and residual ash. At this time, member agencies indicate that this waste type is generally not considered a problem since it is now regulated by the Arizona Department of Environmental Quality (ADEQ) and the Federal Resource Conservation and Recovery Act (RCRA), and due to the recent discontinuation of medical waste incineration in the region. Currently, there are no medical waste incineration facilities in the region, resulting in the elimination of potential emissions and residual waste impacts.

Since the 1993 MAG Plan, the State has adopted rules for the management, transport and storing of biohazardous medical waste under Arizona Administrative Code R18-13-1401 et seq. ADEQ has adopted the following legal definition for biohazardous medical waste: *“any solid waste which is generated in the diagnosis, treatment or immunization of a human being or animal or in any research relating to that diagnosis, treatment or immunization, or in the production or testing of biologicals, and includes discarded drugs but does not include hazardous waste as defined in A.R.S. §49-924 other than conditionally exempt small quantity generator waste.”*

Municipal Subtitle D Landfills accept only non-infectious medical wastes treated in accordance with State and Federal requirements. Generally, infectious waste is equipment, instruments, utensils and formites of a disposable nature from the rooms of patients who have been diagnosed with a communicable disease and public health agencies require that these wastes be isolated.

Previously, incineration of commercially generated medical waste was conducted in the region. In 1997, the U.S. Environmental Protection Agency (EPA) enacted regulations governing medical waste incinerator emissions that made compliance more stringent and

expensive. As anticipated by EPA, the regulations have largely resulted in the discontinuation of medical waste incineration and its replacement by alternative technologies such as thermal treatment (microwave technologies), steam sterilization (autoclaving), electroplyrolysis and chemical mechanical systems.

Currently, there are no operating medical waste incineration facilities in the MAG region according to ADEQ and Maricopa County Environmental Services Department. Today, medical waste in the region is treated using alternative technologies. For example, the privately owned Stericycle Facility, located on the Gila River Indian Community, stopped incinerating medical waste and switched to autoclaving in November 2002. The medical waste treatment facilities and transfer stations in Maricopa County are listed in Table 6.2.

In March 2002, the Gila River Indian Community revised their Medical Waste Management Ordinance which regulates the management of hospital/medical/infectious waste within Community boundaries. The purpose of the Ordinance is to prevent the spread of disease, creation of nuisances and property damage, and to minimize environmental pollution through regulation of medical waste management.

Home generated medical wastes (those generated in the home environment, workplace environment, or any kind of public building environment) are exempted from Arizona's Medical Waste Regulations. ADEQ has established guidelines for safe disposal of home generated medical sharps to help minimize health risks to garbage haulers, landfill personnel and the community.

Generally, local agencies in the region share a common emphasis on the importance of residents safely disposing home generated medical waste in accordance with the ADEQ guidelines. The Cities of Apache Junction, Chandler, Glendale, Goodyear, Mesa, Phoenix and Scottsdale promote proper disposal through items such as educational brochures and Web site information for interested residents. The City of Phoenix has also issued a revised Solid Waste Ordinance that includes requirements for safe disposal of home generated medical waste.

### **5.1.2 Wastewater Treatment Plant Biosolids (Sludges)**

In the 1993 MAG Plan, biosolids were identified as a problem waste due the unknown impact of a projected increase in biosolids generated by small facilities outside the Multi-City Subregional Operating Group (SROG) Facility. At this time, member agencies indicate that biosolids are generally not considered a problem waste.

According to the U.S. EPA, biosolids are the nutrient-rich organic materials resulting from the treatment of sewage sludge (solid, semisolid or liquid untreated residue generated during domestic sewage treatment). When treated and processed in accordance with regulatory requirements, sewage sludge becomes biosolids which can be safely recycled and applied as fertilizer.

At the State level, the ADEQ Biosolids Program implements Section 503 of the Clean Water Act and regulates biosolids management under 18 A.A.C. 9, Article 10. Under this Article, the disposal, treatment, transportation, land application, and management of biosolids is regulated. Incineration of biosolids is regulated by the U.S. EPA and is prohibited in Arizona. Biosolids disposal methods in the region include land application, surface disposal, and landfilling. Any biosolids surface disposal site is regulated under the ADEQ groundwater program and must obtain an Aquifer Protection Permit.

In the MAG region, biosolids are generated by the large regional 91<sup>st</sup> Avenue SROG facility and many smaller wastewater treatment facilities. The SROG cities of Phoenix, Glendale, Mesa, Scottsdale and Tempe and some non-member cities discharge various wastewater flows and sludge to the SROG system. The sludge is transported through the interceptor system to the treatment plant and mixed in the influent wastewater for treatment. Residual solids from the 91<sup>st</sup> Avenue Plant are stabilized, dewatered, and then removed for agricultural reuse by a privately owned company.

According to the *MAG 208 Water Quality Management Plan*, for the 91<sup>st</sup> Avenue SROG Wastewater Treatment Plant, the Year 2002 Total Suspended Solids (residual solids) of 496,500 pounds per day are estimated to increase to a projected 723,000 pounds per day by Year 2020. These figures are derived through parameters that express hydraulic flow (flow capacity), loading conditions (Biochemical Oxygen Demand), and Total Suspended Solids. The Total Suspended Solids values vary from “dry weight basis” values, which would give the weight of biosolids calculated after the material has been dried at 105 degrees Celsius until reaching a constant mass.

In addition to the large regional SROG plant, there are many smaller non-SROG wastewater treatment plants in the MAG region. Generally, plants outside the SROG facility are owned and operated by individual municipal or private entities, and comprehensive data on the amount of biosolids for these smaller non-SROG facilities is not readily available.

### **5.1.3 Nonhazardous Liquid Waste**

Nonhazardous liquid wastes (NHLW) include wastes from septic tanks, dry wells, chemical toilets, food processing operations, water softening processes and cooling towers. Although member agencies identified non-hazardous liquid waste as a problem waste in the 1993 MAG Plan, it is generally indicated that it is not considered a problem waste at this time. Previously, member agencies were concerned that a possible shortage of NHLW disposal sites may occur as a result of the October 1993 EPA solid waste disposal regulations prohibiting co-disposal of liquid wastes in solid waste landfills. At that time, NHLW was being treated or disposed at several landfills and the SROG Wastewater Treatment Plant.

Since that time, three landfills previously used for NHLW disposal have closed. Under Arizona Administrative Code R18-13-1100 - 1117, owners and operators of vehicles used

to store, collect, transport or dispose of NHLW from septic tanks or on-site wastewater treatment facilities are regulated and required to obtain a permit from the appropriate County Health Department. Currently, Maricopa County regulates NHLW storage, transport and disposal under Chapter 2, Section 7 of the Maricopa County Health Code. Maricopa County representatives indicate that, although septic hauling vehicles are required to obtain a permit, the amount of nonhazardous liquid waste generated in the region is no longer tracked by the County.

Three privately owned and operated NHLW disposal sites are currently approved by Maricopa County in the region: Butterfield Station Landfill, AAA Ajax, and Resource Recovery Techniques of Arizona. In some situations, certain types of nonhazardous liquid waste are accepted at wastewater treatment plants in the region. For example, the City of Goodyear 157<sup>th</sup> Avenue Wastewater Treatment Plant accepts nonhazardous liquid waste from septic systems and brine water from cooling tower operations. The Superstition Mountain Community Facilities District, located in Pinal County, accepts nonhazardous liquid waste from septic systems. Based on estimates from the District and septic haulers who deliver to the plant, approximately half of all nonhazardous liquid waste going to the Superstition Plant is collected within Maricopa County.

In 1993, the *Maricopa County Non-Hazardous Liquid Waste Disposal Options Study* was conducted by Malcolm Pirnie, Inc. to investigate the various NHLW treatment methods and disposal options. The report concluded that solids disposal options included landfilling, land application, recycling of oil and grease, and land burial (NHLW only). Liquid disposal options included evaporation, sewer, and land application.

#### **5.1.4 Illegally Dumped Wastes**

In the 1993 MAG Plan illegally dumped wastes were identified as a serious and persistent problem in the MAG region. At that time, the Pima County Model Ordinance was included in the Plan to assist municipalities. Several municipalities have an established City Ordinance or City Code stipulation prohibiting illegal or indiscriminate dumping of solid waste. Also, the MAG Plan previously adopted a recommendation for development of an illegal dumping public education program, and member agencies were encouraged to establish volunteer watch programs for areas continually used by illegal dumpers.

Member agencies indicate that illegal dumping is still a serious and persistent problem due to significant cleanup costs, lacking city and county funds for cleanup and monitoring, lacking city and county authority to cite illegal dumpers, and hurdles in attempting to prosecute illegal dumpers.

According to the March 1998 *EPA Illegal Dumping Prevention Guidebook*, an illegal dumping prevention program should include leadership and support by local officials, cooperation among authorities, communities and industry, an integrated approach, and a means to publicize success. The EPA has also developed the Illegal Dumping Assessment (IDEA) Model, a computer based cost analysis tool for assessing the costs

associated with illegal dumping activities.

### **5.1.5 Electronic Wastes**

Some member agencies indicate that, since the 1993 MAG Plan, electronic wastes have emerged as a problem waste in the region. The concern is that the hazardous components of electronic waste can make disposing them in large quantities an issue. Hazardous components such as lead, chromium, cadmium, and mercury are present in many old televisions and computer monitors, and call for special handling upon disposal. Cell phones also need special handling because they contain lead and brominated flame retardants. In addition to potential hazardous components, electronics may include valuable materials which can be recovered at the end of the product useful life such as steel, glass, plastic and precious metals.

The U.S. EPA cites electronics waste as the fastest growing portion of America's trash with nearly 250 million computers destined to become obsolete in the next five years and more than 3.2 million tons going to landfills in the nation each year. The "EPA Plug-In To eCycling Campaign" seeks to increase the national recycling rate to 35 percent and cut the generation of 30 harmful chemicals by 2005. Through the program, EPA works with private and public partners to encourage reuse, recycling and donation of unwanted electronics and safe e-waste management. The EPA provides safe management guidelines in the June 18, 2003 *Plug-In Campaign Criteria for Environmentally Sound Management*. The program also includes a product stewardship component and highlights businesses participating in reuse and reduce efforts.

Several local governments in the region currently have programs to address electronic waste. The Towns of Carefree, Cave Creek and Gilbert offer computer drop off opportunities in an annual household hazardous waste event. The City of Chandler Transfer Facility accepts computers, electronics, and small household electrical appliances. The City of Glendale Landfill has an electronics recovery program. The City of Mesa provides a household hazardous waste program through which electronics are recycled. The City of Scottsdale provides Electronics Recycling Collection Events for residents.

The City of Phoenix Appliance/Electronic Recycling Program provides curbside electronic waste collection by appointment and accepts electronics waste at Battery Oil Paint and Antifreeze (BOPA) Events, Quarterly Bulk Collection Events and City disposal facilities. The City of Phoenix and the Town of Gilbert also refer residents to the Arizona Students Recycling Used Technology (StRUT), who refurbish used computers and donate them to schools and businesses. This non-profit partnership between schools and businesses was founded by Intel and Motorola in 1997, with funding provided by local businesses. StRUT trains students at a local technical school to work on the donated computers. In Year 2002, over 800 students were trained and 590 businesses received 4,642 refurbished units.

### **5.1.6 White Goods/Wastes Containing Chlorofluorocarbons**

Some member agencies indicate that since the 1993 MAG Plan, appliances and equipment containing Chlorofluorocarbons (CFCs), a regulated substance, have been emerging as a problem waste in the region. CFCs are commonly used as refrigerants, solvents and foam blowing agents.

In 1992, Section 608 of the Clean Air Act was enacted to govern the use, disposal and recycling of refrigerants and end the practice of venting refrigerants to the air. Effective July 1, 1992, refrigerants were required to be removed from appliances, machines and other goods prior to disposal or recycling and it is prohibited to dispose these goods in a way that permits the regulated substance to enter the environment. The U.S. EPA initiated a CFC production phaseout in the early 1990's to help recovery of depletion in the Earth's ozone layer and reduce associated health risks.

In the MAG region, some jurisdictions have appliance collection programs offering curbside appliance collection by appointment or drop off opportunities. Currently, seven jurisdictions in the region have established white goods/appliance collection programs including Chandler, Gilbert, Glendale, Mesa, Phoenix, Salt River Pima Indian Community, and Scottsdale. In addition, six other jurisdictions provide some type of opportunity for appliance drop off or collection including Buckeye, El Mirage, Litchfield Park, Peoria, Tolleson and Wickenburg.

Through some of these municipal programs, household appliances with refrigerants or CFCs (such as air conditioners, refrigerators) first have the regulated substance properly removed at a reclaiming facility and then take recyclable materials to a scrap dealer or other metals recycling facility. A minimal service fee is commonly charged to the resident for this waste type to help recover refrigerant removal costs. Some municipalities request that residents have regulated substances properly removed from appliances prior to collection.

## **5.2 PROBLEMS WITH WASTES OF OTHER CLASSIFICATIONS**

In other waste classifications, problems of a more general nature were identified. For instance, a problem experienced in the commercial and industrial classification is the disposal of inappropriate materials in waste collection bins. An evaluation of problems associated with residential waste, commercial and industrial, household hazardous wastes, used tires and special wastes is provided below.

### **5.2.1 Residential Waste**

In the 1993 MAG Plan, the major problem listed for residential solid waste was continued growth in the ratio of waste generation. Ultimately, the rate at which landfill capacity is used is a function of the generation ratio, total population, and waste management

practices. The 1991 MAG Waste Stream Study deducted a 39 percent increase in the residential waste generation ratio for the 21 year period between 1969 and 1990. This increase had been deducted using the *Solid Wastes Haul Report, Maricopa County of 1969* by John Carollo Engineers.

At this time, it is indicated that growth in the ratio of waste generation in the region has not been a significant problem for larger municipalities but is still a concern for smaller jurisdictions and unincorporated areas. The larger cities and towns have established waste management practices with emphasized recycling and waste reduction programs to help reduce the rate at which landfill capacity is used.

### **5.2.2 Commercial and Industrial Waste**

A commercial and industrial waste problem identified in the 1993 MAG Plan was the illegal placement of hazardous wastes or restricted waste (ie: used oil, anti-freeze, tires, and batteries) into commercial and industrial collection waste bins. Typically, these materials are discovered after the collection trucks have been unloaded at the landfill, thus complicating the task of tracing the materials back to their point of origin. At this time, some member agencies indicate that this is still considered a problem.

Since 1993, new State regulatory used oil and waste tire programs have been implemented and the number of local agency household hazardous waste programs and collection events have significantly increased. It could be assumed that the new State used oil and used tire requirements and the heightened convenience for residents offered by more local HHW collection programs would presumably help decrease the occurrence of illegal disposal of these hazardous wastes in commercial bins.

A related problem is the lack of a coordinated system for the collection agencies to remain updated regarding the types of hazardous materials used by businesses and industries within a jurisdiction. Leased business properties change tenants and industries change processes, leading to the creation of new and different wastes. However, the solid waste collection agencies are not made aware of these facts until this waste is discovered in the trash and must be removed for separate disposal.

Lists of certain chemicals used by industries and businesses in a jurisdiction are often maintained by fire departments. Cities and towns maintain similar lists of chemicals used as part of the wastewater industrial pretreatment programs. However, it appears that this information is not readily available to solid waste collection agencies to assist in locating owners of illegally disposed hazardous wastes.

The three most common methods waste collection agencies use to mitigate this problem are providing locks on the bins, placing warning stickers prohibiting placement of hazardous materials on the bins, and educating customers on types of materials that may and may not be disposed in the bins. However, locks and stickers are not used by all collection agencies for all collection accounts.

One management option adopted by the MAG 1993 Plan was the publication of State and County databases as sources of information on users and generators of hazardous materials. MAG agencies were encouraged to conduct joint investigations of illegally disposed hazardous materials with the Office of the Attorney General. In January 1992, Maricopa County began administering a "County Conservation Program" to evaluate the effectiveness of various conservation strategies, and it was planned to share the concepts with cities, businesses, and industries if the program was successful. Since that time, Maricopa County has reduced its role in solid waste management. The MAG Plan also adopted a policy encouraging development of voluntary source reduction and recycling plans prepared by businesses and industries.

### **5.2.3 Household Hazardous Waste (HHW)**

In the 1993 MAG Plan, member agencies identified the potential for improper HHW disposal and significant costs associated with disposing of hazardous waste in landfills as problems. Presently, it is indicated that the potential for improper disposal is not a problem for municipalities with established HHW programs, but is still a concern for the unincorporated areas and jurisdictions with minimal or no HHW program. Household hazardous waste is any material that can be classified as hazardous waste that is derived from households and generated in quantities typical of households.

This type of waste may come from single or multiple family dwellings, hotels and motels, and other types of residences. Examples include adhesives, paints, thinners, grease, solvents, nail polish and removers, cosmetics, drain openers, insecticides, herbicides, used oil and oil filters, antifreeze, and batteries. The chemical nature of these waste substances may cause the waste to poison, corrode, explode, or ignite easily when improperly handled. Improper disposal can create negative impacts to humans and the environment such as, physical injury to sanitation workers, contaminated septic or wastewater treatment systems, and pollution of water bodies. Types of improper disposal include pouring wastes down the drain, on the ground, or into storm sewers, or putting them out with the trash.

In the 1990's, Arizona adopted laws for the management of used oil under A.R.S. §§49-801 et. al. which prohibit certain types of disposal, establish a used oil program and fund and establish a program to educate oil transporters, marketers and burners. Under these regulations, a household "do-it-yourselfer" is referred to as an unregulated used oil generator with the exception of the prohibited disposal practices and a requirement to take used oil to a collection center. In 2001, over 17.9 million gallons of used oil were collected in Arizona, according to the *Arizona Fiscal Year 2002 Recycling Program Report*. The collection rate increased 8 percent between 1999 and 2001 and this was consistent with the growth rate of Arizona's population for the period, according to the ADEQ report.

At the local level, opportunities for safe disposal of wastes such as used oil, anti-freeze, tires and batteries have greatly increased in the region. Currently, 15 jurisdictions in the region have household hazardous waste collection programs which is a great increase from only 5 programs in 1993. Also, frequency of collection events has increased from no

cities offering more than one event in 1993 to 7 municipalities presently offering multiple events throughout the year.

Five more jurisdictions in the region are planning or considering a HHW collection program. Also, the City of Tempe offers year round disposal opportunities through a permanent household hazardous waste collection center and a permanent collection centers are planned by the City of Chandler and the Town of Gilbert. The existing HHW collection programs generally have some type of education component, and it is emphasized by these member agencies that public outreach and education are a key component to continuing to increase the safe disposal of HHW in the region.

#### **5.2.4 Waste Tires**

During initial development of the 1993 MAG Plan, the disposal of waste tires was identified as a problem. However, as development of the Plan progressed, it was discovered that the ADEQ Waste Tire Program and Grant Fund appeared to alleviate the majority of waste tire disposal problems in the region. Presently, some member agencies report concerns with distance to nearest collection center, local level program fees, and environmental problems and additional costs resulting from tire fires.

The Arizona Waste Tire Fund and Program was mandated in the mid 1990's under A.R.S. §§44-1305 to ensure proper disposal of waste tires. Through the program, the number of waste tires collected in Maricopa County increased from 3,440,771 in year 1997 to 3,725,875 in year 2000, according to the *ADEQ Fiscal Year 2002 Waste Tire Report*. At the State level, the Report concluded that a 25.6 percent change in the number of waste tires collected occurred between years 1997 and 2002.

Currently, some member agencies indicate that there are still challenges associated with disposal of "Off-road" tires because this type is not covered by the ADEQ Waste Tire Fund. The waste tire fee is not imposed on the sale of Off-road tires, although the statutory prohibitions on disposal and storage apply. Off-road tires are defined as any automobile, motorcycle, truck, trailer, truck tractor, and semi-trailer combination, heavy equipment used in mining or metallurgical operations, agriculture, construction or earth moving, airplanes or other vehicles operated off the roads.

During Fiscal Year 2002, 15,301 of the over 2.9 million total tires collected in Maricopa County were Off-road tires, equating to less than 0.1 percent of the total tires collected, according the *ADEQ Fiscal Year 2002 Waste Tire Report*. However, Off-road tires are more bulky and weigh more and take up more space than Passenger or Semi-truck tires. In other States, it is common for waste tire disposal fees for Off-road tires to be much higher than fees for Passenger or Semi-truck waste tires.

#### **5.2.5 Special Wastes**

In the 1993 MAG Plan, Special Wastes were identified as problem wastes because they

require special handling and management to protect public health and the environment. At that time, provisions in A.R.S. §49-854 called for study and classification of certain waste types, and it was too early to determine what impacts would follow.

Since that time, ADEQ has evaluated and classified Special Wastes and developed Best Management Practices. ADEQ defines Special Waste as waste that contains petroleum contaminated soils and auto shredder waste. Special Waste generators, shippers, and receiving facilities are required to request an identification number under Arizona Administrative Code R18-8-302 to 304. At this time, member agencies indicate that Special Waste is not considered a problem waste in the region because Special Waste is generally not dealt with by municipal solid waste managers and is adequately addressed by ADEQ.

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**DRAFT CHAPTER 6**

**CURRENT AND PLANNED  
SOLID WASTE MANAGEMENT FACILITIES AND PROGRAMS**

This chapter provides an inventory and description of existing and planned public and private solid waste management facilities, and current and planned solid waste management programs. Solid waste landfill descriptions include capacities, locations, planned expansions, life expectancies, owners and closure information. Transfer station facility descriptions include location, owner, associated landfill for disposal, and types of waste accepted. Descriptions for Materials Recovery Facilities and combined materials recovery facilities include location, capacity, areas served, owner, and associated landfill for reject materials. Descriptions for Rubbish/Construction & Demolition Debris Landfills, Composting Facilities, Commercial Medical Waste Treatment Facilities and Transfer Facilities, Permanent Household Hazardous Waste Collection Facilities, and Waste Tire Collection Sites are also provided in the chapter.

The existing and planned solid waste management programs of MAG member agencies are described. Following the description of facilities and programs, an assessment of current facilities and programs is provided. The assessment includes a discussion of the ability of identified facilities and programs to meet current and future solid waste management needs.

### **6.1 SOLID WASTE MANAGEMENT PLANS AND FACILITIES**

One of the initial tasks in preparing the update of the Regional Solid Waste Management Plan was to assess the local and regional solid waste needs. To facilitate this assessment, MAG staff collected information from MAG member agencies through a solid waste survey, telephone interviews with solid waste professionals, and municipal web sites and publications. Information obtained regarding current and planned programs, services and facilities includes:

- existing and future solid waste studies and plans;
- existing and planned services, programs and facilities; and
- institutional arrangements for handling waste.

The information has been compiled in Table 6.1, which is a matrix detailing the solid waste management plans of MAG member agencies. The information in Table 6.1 indicates the existing and planned solid waste facilities, programs services and studies (collectively called plans) of the member agencies. The plans of the member agencies vary from comprehensive long range plans encompassing integrated waste management components, to programs which address a particular part of the waste stream using one

**Table 6.1  
MEMBER AGENCY SOLID WASTE MANAGEMENT PLAN**

ENTITIES		COMPONENTS																											
		APACHE JUNCTION	AVONDALE	BUCKEYE	CAREFREE	CAVE CREEK	CHANDLER	EL MIRAGE	FOUNTAIN HILLS	GILA BEND	GRIC	GILBERT	GLENDALE	GOODYEAR	GUADALUPE	LITCHFIELD PARK	MARICOPA COUNTY	MESA	PARADISE VALLEY	PEORIA	PHOENIX	QUEEN CREEK	SRPMIC	SCOTTSDALE	SURPRISE	TEMPE	TOLLESON	WICKENBURG	YOUNGTOWN
SOURCE REDUCTION	Goals																												
	Studies																												
	Programs						E						E	E	E				E			E		E	E	P			
	• Waste reduction education						E					E	E	E					E			E		E	E	P	E		
	• Other													E															
RECYCLING	Goals																	E			E		E	E	E	E			
	Studies						E					E		E				E			E		E	E	E	E			
	Programs		E	C	E	E	E					E	E	E		C		E		E	E	C	E	E	P	E			
	• Buyback center																												
	• Curbside recycling		E		E	E	E		E			E	E	C				E	E	C	E		C	E	P	E	C		C
	• Drop-off recycling	E		C	E	E	E	C		E		E	E	E	E	E		E		E	E		E	E	P	E	C		E
	• Education		E		E	E	E			E		E	E	E		E		E			E		C	E	P	E	P		P
	• Landscape waste composting			C						C								E					E		P				
	• Landscape waste mulching			C				E		C								E		C	E		E	E	P				
	Facilities																												
• Combined materials recovery transfer facility																					E								
• Materials recovery facility												E									E		E						
WASTE ENERGY/GAS	Goals																												
	Studies																					E							
	Waste-to-Energy facility						E														C		E						
	Landfill gas to Energy facility												C								C		E						
LANDFILLING	Goals																							E					
	Studies (for landfills or transfer stations)						E														E		E				E		
	Facilities																												
	• Landfill	E					E					E					C				E	E	E						
	• Transfer station		E			E	E			E				C			E				E			E				E	
• Permanent household hazardous waste collect ctr						P					P															E			
OTHER	• Sludge waste study						E										E	E			E			E	E	E		E	
	• Liquid waste study																	E			E			E	E	E			
	• Household hazardous waste collection	E	C		E	E	E	P		E	E	E	E		E		E		E	E		C	E	P	E			P	
	• Brownfields cleanup & redevelopment activity		E				E										E				E						E		

Source: MAG Solid Waste Information Collection Survey 2003, MAG Member Agency Interviews and Web sites and publications 2003.

waste management option. One of the reasons that a section on the goals of local agencies has been included in the matrix is that the U.S. EPA has identified the establishment of waste reduction and recycling goals as a part of the local solid waste management planning process. Regional solid waste management goals are discussed in Chapter 3.

To date, few of the MAG member agencies have adopted long-range plans or goals to guide the management of solid waste. However, many of the jurisdictions are actively involved in several areas beyond providing for the collection and disposal of solid waste. The activities include the development of additional and alternative solid waste management facilities, curbside and drop-off recycling programs with public education, household hazardous waste collection programs with public education, white goods, green waste and bulk waste collection programs, and brownfields redevelopment programs. Many of the member agencies have undertaken specific programs, such as collection for recycling, to manage part of the total waste stream, with the remaining wastes being disposed in landfills.

## **6.2 SOLID WASTE MANAGEMENT PROGRAMS**

The existing and planned solid waste management programs of MAG member agencies are described in this section. The information on the programs was collected through a survey of MAG member agencies, interviews with solid waste personnel, member agency websites and publications and the Draft *March 2003 MAG Regional Growing Smarter Implementation Solid Waste Report*.

### **6.2.1 CITY OF APACHE JUNCTION**

The City of Apache Junction officially became a MAG member agency through MAG Regional Council approval in 2002. A small portion of the City of Apache Junction Municipal Planning Area lies within Maricopa County with the majority of the City located in Pinal County. For solid waste management planning purposes, the Maricopa County portion of Apache Junction is included in the MAG Regional Solid Waste Management Plan.

The City of Apache Junction integrated waste management program includes a landfill and programs for recycling, household hazardous waste, and white goods. The City of Apache Junction Landfill, located at Tomahawk & Baseline Roads, is owned and operated by Allied Waste, Inc. It is anticipated that the landfill would close in year 2012.

The City offers residents recycling opportunities through drop-off events. In October 2001, the City worked with Pinal County to implement a City-wide drop-off recycling program. The City experienced a great deal of citizen participation at each of the five drop-off sites including, fire stations, City Hall and the Pinal County Complex. Items accepted at the drop-off events include plastics number 1 & 2, cardboard, aluminum cans, tin cans, paper,

junk mail, business cards, magazines, catalogues, telephone books, file folders (manila), maps, carbonless paper, paperboard, and paper bags. Items not accepted include coated boxes, facial tissue, food wrappers, hard cover books, juice boxes, laminated paper, metal fasteners, paper towels, blueprints, and paper reams and wrappers.

In addition to the recycling program, the City of Apache Junction works with Pinal County to host a yearly Household Hazardous Waste Collection Event for paint, tires and oil. The City also conducts an annual white goods event.

### **6.2.2 CITY OF AVONDALE**

The City of Avondale integrated waste management program includes solid waste collection, a transfer facility, and a curbside recycling program. The City of Avondale owns and operates a local transfer station to serve their community. From the transfer station, waste is taken to the Glendale Landfill.

The City of Avondale implemented a curbside recycling program in January 2003. The first phase of the program provided recycling containers to all single family homes within Avondale, and the communities of Cashion, Las Ligas and Rio Vista. Items accepted generally include items accepted by the Glendale MRF such as household paper, newspaper, magazines, phone books, cardboard, milk cartons, chipboard, juice boxes, aluminum, steel, tin, and plastic containers.

Public outreach and education on recycling is conducted through the City's "Phil D. Blue" Campaign, through the Valley-wide Recycling Partnership, through local newspapers, the City newsletter, community events, and through the City's Web site and solid waste telephone line. There are also private recycling enterprises within the City including Friedman, Boys & Girls Club, and at least two aluminum scrap dealers.

For residents wishing to compost, the City issues retired curbside collection containers free of charge for use as compost bins. The City periodically collects waste tires from illegal dump sites and delivers them to the Northwest Regional Waste Tire Facility. The City has one brownfield site which has been developed into a public park for the community.

### **6.2.3 TOWN OF BUCKEYE**

The Town of Buckeye integrated solid waste program includes private collection of solid waste and quarterly bulk trash collection. The Town of Buckeye contracts with the private sector for the collection of wastes. The private hauler offers residents bulk collection service on a quarterly basis. At this time, recycling programs are not offered by the private collection firm. Conceptually, a drop-off recycling program which would use bins located at various locations throughout the Town may be developed in the future.

In regard to solid waste facilities, the planned City of Phoenix State Route 85 Landfill is located within the Town of Buckeye, west of State Route 85, just south of Patterson Road, and the facility is anticipated to open around January 2006.

#### **6.2.4 TOWN OF CAREFREE**

The Town of Carefree integrated solid waste program includes private solid waste hauling services, and a Town recycling program and HHW program. The Town of Carefree uses the Cave Creek Transfer Station with Northwest Regional as its related landfill. Solid waste collection service is provided by private haulers. The Town offers a twice monthly drop-off recycling program jointly with the Town of Cave Creek. Items accepted include newspaper, cardboard, tin, glass, aluminum, and #1 & #2 plastics. In addition, the Town's Christmas Tree Recycling Program was initiated in 1999. Each year, about ten tons of mulch is produced from trees collected in the event.

The Town initiated an Annual HHW Collection Event in 2002. The Town, in cooperation with a local school, was awarded ADEQ grant funding for the first Household Hazardous Waste (HHW) Collection Event. The Annual HHW Event generally accepts paint, antifreeze, auto and household batteries, acids, cleaners, pesticides, pool chemicals, used gas cylinders, propane tanks, computers, and rimless auto tires. The Town provides public outreach on opportunities for safe HHW disposal through the local newspaper.

#### **6.2.5 TOWN OF CAVE CREEK**

The Town of Cave Creek integrated solid waste program includes private solid waste hauling services, and a Town Recycling Program and Household Hazardous Waste Program. The Town of Cave Creek uses their transfer station with the Northwest Regional as its related landfill. Several private haulers collect solid waste generated within the Town, including Waste Management, Inc., D & J Disposal, Abco Waste Management, Curbside Waste, Paradise Waste, and Area Waste.

The Town offers a Drop-off Recycling Program jointly with the Town of Carefree. The once-monthly drop off site alternates between the Town of Cave Creek and the Town of Carefree, and each event is available to residents of both communities. Items such as all paper, cardboard, all metals, glass and plastic are accepted. The Town conducts public outreach and education through the local school district and through the Valleywide Recycling Partnership at several community events throughout the year, and through billboards, buses, local government television channels, radio advertisements, local theaters, a Web site and a hotline.

The Town offers a Household Hazardous Waste program jointly with the Town of Carefree. Through the program, residents of both communities may safely dispose of HHW at an annual collection event. Generally, items accepted include paint, antifreeze, auto and household batteries, acids, cleaners, pesticides, pool chemicals, used gas cylinders,

propane tanks, computers, and rimless auto tires. The Town provides public outreach on opportunities for safe HHW disposal through the local newspaper.

### **6.2.6 CITY OF CHANDLER**

The City of Chandler integrated solid waste management program includes an existing landfill with landfill gas to energy technology and plans for a residential self-haul transfer facility for municipal solid waste to include recycling drop-offs, along with a permanent household hazardous waste collection center for its residents. The City offers curbside collection for refuse and recycling, and cardboard and white goods/appliance recovery. Neighborhood recycling drop-off sites are provided for multi-family residents. The City provides backyard composters to residents. The City has an extensive public education outreach program for its citizens to promote all of Chandler's waste and recycling programs and services. Chandler provides city-office recycling that includes commingled recycling, source-separated recycling for materials such as cardboard, batteries, recycling, ink jet/toner cartridge recycling, and scrap metal recycling.

In regard to brownfields redevelopment activities, the City of Chandler participated in the Chandler Gateway West Project in response to a developer's request. The project was successfully completed and the City does not have an ongoing brownfields redevelopment program at this time.

The City of Chandler owns and operates the Chandler Landfill, located on the northwest corner of Ocotillo & McQueen Roads. The City Landfill currently uses landfill gas to energy technology with two 150-KwH generators and 49 computerized gas wells. The landfill was expanded in year 1999 by 9.6 acres and is anticipated to reach capacity by year 2005. In regard to end use plans, the City's proposal includes an open recreational area for the Chandler Landfill, with anticipated public input. The landfill is anticipated to close in year 2005.

In year 2004, the City provides curbside recycling for about 60,000 residential households (commingled items including newspaper, paper sacks, magazines, paper, cardboard, aluminum beverage cans, steel tin cans, plastic 1-6, glass bottles 'green clear & brown,' and empty aerosol cans). For multi-family households and small commercial recycling, the City offers 9 neighborhood recycling drop-off sites throughout the community (commingled newspaper, cardboard, steel cans, aluminum cans, and plastics at some locations).

The City's White Goods/Appliance Recovery Program offers curbside pickup for single-family homes and drop-off at Chandler's Transfer Facility for multi-family residents and commercial users. The Chandler Transfer Facility offers recycling opportunities for cardboard, batteries, tires, bicycles, computers, electronics, small household appliances, and scrap metals on a drop-off basis.

Currently, the City holds two Household Hazardous Waste Collection Events each year; one in the Fall and one in the Spring. The City partners with the City of Mesa and the Town of Gilbert to provide additional events for safe disposal of household hazardous waste. Items not accepted for collection include explosives, ammunition, and radioactive material.

The City of Chandler currently offers residents backyard composters (90-gallon refuse containers modified into composters), along with an information booklet, and a step-by-step guide at no extra charge. By 2004, the City had distributed composters and educational packets to over 5,200 homes. The City of Chandler has conducted studies since 1993 on the economics of a citywide composting program. The analysis showed that the program was not economical due to the limited demand for composting in Arizona's arid desert climate. The City is committed to reviewing options for feasibly implementing green waste diversion programs, and does so every few years.

Currently, Abitibi Consolidated, a private company, operates a materials recovery facility in Chandler. This facility serves Chandler and other Southeast Valley cities with processing needs for recyclable materials.

In regard to activities related to brownfields redevelopment, the City of Chandler responded to a private developer's request to participate in the Chandler Gateway West Project near Ray Road & Interstate 10. The developer conducted brownfields redevelopment on the former 28 acre auto shredding operation. The site had been vacant for over ten years, and contaminants included lead, Polychlorinated Biphenyls, and auto shredder fluff. Through a public/private partnership, the City and a private remediation financial firm worked to redevelop this area into a successful commercial property containing a major auto dealership and restaurant and retail outlet. The project was successfully completed and the City of Chandler does not have an ongoing brownfields redevelopment program at this time.

### **6.2.7 CITY OF EL MIRAGE**

The City of El Mirage integrated solid waste management program consists of solid waste collection, bulk collection, and drop off recycling opportunities. The City of El Mirage contracts with the private sector for collection and disposal of all residential and commercial wastes. The City Parks Department contracts with a private contractor to haul tree and grass trimmings, etc. to the Northwest Regional Landfill. The City's Water Reclamation Facility also contracts with a private contractor to haul their waste to the Northwest Regional Landfill. The El Mirage Landfill was closed around 1994. The City has a Semi-Annual Loose Trash Pick-up Program and they plan to formalize this program in the future. Programs for recycling and household hazardous waste will be evaluated by the City in the future.

### **6.2.8 TOWN OF FOUNTAIN HILLS**

The Town of Fountain Hills integrated solid waste management program consists of curbside solid waste and recycling collection, drop off recycling opportunities, and public education and outreach on recycling. The Town of Fountain Hills contracts with the private sector for waste collection and curbside recycling collection. Town residents are offered once-weekly trash collection and once-weekly recyclables collection. The Town provides public education and outreach on recycling and a list of available private haulers through

the Town Web site. Drop off recycling opportunities are provided by the private contractors.

### **6.2.9 TOWN OF GILA BEND**

The Town of Gila Bend integrated solid waste management program consists of residential and commercial collection, newspaper collection for recycling, drop off recycling opportunities, and a household hazardous waste collection program. The Town of Gila Bend operates a municipal waste collection service for residential and commercial waste. Since 1993, the Gila Bend Landfill has closed, and wastes are now hauled by the Town to the Southwest Regional Landfill.

Currently, the Town Council and others in the community collect newspaper for recycling. The Town offers residents an opportunity to drop off recyclables such as aluminum cans, newspapers, glass, green waste, and even old furniture. An expanded recycling program with a public education component and a possible recycling center have been discussed for possible future implementation. At this time, the Town also offers residents an opportunity for safe disposal of Household Hazardous Wastes such as old tires, batteries, oil and paint at a drop of site within the planning area.

### **6.2.10 GILA RIVER INDIAN COMMUNITY**

The Gila River Indian Community integrated solid waste management program includes waste collection, a transfer station, and a Household Hazardous Waste Collection and Education Program. The Gila River Indian Community operates the Sacaton Transfer Station, located south of City of Chandler limits and east of Interstate-10 in Pinal County, with Butterfield as the related landfill. The transfer station consists mainly of a 40-yard bin. All trash that is collected in trucks on the Reservation goes directly to the landfill. The Gila River Indian Community is not planning any expansion at this time, as storing additional trash is not desired and demand for waste management service is limited.

The Gila River Indian Community provides an annual opportunity for the community to safely dispose of household hazardous waste. The HHW Program includes both a collection and education component. The HHW Collection Event is generally held the Friday after the Annual Tribal Fair, usually held in the Spring. Items such as batteries, oil paint, antifreeze, pesticide containers, and tires are accepted at the collection event. Items such as ammunition and radioactive materials are not accepted.

The HHW Collection Event is advertised at the Tribal Fair through items such as the Fair brochure, flyers and posters. Information on the collection event is also published in the *GRI News*, the community newspaper. The Education & Outreach Specialist also reaches the public to provide HHW information throughout the year at various community meetings and events.

### **6.2.11 TOWN OF GILBERT**

The Town of Gilbert integrated solid waste management program includes municipal collection service for residential and commercial solid waste. Services are provided in three areas: residential refuse (contained and uncontained), commercial refuse, and recycling (residential and commercial). The Town also offers drop-off programs for batteries and fluorescent light bulbs and household hazardous wastes. In addition, the Town has established extensive public education programs on recycling and safe disposal of household hazardous waste.

The Town of Gilbert provides weekly curbside residential refuse and recycling collection service to its residents. Collected refuse is taken to the Salt River Landfill. Residents of the Town may show their Town of Gilbert utility bill and driver's license to take up to one ton of trash to the Salt River Landfill once per month without additional charge. Residential recycling collections are taken to the Abitibi Materials recovery facility.

The Town provides monthly collection of uncontained bulk trash from single-family residences. This service is intended for the disposal of bulky or cumbersome items that cannot be placed in the refuse container, such as furniture, microwave ovens, televisions, dishwashers, and small rolls of carpet. Included as part of the uncontained bulk trash collection service is the collection of segregated clean green waste such as bagged grass clippings, weeds, and leaves and bundled brush, tree branches, and cuttings. The Town encourages backyard composting, and makes old, unserviceable plastic trash containers available to residents for conversion into composting bins. As a convenience for new residents, the Town also provides a one-time cardboard box and packing paper pickup service. The service is offered within 90 days of the move-in date and residents may call to schedule the pickup.

Through the Town's Appliance Recycling Program, residents may call and arrange for curbside pickup and recycling of large home appliances such as refrigerators, freezers, washers, dryers, ranges, water heaters, and air conditioners. Refrigerators and freezers are taken to Gila River Recycling and all other white goods and metal are taken to Phoenix Steel.

The Town of Gilbert Curbside Recycling Program is a commingled collection program that accepts items such as plastics, tin cans, aluminum cans, glass, paper, newspaper, cardboard, and chipboard boxes. Items such as plastic grocery bags, aluminum siding, aerosol cans, telephone books, light bulbs, and mirrors are not to be placed in the recycle bins. Drop-off sites are provided at Freestone Park, Crossroads Park, and McQueen Park for recycling telephone books.

The Town offers a residential fluorescent light and battery drop-off at the Public Works Field Operations Facility for recycling of certain types of batteries and fluorescent light bulbs. Incandescent light bulbs are recommended for disposal in the regular curbside refuse container. Lead-acid (vehicle) batteries are not accepted at the drop off site, but

residents are referred to contact battery supply companies for recycling/disposal options.

The Town of Gilbert has established an annual Household Hazardous Waste Collection Event for all Gilbert residents. The event is also open to residents of the Cities of Chandler and Mesa, and Gilbert residents are able to participate in collection events conducted by Chandler and Mesa. Residents are asked to present a picture identification and a copy of the most recent refuse bill (single family home) or rent receipt (multi-family unit) in order to participate in the event. Items accepted include household cleaners, solvents, thinners, pesticides, pool chemicals, auto fluids (limit 5 gallons), paint/stain/varnish (limit 5 gallons), batteries, automobile tires, and adhesives. Items not accepted include ammunition, commercial/business waste, explosive material, radioactive waste, and medical waste. Commencing in 2003, a second, smaller Batteries, Oil, Paint and Antifreeze (BOPA) collection event will be conducted at mid-year. For the future, the Town is in the design phase of constructing a permanent Household Hazardous Waste Collection Facility that would accept HHW from Gilbert residents year round. The planned facility is anticipated to open in the summer of 2006.

Through its Commercial Collection Program, the Town provides full service trash and cardboard recycling collection services to Gilbert businesses per individual service agreements, using metal containers, roll-off and compactor service, plastic containers, and recycling containers. Collected trash is taken to the Salt River Landfill, and cardboard is taken to River Recycling.

#### **6.2.12 CITY OF GLENDALE**

The City of Glendale integrated solid waste management program includes a landfill, materials recovery facility, curbside collection programs for refuse and recycling, white goods and electronic waste recycling opportunities, and public education and outreach programs.

The City of Glendale owns and operates the Glendale Landfill, located at 115<sup>th</sup> & Glendale Avenues. The City is planning to expand the landfill by 120 acres in about ten years, with expansions funded through user fees. The landfill is anticipated to remain open until year 2046 and includes white appliances and electronics recovery programs. The landscape waste grinding program was discontinued in June 2002. For potential closure options, a landfill development plan was approved by the Glendale City Council in February 2001 which identifies conceptual land use options ranging from returning the landfill to desert to developing the landfill into recreational areas. Any recreational area options would be coordinated with the City's master plan and regional recreation facilities.

Through their recycling program, the City has achieved a diversion rate of over 20 percent of the residential waste stream for the City of Glendale. In year 2002, the City's recycling program conducted curbside collection to 51,000 residential households (commingled recyclables such as paper, cardboard, plastic, and aluminum/metal containers), commercial collection from City offices and participating commercial customers, and

commercial collection of community drop-off sites (commingled and glass recyclables). The city conducts extensive public recycling education and outreach through their City newsletter, Web site, hotline, and community events.

Also, the City owns and operates a Materials recovery facility, located at 6210 West Myrtle in Glendale, with a 2002 capacity to process 125 tons per shift, per day for a total of 65,000 tons per year. The City staff also works on market development with material mills and brokers. The City provides an extensive public outreach program to educate the public on recycling which includes publication of educational materials, presentations, and MRF tours.

The City provides a White Goods/Appliances Recovery Program and an Electronics Waste Recovery Program at the Glendale Landfill. The City previously operated a municipal level composting program, but found composting to be ineffective based on market value and production costs. The City has researched landfill gas-to-energy projects and continues to assess available options.

The City hosts an Annual HHW Collection Day, typically in March. The event is located at a single site each year and is supplemented with a two week "on-call" collection service which can be requested by the resident. Types of HHW items accepted include paints, stains, antifreeze, motor oils and filters, batteries, pesticides, acids, chemicals, ignitable liquids, and propane containers. HHW types not accepted include explosives, medical wastes, radioactive materials tires, drums, or business generated wastes. The HHW program includes a public education component with a hotline phone number.

### **6.2.13 CITY OF GOODYEAR**

The City of Goodyear integrated solid waste management program includes curbside refuse collection, a drop-off recycling program, graffiti abatement, a drop-off household hazardous waste collection program, and a possible future privately owned transfer station located at Perryville Road and Interstate 10. The City of Goodyear provides manual curbside solid waste collection service for its residents. Generally, collected waste can be disposed at the Southwest Regional Landfill, the City of Glendale Landfill or the Paradise Waste Transfer Station.

The City of Goodyear provides its residents with a commingled drop-off recycling program, with six sites throughout the City. Each site consists of one or two 20-yard roll off bins with easily accessible lids and the recycling commodities are transported to the City of Glendale Materials recovery facility for processing and marketing. Recyclable items accepted include paper, aluminum cans, cardboard, cartons, chipboard, water and soda bottles, milk and water jugs, and steel/tin cans. Items such as glass and hazardous waste are not accepted.

In March 2002, the City sponsored the Southwest Valley Regional Household Hazardous Waste Collection Day Event with participating members such as the Cities of Avondale,

Litchfield Park, and Tolleson, and the Town of Buckeye. Funding for the event was obtained through the ADEQ as funding added to the previously awarded grant for development of the Southwest Valley Regional Recycling Master Plan. On April 12, 2003, the City of Goodyear conducted a Household Hazardous Waste Collection Day which included participation from City of Litchfield Park residents. Items such as adhesives, aerosols, auto products, batteries, flammables, fluorescent tubes, thermostats, paint, poisons, fire extinguishers, asbestos and smoke detectors are accepted. The City also accepts tires at their HHW event, and the City annually receives a permit from Maricopa County to dispose the tires at the Northwest Regional Landfill at no cost.

With the possible siting of a transfer station facility within the Goodyear Municipal Planning Area, the City is considering the advantages and disadvantages of potential regional or partnering options associated with the planned future transfer station.

#### **6.2.14 TOWN OF GUADALUPE**

The Town of Guadalupe contracts with the private sector for the collection of wastes. Historically, the City of Tempe Household Hazardous Products Collection Center has accepted household hazardous waste from residents of the Town of Guadalupe.

#### **6.2.15 CITY OF LITCHFIELD PARK**

The City of Litchfield Park contracts with the private sector for waste collection. In 1993, private contractors offered recyclables collection to residents, but the service was discontinued by the contractor due to cost factors. The City would like to become more involved in solid waste management and possibly offer collection service within the next five years or so. Currently, City of Litchfield Park residents may drop off recyclables at the City of Goodyear bin. The City would like to continue to evaluate the feasibility of recycling opportunities for their residents in the future. The City provides public education and outreach on recycling to residents through the Valleywide Recycling Partnership and through the City Web site.

The City of Litchfield Park provides an annual opportunity for safe disposal of household hazardous waste through the Annual HHW Collection Event in partnership with the City of Goodyear. The City provides public outreach on the event through their Web site and through the local newspaper. Items accepted include paint related materials, aerosol cans, adhesives, motor oil, antifreeze, appliances (limit 2), fuel additives, pool chemicals, gasoline, batteries, mercury, pesticides, and electronics. Items such as auto/large truck tires, commercial/industrial waste, radioactive material, explosives, bullets, and 55 gallon drums of material are not accepted at the event.

#### **6.2.16 MARICOPA COUNTY**

Maricopa County owns and operates several transfer stations in outlying areas of the County. Included are the Cave Creek, Aguila, Morristown, and New River Transfer

Stations. Also included are the Wickenburg Transfer Station, which uses Northwest Regional as its related landfill and the Rainbow Valley Transfer Station, which uses Southwest Regional as its related landfill. Generally, the County's transfer stations each consist of 40-yard containers that are open to the public two days per week.

The County is currently conducting a feasibility study to convert methane landfill gas into electricity at the Queen Creek Landfill. The County administers a Waste Tire Recycling Program to help reduce illegal dumping.

To encourage brownfields redevelopment, the Maricopa County Contaminated Property Tax Reduction Program was designed to promote cleanup of contaminated properties by providing financial incentive through tax reduction. The *Arizona Brownfields Tax Abatement Law*, effective December 31, 2001, provides the County Board of Supervisors the authority to abate delinquent property taxes owed on properties with significant environmental contamination or petroleum. The County may reduce the lien for delinquent taxes, interest, costs and penalties if the property is determined to be substantially contaminated with hazardous substances or petroleum. Maricopa County has established processes to implement this law.

#### **6.2.17 CITY OF MESA**

The City of Mesa integrated solid waste management program includes curbside collection of refuse, recycling, green waste, and appliances, and extensive public education programs. The City also participates in-house recycling of various items. Curbside refuse collections are hauled to the Salt River Landfill. Each of the City of Mesa recycling programs include a public education component that consists of flyers, truck signs, web page information, informational articles for newsletters, presentations, participation in local events and personalized customer service.

The City of Mesa Recycling Program includes a curbside collection program, drop-off program and a public education and outreach component. The City's curbside recycling program includes newspaper, aluminum, cardboard, telephone books, paper, direct mail, plastic bottles, jugs and jars, and magazines. Collected recyclables are hauled by the City to the Salt River Landfill Materials recovery facility (River Recycling) and to Abitibi Consolidated. There are two recycling drop-off sites in the City which accept aluminum, glass, newspaper and cardboard. The City also offers its commercial customers cardboard and newspaper recycling free of charge.

For green waste, the City maintains a curbside recycling program for green waste material. Weekly, the material is collected and hauled to the Salt River Landfill where it is mulched and composted. Other green waste material is collected from commercial businesses through roll-off containers. Christmas trees are collected curbside or via drop-off locations during the holiday season. All green waste material is taken to the Salt River Landfill for mulching and compost production.

For appliances, the City provides residential curbside appliance collection services and sells them to a local appliance recycler. The City provides a Household Hazardous Waste Collection Program for residents through which appliances, electronics, batteries, tires, and paint are recycled or reused.

The City provides Household Hazardous Waste Collection Events every other month for its residents. As part of these events, the City partners with the Town of Gilbert and the City of Chandler to allow their residents access to two events per year. The events are free of charge for Mesa residents and are hosted by the Solid Waste Division, the Environmental Services Division and the Fire Department. With the exception of radioactive materials, commercial and industrial wastes, oversized tires, explosives and large 55-gallon containers, most other materials are accepted.

The City of Mesa makes backyard composters, created from unusable curbside barrels retrofitted for airflow, available to its residents along with composting instructions for a nominal refundable deposit. The City also offers numerous in-house programs including commingled recycling, sources separated recycling, battery recycling, inkjet/toner cartridge recycling, and scrap metal recycling.

#### **6.2.18 TOWN OF PARADISE VALLEY**

Residents of the Town of Paradise Valley and businesses in the Town contract independently with private sector contractors for the disposal of wastes. Curbside recycling collection is available through some of the private providers and residents may choose to enlist for private recycling collection service.

#### **6.2.19 CITY OF PEORIA**

The City of Peoria integrated solid waste management program consists of residential and commercial waste collection, drop off recycling opportunities, and drop off and curbside household hazardous waste collection. The City collects all residential waste and about 10 percent of the commercial waste generated in the City. The City provides bulk waste collection for a fee.

Currently, the City provides drop off recycling opportunities to its residents. Sites for recyclable aluminum and newspaper were initiated in 1997. In July 2003, the recyclable drop off sites were upgraded to accept commingled recycling. The City's Household Hazardous Waste Program consists of five drop off events each year and curbside pickup may be requested by residents.

#### **6.2.20 CITY OF PHOENIX**

The City of Phoenix integrated solid waste management program includes landfills, transfer stations, Materials Recovery Facilities, curbside refuse and bulk waste collection, a curbside and drop off recyclables program, a green waste mulching program, a household

hazardous waste program, an appliances and electronics collection and recycling program, extensive public education and outreach programs, and a brownfields land recycling program.

In regard to landfills, the City of Phoenix State Route (SR)85 Landfill is planned to open in January 2006. The city owned landfill would be located west of SR85 and south of Patterson Road with a planned capacity of over 50 years. The existing City of Phoenix Skunk Creek Landfill, located one quarter mile west of Interstate 17 on Happy Valley Road, is anticipated to close in January 2006.

In regard to landfill end use plans, the City of Phoenix indicates that their Del Rio Landfill has potential for development of a golf course or park on the site. Their Skunk Creek Landfill is expected to close in January 2006, and the area will be turned over to the City Parks Department for use. The Deer Valley Landfill has closed and is currently being used as a golf course and park. For the City of Phoenix 27<sup>th</sup> Avenue Landfill, a master plan is currently being developed called the Center for Environment Learning and Enterprise (CELE).

The City's Skunk Creek Landfill operates a recycling transfer station in addition to a recycling drop off area for mixed metals, carpet, mattresses, used motor oil, batteries, and appliances with or without Chloro-fluorocarbon (CFC's). The City anticipates that their planned North Gateway Transfer/Materials Recovery Facility (MRF) will open in January 2006. The existing City of Phoenix 27<sup>th</sup> Avenue Solid Waste Management Facility is a materials recovery facility which recovers over 300 residential tons per day.

The City of Phoenix provides weekly curbside refuse collection for its single family home residents. Weekly curbside recycling collection is also provided by the City. Curbside bulk trash pick up is offered by the City four times each year for items not well suited for disposal in the refuse or recycling bins such as tree limbs, bagged lawn waste, carpet, televisions and refrigerant/CFC-free large appliances.

Residential waste accounts for about half of Phoenix's total solid waste stream. "Phoenix Recycles" provides residents the opportunity to reduce the amount of waste headed to Phoenix landfills by about 20 percent. The City of Phoenix has worked with other local and State government agencies in the development of the award-winning Valleywide Recycling Partnership. These 14 cities and towns and the Arizona Department of Environmental Quality have worked together for three years developing mass media recycling campaigns to educate the public on recycling.

In regard to diverting green waste from the solid waste stream, the City contracts out mulching of green waste at the 27<sup>th</sup> Avenue Transfer Station. At Skunk Creek Landfill, green waste is ground to be used as alternate daily cover. For residents wishing to home compost, the City offers composters and yard carts (constructed from damaged garbage cans). The composters are available for a minimal fee at the Skunk Creek Landfill and the 27<sup>th</sup> Avenue Solid Waste Management Facility.

For safe disposal of household hazardous waste, the City's Public Works Field Services Special Operations Section conducts ten HHW collection events a year (none in July or August). Each event is held at a different location throughout the City of Phoenix to allow customers to dispose of or recycle items properly which diverts them from the waste stream. Items accepted are: auto batteries, motor oil, paint, antifreeze, standard size vehicle tires, white goods and appliances (with and without refrigerants or CFCs), pool chemicals, herbicides, pesticides, contaminated fuel, electronic equipment, computers (including monitors, hard drives, printers, etc.), microwave ovens, propane tanks, cylinders, and fire extinguishers.

The City of Phoenix Appliances & Electronics Collection and Recycling Program provides residents with curbside collection of large appliances and computers. Residents may call the City to request pick up and there is a minimal fee for the service. Materials collected are direct hauled to a recycling facility (scrap metal dealer) or taken first to the 27<sup>th</sup> Avenue Solid Waste Facility for removal of the regulated materials, and then taken to a recycling facility. The goal of the program is to take tons of reusable and recyclable materials out of the solid waste stream. The City also refers residents to the phone directory for computer repair shops, charitable reuse facilities, and the Students Recycling Used Technology "stRUT" Web site (a partnership between local schools and businesses where students learn computer refurbishing skills and computers are donated to schools and non-profit organizations in Arizona).

For safe used tire disposal, the City of Phoenix accepts up to five program tires per year from residents. The City of Phoenix takes the tires they receive to the closest permitted disposal facility and the program is running well. In Fiscal Year 2003-2004, 32,707 tires were hauled to a permitted facility.

The City of Phoenix initiated a Brownfields Land Recycling Program in 1998 to stimulate reinvestment in one of the City's greatest assets: the available commercial land base in the inner city. The City's goal is to encourage the private sector to examine the advantages of renovating or developing environmentally contaminated properties. Brownfields are a resource for the City because their redevelopment contributes to community revitalization by cleaning up and creating use of blighted, contaminated properties, creating jobs; bringing services to the community; and generating tax revenues.

The program offers various forms of assistance to property owners and developers as they confront obstacles resulting from environmental contamination. Limited financial assistance is available to the private sector for grants for public infrastructure improvements and development fees. Brownfield projects completed in Phoenix have resulted in the restoration of over 235 acres of previously contaminated property, the creation of more than 3,000 jobs and total private investment of approximately \$245 million.

### **6.2.21 TOWN OF QUEEN CREEK**

The Town of Queen Creek integrated solid waste management program includes curbside waste collection by the private sector, and a County owned landfill. Residents of the Town of Queen Creek currently have the option of contracting with the private sector for the collection and disposal of wastes, or disposing of wastes directly in the Maricopa County Queen Creek Landfill. At this time, there are no recycling collection programs offered. The Town has been involved in the East Valley Communities Recycling Committee, which seeks to develop a regional recycling facility.

At the present time, Maricopa County is considering the future potential for a landfill in the southeastern part of Maricopa County or adjacent Pinal County as possible a replacement for the Queen Creek Landfill.

### **6.2.22 SALT RIVER PIMA MARICOPA INDIAN COMMUNITY**

The Salt River Pima Maricopa Indian Community (SRPMIC) integrated solid waste management program includes a landfill with a materials recovery facility, green waste program, white goods program, public education and outreach, and an electricity generating plant fueled by landfill gas. The SRPMIC owns and operates the Salt River Landfill located at State Route 87 and Gilbert Road on the SRPMIC land. The landfill opened in 1993 and development has been planned in six phases.

The SRPMIC Public Works Department has expressed interest in exploring the possibility of a future household hazardous waste program; however, the Salt River Landfill currently has no immediate plans to establish a household hazardous waste program. Currently, the Salt River Landfill accepts recyclables from the Cities of Mesa and Scottsdale. In September 2002, Public Works initiated a pilot curbside recycling program for the Salt River Community of Lehi.

The Salt River Landfill has developed recycling and green waste programs at the landfill site. A large materials recovery facility was recently constructed at the landfill, which includes a recycling education outreach component. An award winning educational recycling video, which provides an overview of the facility and current recycling initiatives is available for viewing by interested communities.

The goal of this state of the art, 200 acre solid waste landfill and materials recovery facility is to recycle as much as possible and significantly reduce the volume of the remaining solid wastes. On the average, the landfill accepts about two thousand tons of waste each day for disposal, recycling or composting. The Cities of Scottsdale Mesa collect garbage, recyclables, green waste and bulk waste and transport it to the Salt River Landfill either directly or through a transfer station. The Town of Gilbert also transports solid waste collected in their residential program to the landfill. The landfill also has a white goods program for major appliances such as, refrigerators, washing machines, dryers, and water heaters.

The landfill's green waste area is where green waste is sorted and processed into mulch. About 50,000 tons of green waste is diverted from the landfill each year. Landfill space is also saved through the thousands of tons of metal diverted each year through the white goods program. Recycling materials like paper, plastics and glass processed through the materials recovery facility saves large volumes of landfill space.

The Salt River Landfill in partnership with Salt River Project (SRP) operates an Alternative Energy Research Park, which includes an innovative electric generating plant converting solar energy from a reflective dish to electricity by a sterling engine.

At the now closed Tri-Cities Landfill, methane gases generated from this capped landfill are utilized as an alternative fuel source through a co-generation facility with SRP, where a series of reciprocating engines convert the landfill and methane gas to electricity. The generated electricity is delivered to the local electrical grid system.

### **6.2.23 CITY OF SCOTTSDALE**

The City of Scottsdale integrated solid waste management program consists of a transfer station, curbside residential refuse and recycling collection, drop off recycling collection, commercial refuse and recycling collection, a green waste program, a household hazardous waste program, a home composting program, and special curbside collection programs. The Salt River Landfill, owned and operated by the Salt River Pima-Maricopa Indian Community, is located within the Scottsdale Municipal Planning Area.

The City of Scottsdale Transfer Station, owned by the City, is located on Union Hills Drive just west of Pima Road on over eight acres of land. The Scottsdale Transfer Station has a capacity of approximately 500 tons per day. The City offers educational tours of the facility to the public. The City has found that utilizing the Transfer Station has reduced mileage driven by City collection vehicles by about 160,000 miles on an annual basis.

The City of Scottsdale curbside refuse collection program covers all of the residential areas of the City. Generally, the collected refuse is taken to the Salt River Landfill. In addition, Scottsdale's single family residential customers may haul a limited amount of refuse, brush or bulk items generated from their property to the Salt River Landfill free of charge provided they adhere to the landfill usage guidelines.

For convenience, and to divert these items from being landfilled, the City offers residents two special collection programs: a One-Time Move-in Box Collection for New Residents and Appliance Collection for Residential Customers. Residents may schedule these collection services in advance, and guidelines for the services have been developed by the City.

The City offers commercial refuse collection services for a fee to meet the waste management needs of businesses. The City also offers commercial recycling opportunities to eligible businesses and multi-family commercial customers. For big jobs, such as

business, construction, industrial and large residential clean up projects, the City offers commercial roll-off box services.

In regard to source reduction and recycling programs, the City of Scottsdale offers curbside, drop off, and commercial recycling opportunities. Recyclables collected by the City are generally taken to the River Recycling Materials recovery facility. All residential single family households receive one collection of recycling weekly. The City also offers electronics recycling. Public education on recycling is provided by the City through presentations, brochures, a Web site and a phone line. Recycling participation is also encouraged by Scottsdale's Recycling Mascot, Wyatt Earth.

For Scottsdale residents, the City offers backyard composters for sale and home composting information. The City provides home composting education on their Web site and through a solid waste department phone line.

Through the City of Scottsdale Green Waste Program, green waste from residential brush bulk piles is collected and transported to the green waste processing area of the Salt River Landfill. At the landfill, moisture is added to the ground up green waste and turning is conducted to produce mulch which is then bagged and transported to local home and garden stores for sale. Landfill tipping rates for the green waste are lower than for refuse since the green waste goes to the special green waste area for mulch production and sale.

The City of Scottsdale has a Household Hazardous Waste Program and a total of three collection events were conducted in Fiscal Year 2002 during November, January and April. Items such as paints, solvents, insecticides, oil, poisons, acids and batteries are accepted. The City provides education on safe household hazardous waste disposal options to its residents through their Web site and through a solid waste department phone line.

#### **6.2.24 CITY OF SURPRISE**

In the City of Surprise, commercial wastes are collected by the private sector and most residential wastes are collected by the City. In certain neighborhoods, residential wastes are collected by the private sector to facilitate specialized service requirements, such as private and rural access conditions and in-ground containers. Implementation of a recycling program is underway as a part of an "Environmental Program Package." Curbside recycling will be phased in to all City sanitation customers beginning as a pilot program in October, 2003 and on through complete participation by all City sanitation customers by summer, 2004.

Other components of the City's environmental program will include three Household Hazardous Waste disposal events beginning in November, 2003, electronics recycling events, and mulching, composting and general waste reduction and recycling education in all the local schools, at City-sponsored events and various civic and organizational meetings and events. An analysis of other solid waste management and environmental and recycling options that would be feasible for implementation in Surprise will also be

undertaken on a continual basis.

### **6.2.25 CITY OF TEMPE**

The City of Tempe integrated solid waste management program includes residential curbside refuse and recycling collection, a permanent Household Products Collection Center, and a commercial recycling program. The City is currently participating with a private developer on a major brownfields cleanup and redevelopment project.

The City of Tempe provides curbside collection of solid waste generated from residential and selected commercial establishments and collection of uncontained residential waste. Currently, the City collects all residential waste and about 60 percent of the commercial waste. Refuse collected is disposed at the Waste Management Sky Harbor Transfer Station, with Butterfield as its associated landfill. For commercial accounts, the City provides metal bulk solid waste containers. Upon request, the City provides bins to businesses for recyclables such as paper and cardboard. The City also offers businesses the option of a bin for commingled recycling collection. These business recycling bins are picked up by City crews on the same days as residential collection.

The City's Curbside Recycling Program, initiated in 1993, provides curbside collection of commingled recyclables for residential areas. Currently, curbside recycling collection is provided to single-family residences, duplexes, and townhouses for items such as plastic, glass, aluminum, steel (tin) cans, cardboard, chipboard, paper, and newspapers. The City has an extensive public education and outreach program for recycling including visiting local schools and neighborhood association events.

In 1993, the City of Tempe adopted a goal of recycling up to 30 percent of the waste stream. Currently, the City has succeeded in achieving a 24 percent recycling level and continues to work to keep increasing this level with their recent addition of a new form of recycling education with signs promoting recycling mounted on solid waste collection trucks. For individual residential composting, the City provides an informational brochure on how to get started.

The City of Tempe first offered residents an opportunity for household hazardous waste collection in 1990 through a partnering effort with the Cities of Mesa and Scottsdale. The City of Tempe Household Products Collection Center, (located on the northeast corner of Dorsey and University), opened in April 1999 as the first permanent collection center of its type in the Valley. The facility accepts unwanted household and automotive items from residents of Tempe and Guadalupe. Residents must provide proof of residency with a water bill or Arizona Driver's License. In addition, the City has a Pollution Prevention Program to educate residents on topics such as safe disposal of Household Hazardous Waste.

Types of residential waste accepted at the facility include antifreeze, battery acid, paint, paint thinners, fluorescent lamps, poisons, insecticides, herbicides, medicines, motor oil

and oil filters, ammonia cleaners, pool cleaners, and many other miscellaneous materials. The facility does not accept commercial waste, ammunition, fireworks, blasting caps, radioactive materials, medical waste, or compressed gas cylinders.

The City strives to reuse or recycle the majority of items received. Household products brought to the facility are sorted by hazard class and either packed individually in drums or bulked into larger drums with other compatible materials. Various products received by the facility are processed differently depending upon their type and chemical characteristics. The City conducts periodic advertisement of the facility through City water bills such as a reminder that, with spring cleaning, household products may be brought to the facility for reuse recycling or safe disposal. Through the City's reuse program, residents may even shop for certain items such as paint or fertilizers.

In regard to brownfields cleanup and redevelopment activities, the City of Tempe is currently working with a private firm on the Crossfield Project, which is comprised of 220 acres of industrial property divided into 95 parcels and owned by over 40 parties. Industrial activities conducted on the brownfields area have included aggregate mining and processing operations, salvage yards, landfills, industrial manufacturing, gold extraction, and other activities.

The City has acquired the property and officially designated the area as a Redevelopment Area. The City plans to conduct redevelopment through a public/private partnership. The City, working with the ADEQ Voluntary Remediation Program, was able to obtain a partial CERCLA deletion removing 100 acres of the site from the EPA National Priorities List. The City plans to continue to work with ADEQ to conduct the next steps of the process which include site inspections, additional record searches, demolition of structures, waste removal, area-wide assessments and risk evaluation, location-specific remediation projects, a No Further Action Determination, addressing environmental insurance, and conducting data management.

#### **6.2.26 CITY OF TOLLESON**

The City of Tolleson integrated solid waste management program includes a collection program for residential and commercial waste, a bulk waste collection program, recycling education and study, and participation in a joint household hazardous waste collection event. The City of Tolleson operates a municipal collection system for commercial and residential waste. The City also provides curbside collection for bulk waste.

In March 2002, the City of Tolleson participated in the Southwest Valley Regional Household Hazardous Waste Collection Event with the Cities of Avondale, Goodyear, and Litchfield Park and the Town of Buckeye. The City of Tolleson also participated in the Southwest Valley Regional Recycling Master Plan with these same jurisdictions. Currently, the City of Tolleson provides recycling education to the public through the City Web site and the Valley-wide Recycling Partnership. The City is pursuing recycling needs for the community and indicates that the population has remained steady at approximately 5,000

people.

### **6.2.27 TOWN OF WICKENBURG**

The Town of Wickenburg integrated solid waste management program includes curbside refuse collection, a green waste mulching program, a drop off recycling program, an annual bulk trash collection event and a County owned transfer station. The Town of Wickenburg collects residential wastes from the Town for disposal at the Northwest Regional Landfill. In 1993 the Wickenburg Landfill was closed due to life cycle factors.

The Town of Wickenburg has a newly built recycling collection drop-off point adjacent to the Wickenburg Transfer Station. The County owned transfer station is located near the old Wickenburg Landfill site and generally serves the unincorporated surrounding areas.

Through the Town's green waste mulching program, residential green waste from the Town and some surrounding areas is collected at the recycling drop-off point. The Town works jointly with the Natural Resource Conservation District to provide an annual residential bulk trash collection day.

### **6.2.28 TOWN OF YOUNGTOWN**

The Town of Youngtown integrated solid waste management program includes private sector curbside waste collection and drop off recycling, Town cleanup events, and a potential future household hazardous waste program. Residents and businesses of Youngtown independently contract with the private sector for the collection of solid wastes. At this time, the recycling program consists of weekly newspaper collection by the private hauler and drop-off newspaper collection offered by the Lion's Club at a local grocery parking lot. Previously, the private hauler offered collection of plastic and glass, but collection of these items was discontinued.

The Town conducts two cleanups each year for items such as appliances and old tires. A local company removes Freon from the appliances free of charge and the Town's private hauler disposes of the appliances at no cost to the Town.

The Town is working to provide its residents with an opportunity for safe disposal of Household Hazardous Waste through an annual collection event. Through a partnership with the Cities of Surprise and El Mirage, Youngtown has applied for ADEQ funding for establishment of a HHW program which would include public outreach and education. If the funding is obtained, it is anticipated that residents of all three communities would be able to participate in the collection sites located in Surprise and El Mirage.

### **6.3 ASSESSMENT OF SOLID WASTE MANAGEMENT FACILITIES**

The existing and planned solid waste facilities of various types in Maricopa County are listed in Table 6.2 and their locations are shown in Figure 6-1. The ability of currently existing and planned solid waste management facilities to meet current and future solid waste management needs in Maricopa County was assessed in the *Draft March 2003 MAG Regional Growing Smarter Implementation: Solid Waste Report* (Appendix E).

The report was designed to highlight solid waste management planning issues and challenges for the region and local governments relative to future landfills. It was one of a series of MAG technical reports regarding future population growth and infrastructure under the Transportation and Community Systems Preservation Pilot Program. In February 2003, the MAG Solid Waste Advisory Committee reviewed the study and comments received were incorporated. The report provided a comprehensive look at future demand and supply needs for landfill capacity in Maricopa County, specifically in years 2000, 2010, 2025, 2040 and build out (2050).

Generally, the report projected that overall landfill disposal capacity would be in excess of needs during the current 20 year planning period and beyond year 2050 build out. During the current 20 year planning period, landfill disposal is anticipated to continue to have a primary role in meeting the solid waste management needs of the region. For the net landfill capacity analysis in the report, it was assumed that shifts to alternative landfills and additional transfer stations would occur as needed.

In the report, the remaining net landfill capacity was projected for incremental periods through buildout (years 2000, 2010, 2025, 2040, and 2050). The analysis compared the annual required capacity to the available capacity. For the current 20 year planning period of the *MAG Regional Solid Waste Management Plan*, the report concluded that the Maricopa County region would have over 300.98 million tons remaining landfill capacity in year 2010 and over 255.91 million tons remaining in year 2025. On a regional basis, at build out, 153.44 million tons net landfill capacity was projected and this capacity was identified to last about 30 years beyond year 2050 build out. These figures were dependent on the actual level of future recycling and the number of curbside recycling programs.

**TABLE 6.2**  
**MAG SOLID WASTE MANAGEMENT FACILITIES SUMMARY**  
**2002**

<b>OPERATING SOLID WASTE LANDFILLS</b>						
LANDFILL NAME	REMAINING CAPACITY (Million Cubic Yards)	REMAINING YEARS	ANTICIPATED YEAR OF CLOSURE	OWNER	LOCATION	OTHER COMPONENTS
Apache Junction		10	2012	Allied Waste Industries, Inc.	Tomahawk & Baseline. 4050 Tomahawk Road Apache Junction, Arizona	
Butterfield Station		108	2110	Waste Management, Inc.	One mile north of 238 on 99th Ave. 40404 South 99 <sup>th</sup> Avenue Mobile, Arizona 85239	Generally accepts MSW, C & D debris, special wastes, non-hazardous de-watered sludges, green waste, NHLW.
Chandler	13,888 (250,000 tons) Assuming 1,800 lbs = 1 ton	2.5	June 2005	City of Chandler	Northwest corner of Ocotillo Road & McQueen Road. 3200 South McQueen Road Chandler, Arizona	Life Cycle. Current last cell is Subtitle D.
Glendale	39	43	2046	City of Glendale	115 <sup>th</sup> Ave & Glendale Ave (½ mile east of Agua Fria River). 11480 West Glendale Avenue Glendale, Arizona	Landscape waste grinding was discontinued July 2002.
Northwest Regional	85	99	2102	Waste Management Inc.	Deer Valley Road & 195 <sup>th</sup> Avenue. 19401 West Deer Valley Road Surprise, Arizona 85387	Waste tire collection center.
Queen Creek		2	2003-2005	Allied Waste Industries, Inc.	½ mile south of Chandler Heights Road on Hawes Road.	Local concerns; availability of new Southeast regional facility. Planned site for composting of NHLW. Potential consideration of expansion.
Salt River Landfill		12	2015	Salt River Pima Maricopa Indian Community (SRPMIC)	SR 87 & Gilbert Road. 13602 East Beeline Highway Scottsdale, Arizona	Life Cycle. Green waste mulching and composting, white goods program.

**TABLE 6.2  
MAG SOLID WASTE MANAGEMENT FACILITIES SUMMARY  
2002**

LANDFILL NAME	REMAINING CAPACITY (Million Cubic Yards)	REMAINING YEARS	ANTICIPATED YEAR OF CLOSURE	OWNER	LOCATION	OTHER COMPONENTS
Skunk Creek	1 million cubic yards as of September 2004.	1.5	January 2006	City of Phoenix	1/4 mile west of I-17 on Happy Valley Road. 3165 West Happy Valley Road Phoenix, Arizona	
Southwest Regional	26	48	2051	Allied Waste Industries, Inc.	8 miles south of Buckeye, east of State Highway 85. 24427 South Highway 85 Buckeye, Arizona 85326	

<b>PLANNED SOLID WASTE LANDFILLS</b>						
LANDFILL NAME	PLANNED CAPACITY (YEARS)	PLANNED SIZE (ACRES)	EXPECTED YEAR OF OPENING	OWNER	LOCATION	ADDITIONAL COMPONENTS (Conceptual)
SR 85	Approx. 50	2,652	2006	City of Phoenix	West of Southern Route (SR) 85 & south of Patterson Road.	
Southpoint Environmental				Southpoint Environmental Services	In Maricopa County, approx. 200 feet from Pinal County line, north side of SR 238. Mobile, Arizona	
Cactus Waste			Under construction 2004	Capital Environmental Resources, Inc./Waste Services, Inc.	22841 E Deepwell Road Florence, Arizona (In Pinal County)	

**TABLE 6.2**  
**MAG SOLID WASTE MANAGEMENT FACILITIES SUMMARY**  
**2002**

<b>CLOSED SOLID WASTE LANDFILLS</b>				
LANDFILL NAME	YEAR OF CLOSURE	OWNER	LOCATION	REMARKS ON CLOSURE
Cave Creek	1999	Maricopa County	3 miles west of Cave Creek Road, south side of Carefree Highway.	Life Cycle. Transfer station constructed.
Gila Bend	1997	Maricopa County	50252 South Old US 80.	RCRA regulations. Closed.
Gila River Indian Community (GRIC) District 6	1995	GRIC	Between 51 <sup>st</sup> Avenue & the Gila River.	Life Cycle. Closed.
Hassayampa	1997	Maricopa County	Salome Highway & Ward Road/ Baseline Road.	RCRA regulations. Closed.
New River	1997	Maricopa County	3½ miles west of I-17 on New River Road.	Closed. Transfer station constructed.
Sacaton	N/A	GRIC	South of the City limits of Chandler & East of I-10 in Pinal County.	Life Cycle. Closed, transfer station constructed.
Tri-City	N/A	SRPMIC	11630 East Beeline Highway. Scottsdale, Arizona 85256 South side of State Highway 87	Closed. Gas to energy conducted at capped landfill.
27 <sup>th</sup> Avenue	1995	City of Phoenix	27 <sup>th</sup> Avenue & Lower Buckeye Road. 3060 South 27 <sup>th</sup> Avenue Phoenix, Arizona	Closed. City developing end use master plan for Center for Environmental Learning and Enterprise.
Wickenburg	1997	Town of Wickenburg	NE quarter, Section 7, township 7N, range 5W.	Closed October 1, 1997.

**TABLE 6.2  
MAG SOLID WASTE MANAGEMENT FACILITIES SUMMARY  
2002**

<b>INACTIVE LANDFILLS</b>				
LANDFILL NAME	YEAR BECAME INACTIVE	OWNER	LOCATION	REMARKS ON INACTIVITY
Sierra Estrella	Unknown	Waste Management Inc.	22087 N Ralston Road Maricopa, Arizona (In Pinal County)	Reportedly still a permitted facility.

<b>EXISTING TRANSFER FACILITIES</b>				
TRANSFER FACILITY NAME	OWNER/OPERATOR	LANDFILL FOR DISPOSAL	TYPES OF WASTE ACCEPTED	TRANSFER STATION LOCATION
Aguila	Maricopa County	Northwest Regional	Residential	3 miles west of Aguila on State Highway 60. 48848 North 531 <sup>st</sup> Avenue Aguila, Arizona 85320
Avondale	City of Avondale	Glendale	Residential	South of Lower Buckeye Road & 4 <sup>th</sup> Street, adjacent to old treatment plant site. 395 East Lower Buckeye Road Avondale, Arizona 85323
Chandler	City of Chandler		(Mini facility)- Accepts approximately 20 percent of Chandler residential waste.	McQueen Road & Queen Creek Road 3200 McQueen Road Chandler, Arizona
Cave Creek	Maricopa County	Northwest Regional	Residential	8.3 miles east of I-17 on S Side State Highway 74. 3955 East Carefree Highway Carefree, Arizona 85331
Deer Valley	Waste Management, Inc.	Northwest Regional	Generally accepts: MSW, C & D debris, site cleanup, paper products, landscape trimmings, commercial hauling.	½ mile north of Deer Valley Road, just east of I-17. 2120 West Adobe Drive Deer Valley, Arizona 85027
Lone Butte	Waste Management, Inc.	Butterfield Station	Generally accepts: C & D debris, site cleanup, paper products, landscape trimmings.	On Kyrene, south of Chandler Boulevard. 1000 South Kyrene Road Chandler, Arizona 85226
Morristown	Maricopa County	Northwest Regional	Residential	North of 60-89-93 by Morristown Overpass 40135 North Highway 60 Morristown, Arizona 85342

**TABLE 6.2**  
**MAG SOLID WASTE MANAGEMENT FACILITIES SUMMARY**  
**2002**

TRANSFER FACILITY NAME	OWNER/OPERATOR	LANDFILL FOR DISPOSAL	TYPES OF WASTE ACCEPTED	TRANSFER STATION LOCATION
New River	Maricopa County	Northwest Regional	Not available.	3 ½ miles west of I-17 on New River Road. 41835 North Lake Pleasant Road New River, Arizona
Paradise	Allied Waste Industries, Inc.	Not available.	Not available.	South of Lower Buckeye Road, east of 51 <sup>st</sup> Avenue. 4845 West Lower Buckeye Road Phoenix, Arizona 85043
Rainbow Valley	Maricopa County	Southwest Regional	Residential	3 miles south of Ray Road on Rainbow Valley Road. 17795 South Rainbow Valley Road Goodyear, Arizona 85338
Sacaton	GRIC	Butterfield	Residential	2 miles south of Casa Blanca Road (BIA#1) on Casa Grande Highway (BIA#7). South of Chandler city limits & east of I-10 in Pinal County
Scottsdale	City of Scottsdale	SRPMIC	Residential, Commercial & Recyclables.	West of Pima on Union Hills. 8417 East Union Hills Scottsdale, Arizona 85255
Skunk Creek	City of Phoenix	Transferred to MRF	City of Phoenix residential commingled recyclables.	1/4 mile west of I-17 on Happy Valley Road. 3165 West Happy Valley Road Phoenix, Arizona
Sky Harbor	Waste Management, Inc.	Not available.	Generally accepts: Municipal, commercial haulers, general public.	North of University Drive, east of 40 <sup>th</sup> Street. 2425 South 40 <sup>th</sup> Street Phoenix, Arizona 85034

**TABLE 6.2  
MAG SOLID WASTE MANAGEMENT FACILITIES SUMMARY  
2002**

TRANSFER FACILITY NAME	OWNER/OPERATOR	LANDFILL FOR DISPOSAL	TYPES OF WASTE ACCEPTED	TRANSFER STATION LOCATION
Wickenburg	Maricopa County	Northwest Regional	Residential	NE quarter, section 7, township 7N, range 5W. 3305 Sabine Brown Road Wickenburg, Arizona 85390
<b>PLANNED TRANSFER FACILITIES</b>				
Cactus Waste	Capital Environmental Resources, Inc. (formerly owned by Cactus Waste Systems)	Planned landfill in Pinal County, near Picacho Peak area.		Pecos Road & Mountain Road (on Mesa side of Meridian Line).
East Valley	Waste Management Inc.	Butterfield	Planned design capacity 12,000 tons per day, planned to open 2004.	80 <sup>th</sup> Street & Warner Road.
Gila River Indian Community District 6	GRIC	Butterfield	Residential	On Riggs Road, approx. 3 miles east of 51 <sup>st</sup> Avenue.
West Valley	Waste Management Inc.	Northwest Regional	Planned design capacity 12,000 tons per day, planned to open 2004.	Perryville & McDowell Roads.
Name undetermined (East Valley)	Undetermined			Elliott & 88 <sup>th</sup> Street (Hawes).
<b>CLOSED TRANSFER FACILITIES</b>				
TRANSFER FACILITY NAME	OWNER/OPERATOR	LANDFILL FOR DISPOSAL	TYPES OF WASTE ACCEPTED	TRANSFER STATION LOCATION
Glendale	City of Glendale	Glendale	Residential	6210 W Myrtle Glendale, Arizona.

**TABLE 6.2**  
**MAG SOLID WASTE MANAGEMENT FACILITIES SUMMARY**  
**2002**

<b>RECYCLING/MATERIALS RECOVERY FACILITIES (MRFs)</b>						
<b>FACILITY NAME</b>	<b>STATUS</b>	<b>OWNER/OPERATOR</b>	<b>AREAS SERVED</b>	<b>MATERIAL RECOVERY CAPACITY</b>	<b>LANDFILL FOR REJECTS</b>	<b>MRF LOCATION</b>
Abitibi (f.k.a. Valley Recycling)	Operating	Abitibi	Chandler, Mesa, Gilbert	8,580 Tons per Year. (33 tons per day x 5 days per week)	Salt River	Ray Road & Chandler Blvd.
Glendale	Operating	City of Glendale	Glendale	65,000 Tons per Year. (250 Tons per day x 5 days per week)	Glendale	6210 West Myrtle Glendale, Arizona
19 <sup>th</sup> Street & University (f.k.a. Hudson Baylor)	Operating	Hudson Baylor	Phoenix (south), Scottsdale	78,000 Tons per Year. (300 Tons per day x 5 days per week)	Skunk Creek	19 <sup>th</sup> Street & University. 1919 E University Drive Phoenix, Arizona
Salt River MRF	Operating	SRPMIC	Mesa, Scottsdale, SRPMIC	74,880 Tons per Year. (288 Tons per day x 5 days per week)	Salt River	13602 East Beeline Hwy Scottsdale, Arizona 85256
Western Organics-27 <sup>th</sup> Avenue	Operating	Western Organics	Phoenix	17,420 Tons per Year. (67 Tons per day x 5 days per week)	Skunk Creek	2807 South 27 <sup>th</sup> Avenue Phoenix, Arizona 85009
Recycle America Phoenix I	Operating	Waste Management, Inc.	Tempe, Fountain Hills, Tucson	Not available.	Butterfield Station	3115 East Madison Phoenix, Arizona 85034
Recycle America Phoenix II	Operating	Waste Management, Inc.	Not available.	250 Tons per day x??= ??	Butterfield Station	3060 South 7 <sup>th</sup> Avenue Phoenix, Arizona 85041
<b>PLANNED MATERIALS RECOVERY FACILITIES (MRFS)</b>						
N/A						

**TABLE 6.2  
MAG SOLID WASTE MANAGEMENT FACILITIES SUMMARY  
2002**

<b>COMBINED MATERIALS RECOVERY FACILITIES/TRANSFER FACILITIES</b>							
FACILITY NAME	STATUS	OWNER/OPERATOR	AREAS SERVED	(TONS/DAY) CAPACITIES TRANSFER	(TONS/DAY) RECOVERY	LANDFILL FOR DISPOSAL	FACILITY LOCATION
27 <sup>TH</sup> Avenue Transfer Station/MRF	Operating	City of Phoenix	Phoenix (south)	4,500	320 Residential.	Skunk Creek (will switch to SR85 when open).	27 <sup>th</sup> Avenue & Lower Buckeye Road.

<b>PLANNED COMBINED MATERIALS RECOVERY FACILITIES/TRANSFER FACILITIES</b>							
FACILITY NAME	STATUS	OWNER/OPERATOR	AREAS SERVED	(TONS/DAY) CAPACITIES TRANSFER	(TONS/DAY) RECOVERY	LANDFILL FOR DISPOSAL	FACILITY LOCATION
North Gateway Transfer/ Recycling Station	Planned 2006	City of Phoenix	North portion of Phoenix	4,000	320	SR85	3 miles north of Happy Valley Road, east of I-17.

<b>RUBBISH/CONSTRUCTION &amp; DEMOLITION DEBRIS LANDFILLS</b>				
LANDFILL/OWNER NAME	SIZE (ACRES)	REMAINING CAPACITY	REMAINING YEARS	LOCATION
Bradley 40 <sup>th</sup> Street/Bradley Corporation	Not available.	Not available.	Not available.	North Side of Magnolia Street, 1/4 mile east of 40 <sup>th</sup> Street. 4346 East Magnolia
CalMat/Vulcan	Not available.	Not available.	Not available.	11923 W Indian School Rd.
Deer Valley Landfill (f/k/a Knuechel Brothers)/Waste Management, Inc.	Not available.	Not available.	Not available.	24802 N 14 <sup>th</sup> Street, at 14 <sup>th</sup> Street and Alameda.
Glenn Weinberger Rainbow Valley/Weinberger	Not available.	Not available.	Not available.	3410 S 39 <sup>th</sup> Avenue (39 <sup>th</sup> Avenue & Lower Buckeye Road).
Lone Cactus (f/k/a Arizona Crushers) Current owner. Waste Management, Inc.	Not available.	Not available.	Not available.	Northwest corner of 7 <sup>th</sup> Street & Beardsley Road. 21402 N 7 <sup>th</sup> Street Phoenix, Arizona 85024

**TABLE 6.2  
MAG SOLID WASTE MANAGEMENT FACILITIES SUMMARY  
2002**

<b>COMPOSTING FACILITIES</b>			
FACILITY NAME	OWNER/OPERATOR	MATERIALS ACCEPTED	LOCATION
Western Organics	Private	Green wastes, biosolids, agricultural wastes, solid wastes.	2807 S 27 <sup>th</sup> Avenue, Phoenix.
Urban Forest Products	Private	Green wastes, wood wastes, agricultural wastes.	3330 W Broadway Road, Phoenix.
Salt River Landfill Mulching/Composting	SRPMIC	Green wastes.	SR 87 & Gilbert Road. Scottsdale, Arizona

<b>PLANNED MUNICIPAL SOLID WASTE COMPOSTING FACILITIES</b>			
FACILITY NAME	OWNER/OPERATOR	MATERIALS ACCEPTED	LOCATION
N/A			

<b>COMMERCIAL MEDICAL WASTE TREATMENT FACILITIES</b>			
FACILITY NAME	OWNER/OPERATOR	MATERIALS ACCEPTED	LOCATION
Stericycle	Stericycle, Inc.	Generally treats waste from hospitals, medical and dental offices, mortuaries, and research institutes. Stopped incinerating in November 2002. Currently uses autoclaving technology.	Gila River Indian Community on northern edge of Reservation in Lone Butte Business Park.

<b>COMMERCIAL MEDICAL WASTE TRANSFER STATIONS</b>			
FACILITY NAME	OWNER/OPERATOR	MATERIALS ACCEPTED	LOCATION
Envirosolve	Envirosolve LLC	Not available.	2844 West Broadway Road Phoenix, Arizona 85041
Milum Textile Services	Milum	Not available.	2600 South 7 <sup>th</sup> Avenue Phoenix, Arizona 85007

**TABLE 6.2  
MAG SOLID WASTE MANAGEMENT FACILITIES SUMMARY  
2002**

<b>OPERATING PERMANENT HOUSEHOLD HAZARDOUS WASTE COLLECTION FACILITIES</b>				
FACILITY NAME	OWNER/OPERATOR	SERVICE AREA	MATERIALS ACCEPTED	LOCATION
Tempe Household Hazardous Products Collection Center	City of Tempe	Tempe, Guadalupe	Generally accepts household and automotive waste.	1320 East University Drive Tempe, Arizona

<b>PLANNED PERMANENT HOUSEHOLD HAZARDOUS WASTE COLLECTION FACILITIES</b>				
FACILITY NAME	OWNER/OPERATOR	SERVICE AREA	MATERIALS ACCEPTED	LOCATION
Chandler Hazardous Household Waste Collection Center	City of Chandler	Chandler	Plans to generally accept household and automotive waste.	Not available.
Gilbert Household Hazardous Waste Collection Center	Town of Gilbert	Gilbert	Plans to generally accept household and automotive waste.	Gilbert South Area Service Center NW corner of Queen Creek & Greenfield Rd.

<b>WASTE TIRE COLLECTION SITES</b>				
FACILITY NAME	OWNER/OPERATOR	SERVICE AREA	LOCATION	
Queen Creek Waste Tire Collection Site	Maricopa County Solid Waste Department	Not available.	Entrance of Riggs Road, 1/4 mile west of Ellsworth Road. 26402 South Hawes Road	
Defense Reutilization and Marketing Office at LAFB	Defense Reutilization & Marketing Office.	Luke Air Force Base.	North of Glendale Avenue, 2 miles east of Luke Air Force Base. 7011 North El Mirage Road Glendale, Arizona 85307	
City of Chandler Waste Tire Collection Site	City of Chandler Solid Waste Management.	Chandler	3200 South McQueen Road Chandler, Arizona	
City of Glendale Waste Tire Collection Site	City of Glendale Municipal Solid Waste.	Glendale	11480 West Glendale Avenue Glendale, Arizona 85307	
27 <sup>th</sup> Avenue Waste Tire Collection Site	City of Phoenix Department of Public Works.	Phoenix	South of Buckeye Road. 3060 South 27 <sup>th</sup> Avenue Phoenix, Arizona 85009	
Skunk Creek Waste Tire Collection Site	City of Phoenix Department of Public Works.	Phoenix	One half mile west of I-17. 3165 West Happy Valley Road Phoenix, Arizona 85027	

**TABLE 6.2**  
**MAG SOLID WASTE MANAGEMENT FACILITIES SUMMARY**  
**2002**

FACILITY NAME	OWNER/OPERATOR	SERVICE AREA	LOCATION
EnviroTech Industries International Waste Tire Collection Site	EnviroTech Industries International LLC.	Not available.	6.5 miles west of Mobile, Arizona on SR 283 (Maricopa Gila Bend Road).
USMX, Inc. Waste Tire Collection Site	USMX, Inc.	Not available.	1/4 mile east of 35 <sup>th</sup> Ave, on Broadway Road. 3106 West Broadway Road Phoenix, Arizona 85041
Recovery Technologies of Arizona, Inc. - Buckeye Waste Tire Collection Site	Recovery Technologies Group.	Not available.	½ mile west of Oglesby Road (SR 85) on Baseline Road.
All Mighty Metals Processing Waste Tire Collection Site	All Mighty Metals Processing.	Not available.	East of 35 <sup>th</sup> Avenue, on Broadway Road. 3408 West Broadway Road Phoenix, Arizona 85041
Weinberger Rainbow Valley Waste Tire Collection Site	GMW Enterprises, Inc.	Not available.	On SR 283 (Maricopa Gila Bend Road). 39500 South 99 <sup>th</sup> Avenue Mobile, Arizona
Pep Boys #747 Waste Tire Collection Site	Ronald Knopf	Phoenix	Northwest corner of 35 <sup>th</sup> Ave & Cactus Rd. 3528 West Cactus Road Phoenix, Arizona 85029
Pep Boys #779 Waste Tire Collection Site	Davis Marentes	Glendale	Southwest corner of 63 <sup>d</sup> Ave & Bell Road. 6311 West Bell Road Glendale, Arizona 85308

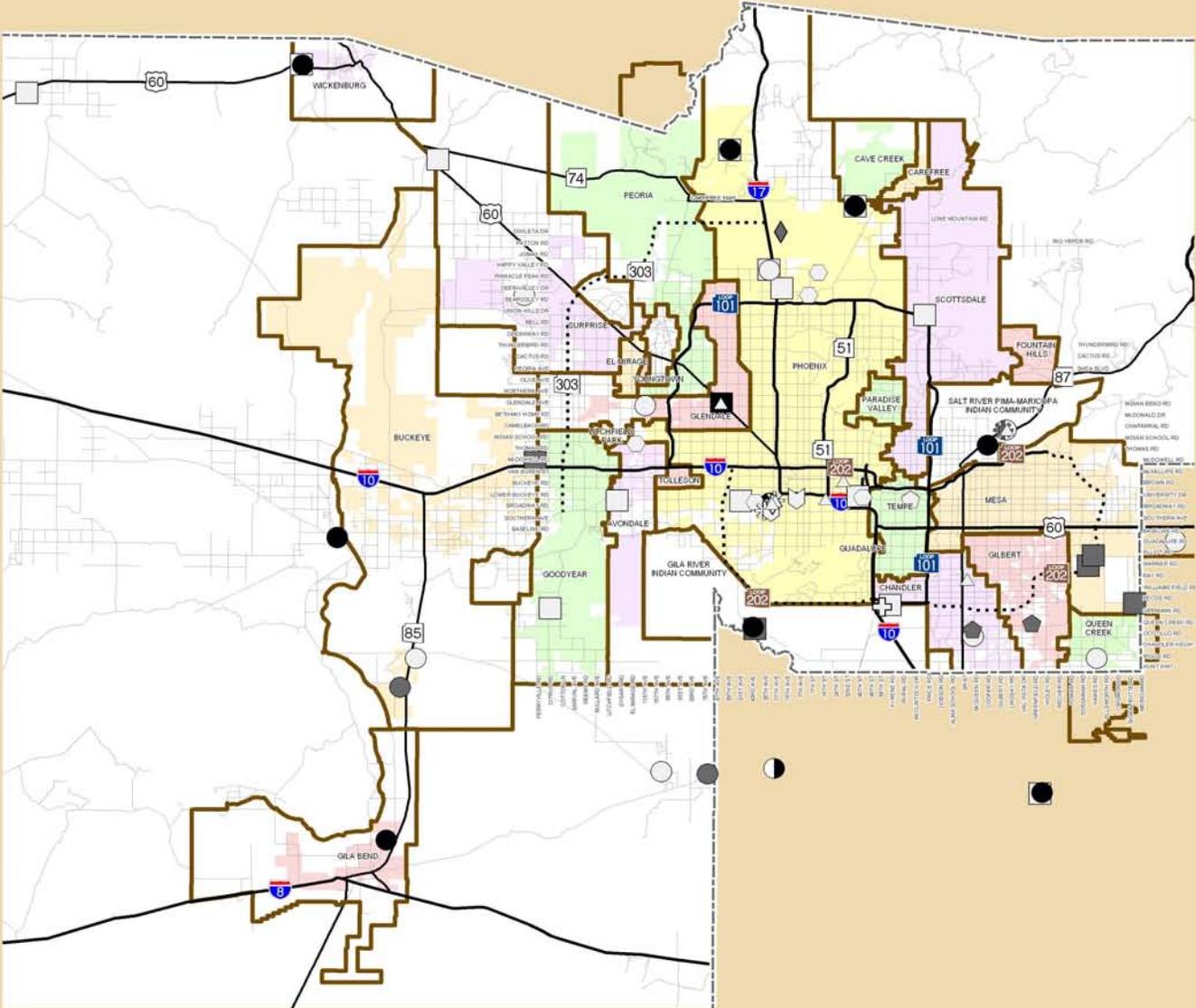
Sources: 1991 MAG Regional Waste Stream Study; MAG Solid Waste Information Collection Efforts: 1998, March 2001 and January 2003; MAG Member Agency Interviews and Web sites; ADEQ Directory of Arizona's Waste Tire Collection Sites January 2003; ADEQ Directory of Arizona Bichazardous Medical Waste Handlers.

# Solid Waste Management Plan

Fig. 6-1



## Solid Waste Management Facilities



- Landfill**
  - Open
  - Planned
  - Closed
  - ◐ Inactive
- Transfer Station**
  - Open
  - Planned
  - Closed
- Materials Recovery Facility**
  - △ Open
  - ◆ Planned
- Combined Transfer Station & Materials Recovery Facility**
  - ◇ Open
  - ◆ Planned
- Rubbish/Construction & Demolition Debris Landfill**
  - Open
- Permanent Household Hazardous Waste Collection Facility**
  - ⬠ Open
  - ⬡ Planned
- Composting Facility**
  - ⊙ Open
  - ⊛ Planned
- Medical Waste**
  - ⊕ Open Treatment Facility
  - ⊞ Open Transfer Station
- Other Features**
  - ▭ Municipal Planning Area
  - - - County Boundary
  - Existing Freeway
  - ⋯ Planned Freeway
  - Other Roads



Source: Maricopa Association of Governments

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The report's projected capacity analysis of transfer station and Materials Recovery Facilities showed a surplus of capacity in overall countywide totals throughout the twenty year planning period and at year 2050 build out. The analysis showed that additional transfer capacity would be needed by year 2040 in Gila Bend, Wickenburg, Cave Creek, Carefree, and Avondale, but this could possibly be accommodated through shifting of assignment of transfer facilities.

For the report, several recycling assumptions were made with technical assistance from the Arizona Department of Environmental Quality (ADEQ). A recycling rate of 26.2 percent was assumed for year 2000. By year 2040, a recycling rate of 35 percent was assumed for all participating jurisdictions, and the rate was increased to 37.4 percent at build out. The following sections contain an assessment of the ability of facilities and programs to meet current and future solid waste management needs.

## **6.4 SOLID WASTE MANAGEMENT FACILITIES IN MARICOPA COUNTY**

### ***6.4.1 Existing and Planned Landfills***

The existing and planned landfills in Maricopa County are listed in Table 6.2 and shown in Figure 6-2. There are three existing regional landfills in Maricopa County: Northwest Regional, Butterfield Station, and Southwest Regional. These regional landfills are located in remote areas along the urban periphery and each services a large portion of the metro area.

In 1998, Maricopa County opened the Northwest Regional Landfill, the first of four regional landfills planned at that time. However, soon thereafter, the County got out of the regional landfill business and sold the Northwest Regional Landfill to a private service provider, Waste Management, Inc. The Northwest Regional Landfill generally services Aguila, El Mirage, Morristown, Peoria, Surprise, Sun City, Wickenburg and Youngtown.

Other regional landfills that were planned in the 1993 MAG Plan and have opened to date include Southwest Regional Landfill and Butterfield Station Landfill. Southwest Regional Landfill is owned by the Buckeye Pollution Control Agency and operated by Allied Waste, Inc., a private service provider. The Southwest Regional Landfill generally services within Avondale, Buckeye, Gila Bend, Goodyear and Litchfield Park. The Butterfield Landfill, owned and operated by Waste Management, Inc., generally services within Cave Creek, Carefree, Chandler, Tempe, and the Gila River Indian Community. The Waste Management Sierra Estrella Landfill is currently inactive, although it is reportedly still a permitted facility.

Other existing and planned landfills in the Maricopa County generally service the jurisdiction where the facility is located. The Apache Junction Landfill, owned and operated by Allied Waste Industries, Inc., generally serves within the Apache Junction Municipal Planning Area (MPA), which lies within both Maricopa and Pinal Counties.

Solid Waste Management Plan

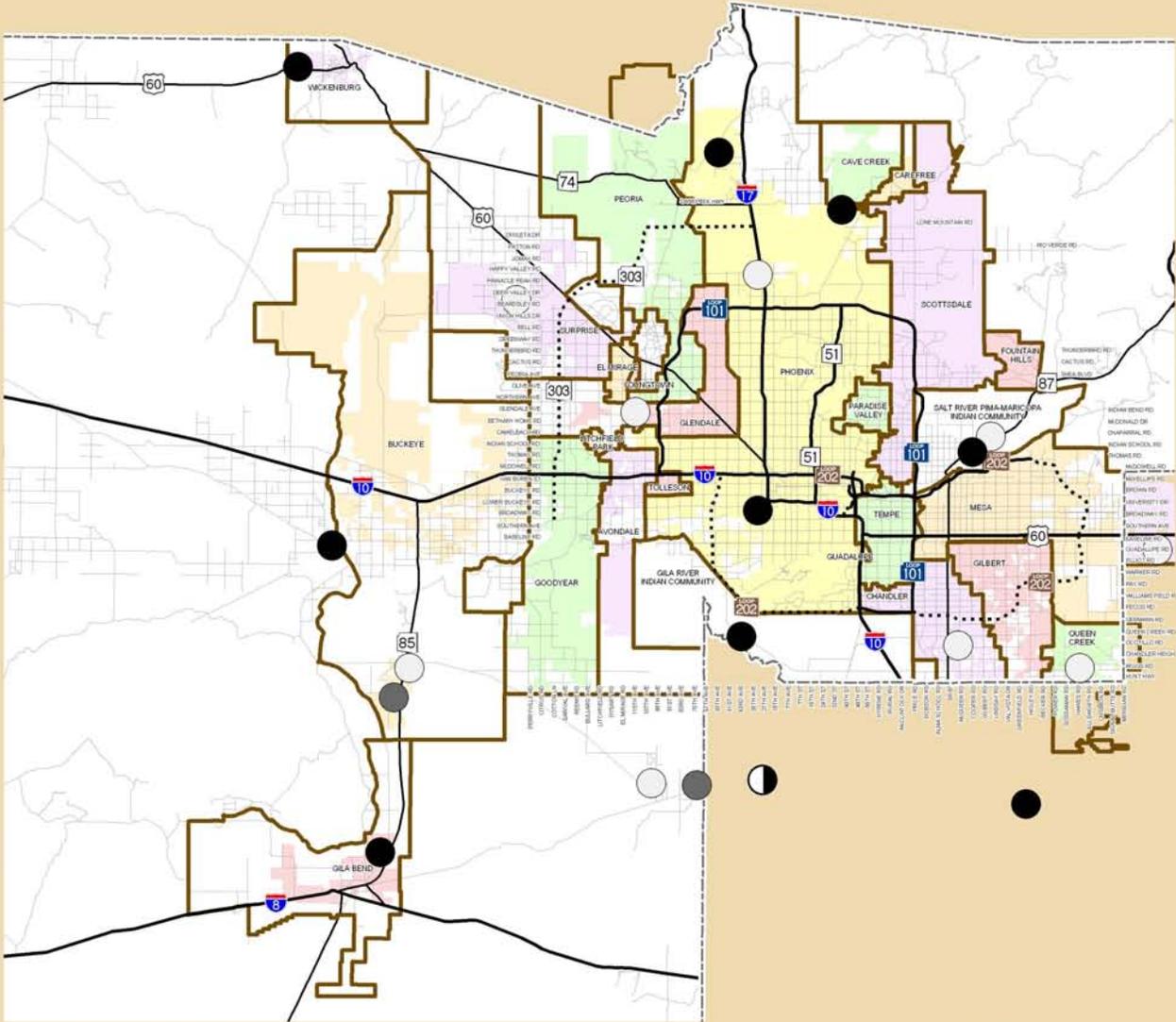
Fig. 6-2



Landfills

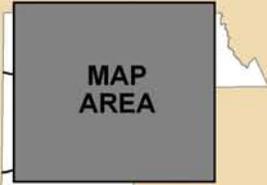
- Landfill
- Open
  - Planned
  - Closed
  - ◐ Inactive

- Other Features
- ▭ Municipal Planning Area
  - - - County Boundary
  - Existing Freeway
  - · - · - Planned Freeway
  - Other Roads



Source: Maricopa Association of Governments

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MAP AREA

The Chandler Landfill, owned and operated by the City of Chandler, serves the Chandler MPA and has a current last cell that is Subtitle D. This landfill was expanded in 1999 by 96 acres. The Chandler landfill currently uses landfill gas to energy technology.

The Glendale Landfill is owned and operated by the City of Glendale and generally serves the Glendale MPA and includes white appliance and electronics recovery programs. A planned 120-acre landfill expansion is anticipated in about ten years.

For solid waste disposal within the Phoenix MPA, the City of Phoenix owns and operates the Skunk Creek Landfill, which includes a recycling transfer station and recycling drop off area. The planned City of Phoenix State Route (SR) 85 Landfill is expected to open in year 2006 at a location west of SR85 and south of Patterson Road. This landfill is anticipated to serve the Phoenix MPA with a planned capacity of over 50 years. The City of Phoenix conducted a landfill siting study with public participation activities such as briefing elected officials in affected jurisdictions, meeting with key stakeholders, working with a Citizen Advisory Committee, and providing public outreach through newsletters, community open houses, notices, and a project Web site and hotline.

The Salt River Landfill, owned and operated by the Salt River Pima Maricopa Indian Community, services Gilbert, Mesa and Scottsdale. The Salt River Landfill includes a materials recovery facility, and green waste composting and white goods programs.

The Queen Creek Landfill, located on 128 acres at Hawes & Riggs Roads, is owned and operated by Allied Waste, Inc. and generally services within the Queen Creek MPA. Maricopa County is considering the future potential for a landfill in the southeastern part of Maricopa County or adjacent Pinal County to replace the Queen Creek Landfill.

Waste Management, Inc. owns and operates the Seventh Avenue Landfill, which was previously a sand and gravel operation. Waste Management currently operates the site as a land reclamation project, accepting only inert materials such as dirt, rocks and concrete. The Waste Management Lone Cactus Landfill accepts construction and debris and green waste.

A planned landfill proposed by Southpoint Environmental Services has obtained a special use permit from Maricopa County for a proposed landfill in Mobile, Arizona near the Pinal County line and north of Highway 238 in Maricopa County.

#### **6.4.2 Landfill Closures and End Use Plans**

During the current twenty year MAG planning period, five existing landfills in Maricopa County are anticipated to close including the Chandler, Queen Creek, Skunk Creek, Apache Junction and Salt River Landfills. The Chandler Landfill, which serves the Chandler MPA, is anticipated to close in 2005 and the City will propose an open recreational area end use plan.

The Queen Creek Landfill, which serves the Queen Creek MPA, is expected to close in 2005 and end use options are being evaluated. The Town is located mainly within Maricopa County but partially within Pinal County. Maricopa County is considering the future potential for a landfill in the southeastern part of Maricopa County or adjacent Pinal County as possible a replacement for the Queen Creek Landfill.

The Phoenix Skunk Creek Landfill, which serves the Phoenix MPA, is anticipated to close in January 2006 and the area will be turned over to the City Parks Department for end use. The planned City of Phoenix SR85 Landfill is anticipated to open in January 2006 with a capacity of over 50 years. The City is also planning to open a combined materials recovery transfer facility during the planning period. The City of Phoenix North Gateway Transfer/Recycling Facility is planned to open in January 2006 at a location three miles north of Happy Valley Road, east of Interstate-17.

The Apache Junction Landfill, operated by Allied Waste Industries, Inc., is anticipated to close in year 2012. A portion of Apache Junction Municipal Planning Area is located within Maricopa County with the majority of the planning area located in Pinal County.

The Salt River Landfill, which services Gilbert, Mesa and Scottsdale, is expected to close in 2015. The SRPMIC indicates that land is not available for a landfill expansion, but land is available for expansion of the SRPMIC Materials recovery facility. When the landfill closes, potential alternatives for consideration include using nearby transfer stations and/or landfills. Nearby facilities include Butterfield Station Landfill (expected to remain open until 2110), the planned Waste Management East Valley Transfer Station (anticipated to open in 2004), and the planned Cactus Waste Transfer Station with its related Cactus Waste Landfill in Pinal County.

The remaining four existing landfills in Maricopa County are anticipated to close well after the current twenty year planning period. These include the Glendale, Southwest Regional, Northwest Regional and Butterfield Station Landfills. The Glendale Landfill is anticipated to remain open until 2046. For end use, a City Council approved plan includes conceptual options such as desert reestablishment or recreational areas. For the Southwest Regional Landfill, which services municipalities in the west valley including Avondale, Buckeye, Gila Bend, Goodyear, Litchfield Park and Youngtown, closure is anticipated in 2051.

Year 2102 closure is anticipated for the Northwest Regional Landfill, which serves several west valley municipalities, including El Mirage, Peoria, Surprise Wickenburg, Aguila, Deer Valley, Morristown and Sun City. Waste Management indicates that surrounding vacant land is available for expansion if needed. Year 2110 closure is anticipated for the Butterfield Station Landfill, which serves several central and east valley municipalities including Carefree, Cave Creek, Chandler, GRIC, Phoenix and Tempe. Currently, Southpoint Environmental Services has proposed a landfill in Mobile, Arizona.

### **6.4.3 Existing and Planned Transfer Stations, Materials Recovery Facilities, and Combined Materials Recovery Transfer Facilities**

The locations of existing and planned public and private transfer facilities and combined material recovery transfer facilities are shown in Figure 6-3. Maricopa County owns and operates several transfer stations in outlying areas of the County. Generally, the County's transfer stations each consist of 40 cubic yard containers that are open to the public. The Cave Creek Transfer Station, located in northeast Maricopa County 3 miles east of Cave Creek Road, 8 miles east of I-17, and south of Carefree Highway, generally serves the Towns of Cave Creek and Carefree. Additional Maricopa County owned and operated transfer stations include the Aguila, Morristown, New River, Rainbow Valley and Wickenburg Transfer Stations. Northwest Regional Landfill is the related landfill for all of the County owned transfer stations except Rainbow Valley, whose associated landfill is Southwest Regional.

The Aguila Transfer Station is located 3 miles west of Aguila on State Highway 60 in the far northwestern corner of Maricopa County. Also in the northwestern portion of the County, the Morristown Transfer Station is located by Morristown Overpass and the Wickenburg Transfer Station is located in the Wickenburg MPA. The New River Transfer Station is located in the north central part of Maricopa County, 3.5 miles west of I-17 on New River Road. In the southwest valley, the Rainbow Valley Transfer Station is located 3 miles south of Ray Road on Rainbow Valley Road.

The City of Scottsdale Transfer Station is owned and operated by City of Scottsdale and serves the Scottsdale MPA with a capacity of approximately 500 tons per day. Facility expansion options include adding more loading bays for trucks or adding a new adjacent building.

The Sky Harbor Transfer Station, owned by Waste Management, generally serves within Tempe and Phoenix with a recovery capacity of about 6,078 tons per day. The Deer Valley Transfer Station, owned and operated by Waste Management, services within the Phoenix MPA with a capacity of 3,039 tons per day. The Avondale Transfer Station is owned and operated by the City of Avondale and serves the Avondale MPA with a capacity of about 12 tons per day.

Sacaton Transfer Station serves the Gila River Indian Community with a recovery capacity of 40 tons per day. The GRIC plans to add a second transfer station at the west end of the community, south of Beltline Road (Riggs) and east of 51<sup>st</sup> Avenue. Both stations are designed to transfer waste into semis with an initial startup of 40 cubic yard containers with capability to use semis.

Up to four new transfer stations are planned in Maricopa County including the Waste Management West Valley Transfer Station, Waste Management East Valley Transfer Station, Cactus Waste Transfer Station and another potential East Valley transfer station.

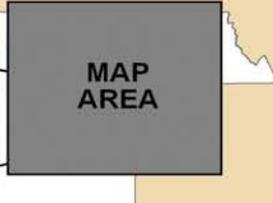
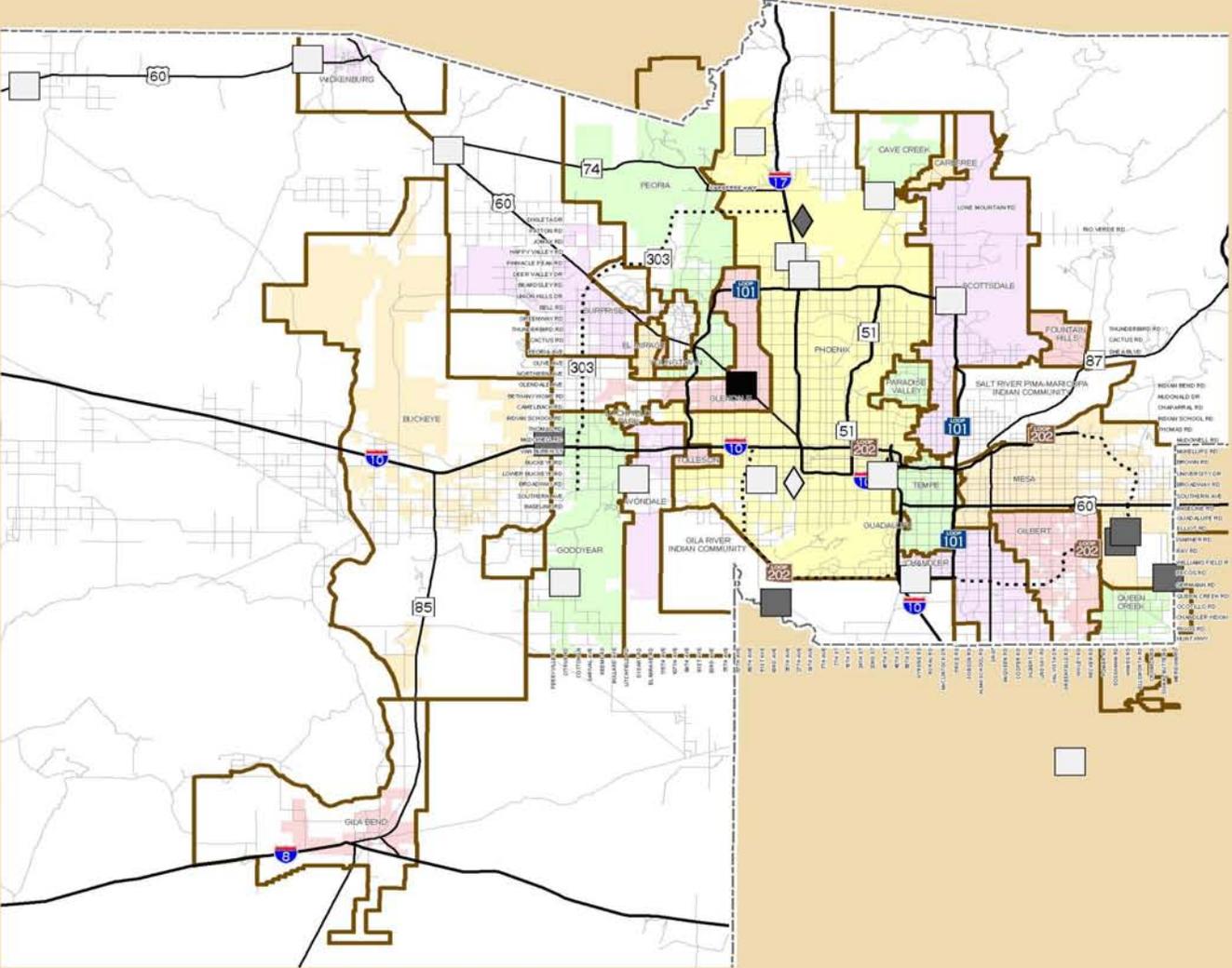
Solid Waste Management Plan

Fig. 6-3



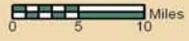
Transfer Stations and Combined Materials Recovery Facilities/Transfer Facilities

- Transfer Station**
- Open
  - Planned
  - Closed
- Combined Transfer Facility & Materials Recovery Facility**
- Open
  - Planned
- Other Features**
- Municipal Planning Area
  - County Boundary
  - Existing Freeway
  - Planned Freeway
  - Other Roads



Source: Maricopa Association of Governments

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The Waste Management West Valley Transfer Station will be located at Perryville & McDowell Roads in southwest Maricopa County. The Waste Management East Valley Transfer Station will be located at 80<sup>th</sup> Street & Warner Road in southeast Maricopa County. Both of these facilities have been approved by ADEQ and are scheduled to open in 2004. The Cactus Waste Transfer Station is planned to service the East Valley in the future with a Meridian & Pecos Road location. Another possible East Valley transfer station may be planned, possibly near Elliott & 88<sup>th</sup> Street (Hawes).

For the Maricopa County region, the existing and planned public and private Materials Recovery Facilities and combined materials recovery facilities are listed in Table 6.2. The locations for planned and existing Materials Recovery Facilities are shown in Figure 6-4. Materials Recovery Facilities (MRFs) in Maricopa County include Abitibi, City of Glendale, 19<sup>th</sup> Street & University, Salt River Recycling, Western Organics- 27<sup>th</sup> Avenue, Recycle America Phoenix I and Recycle America Phoenix II.

The Abitibi Facility serves Chandler, Mesa, and Gilbert with a recovery capacity of 33 tons per day. The City of Glendale Material Recovery serves Glendale with a 250 tons per day recovery capacity. The 19<sup>th</sup> Avenue & University Materials recovery facility serves Phoenix south of Cactus Road with a 300 ton per day capacity. Salt River Recycling is owned by the Salt River Pima Maricopa Indian Community and serves Mesa, SRPMIC, and Scottsdale with a capacity of 288 tons per day.

The Recycle America Phoenix I and Recycle America Phoenix II Facilities are owned by Waste Management, Inc. Recycle America Phoenix I opened in 1994 and generally services within Fountain Hills, Tempe and Tucson. Recycle America II, which USA Crinc, Inc. opened in 1998, was purchased by Waste Management in 2000 and is presently operated under contract to the City of Phoenix.

The City of Phoenix owns the 27<sup>th</sup> Avenue Combined Materials Recovery and Transfer Facility which serves mainly south Phoenix. The City of Phoenix North Gateway Transfer/Recycling Facility is planned for year 2006 opening. Similar to their landfill siting study, the City of Phoenix conducted multiple public participation activities in siting the transfer/recovery facility.

# Solid Waste Management Plan

Fig. 6-4

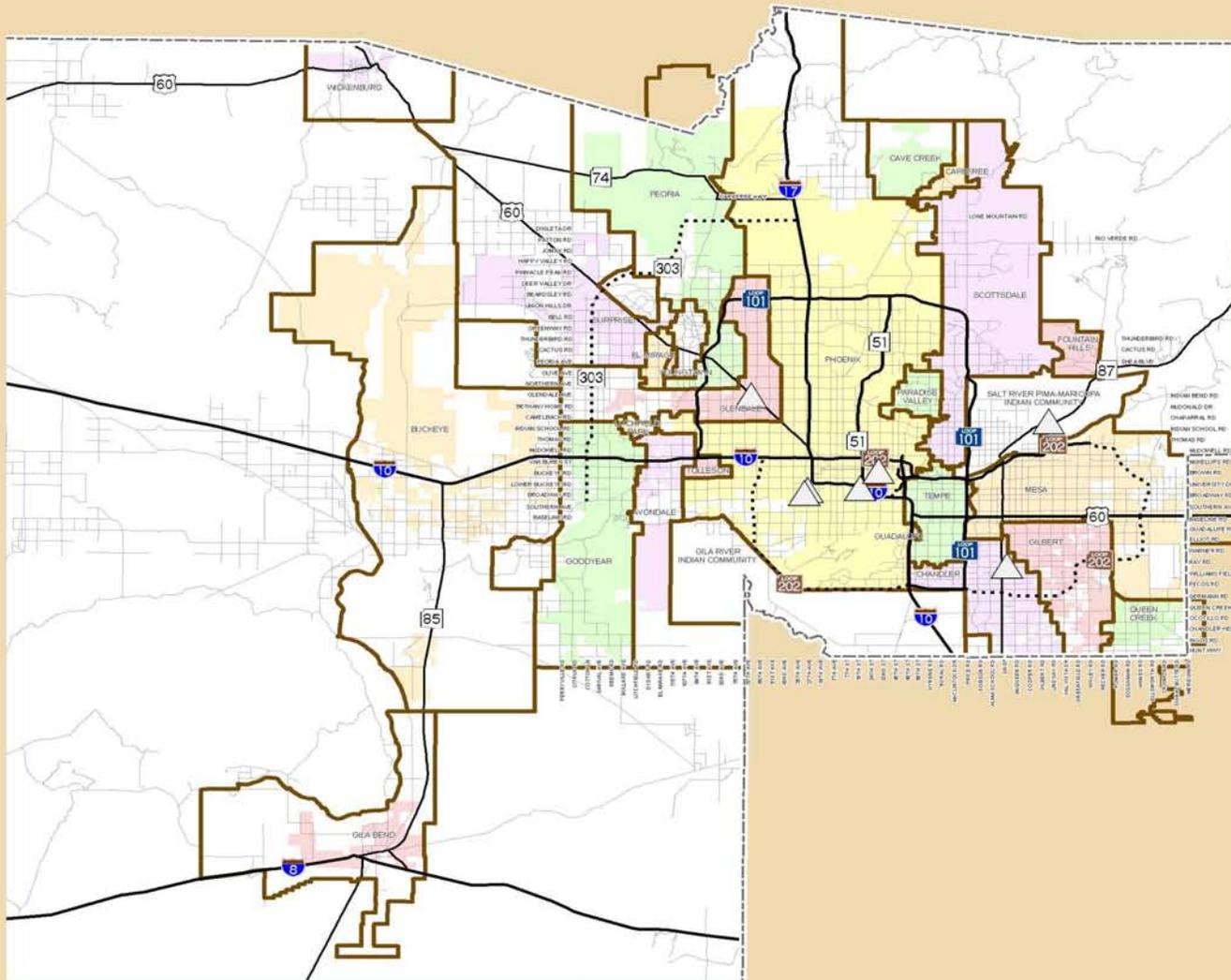


## Material Recovery Facilities

△ Materials Recovery Facilities

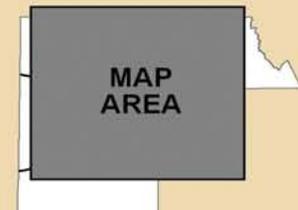
### Other Features

- ▭ Municipal Planning Area
- - - County Boundary
- Existing Freeway
- ⋯ Planned Freeway
- Other Roads



Source: Maricopa Association of Governments

While every effort has been made to ensure the accuracy of this information, the Maricopa Association of Governments makes no warranty, expressed or implied, as to its accuracy and expressly disclaims liability for the accuracy thereof.



#### **6.4.4 Rubbish/Construction and Demolition Debris Landfills**

Generally, rubbish/construction and demolition debris landfills in Maricopa County tend to be located in areas mined for stone, gravel and sand. Since much of the waste placed in these landfills is inert, these facilities are considered by regulators to be less likely to cause environmental degradation in comparison to sanitary landfills. Figure 6-5 depicts the rubbish/construction and demolition debris landfills in Maricopa County.

#### **6.4.5 Waste Tire Collection Sites**

The planned and existing Waste Tire Collection Sites in Maricopa County are listed in Table 6.2 and their locations are depicted in Figure 6-6. In Maricopa County, over 2.9 million waste tires were collected through the Arizona Waste Tire Management Program in Fiscal Year 2002 according to the *ADEQ Fiscal Year 2002 Waste Tire Report*. The purpose of the program is to ensure proper disposal of waste tires under Arizona Revised Statute §49-1306.B. The program is funded through a waste tire fee imposed on the sale of every new tire or motor vehicle in Arizona. The ADEQ program has three categories of waste tire types: passenger and light truck tires, semi-truck tires, and off-the-road tires. The majority of the tires collected in Maricopa County, over 2.7 million, were passenger and light truck tires. While the waste tire fee only applies to passenger/light truck and semi-truck tires, statutory prohibitions apply to disposal and storage of all three tire types.

The collected waste tire fees are placed in a Waste Tire Fund by the Arizona Department of Revenue and distributed quarterly to ADEQ and each of the Counties in proportion to the number of motor vehicles registered in each respective County. Each County is required to establish at least one Waste Tire Collection Site and ensure proper tire disposal. According to the *ADEQ Fiscal Year 2002 Waste Tire Report*, the Waste Tire Fund received over \$6.3 million on the sale of over 5.7 million new motor vehicle tires. About 3.5 percent of the total received went to ADEQ and the rest was distributed among the Counties, with about \$3.5 million going to Maricopa County.

#### **6.4.6 Permanent Household Hazardous Waste Collection Facilities**

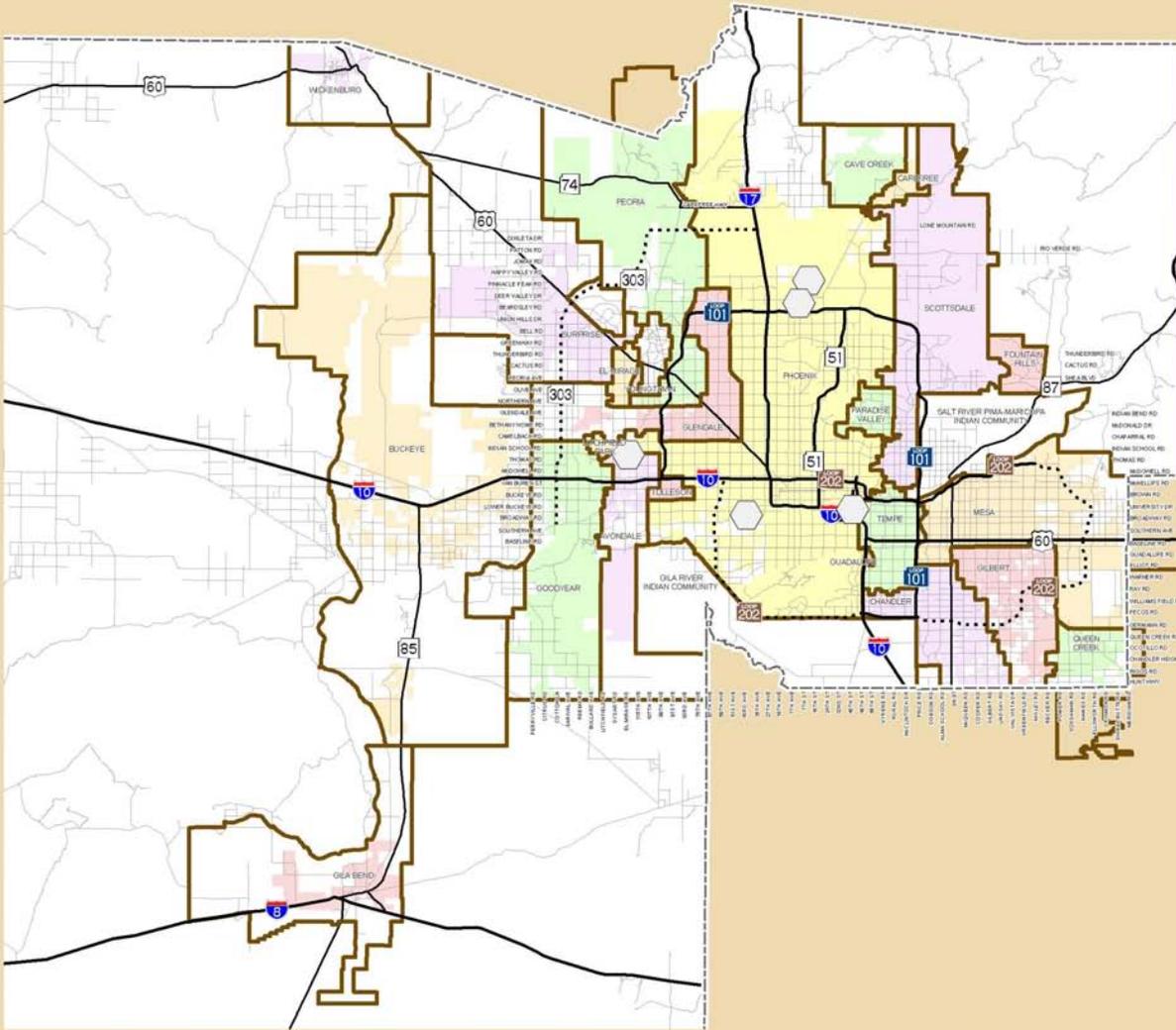
The planned and existing permanent household hazardous waste collection facilities are listed in Table 6.2 and their locations are shown in Figure 6-7. The City of Tempe owns and operates the existing City of Tempe Household Products Collection Center, which accepts unwanted household and automotive items from residents of Tempe and Guadalupe. The City of Chandler is planning a year 2005-2006 opening of a permanent household hazardous waste facility to accept household waste from Chandler residents. The Town of Gilbert also plans a year 2006 opening of a permanent household hazardous waste facility to accept household waste from Gilbert residents.

Solid Waste Management Plan

Fig. 6-5



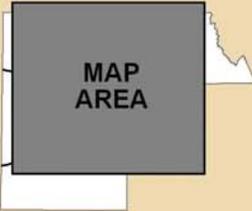
Rubbish/Construction & Demolition Debris Landfills



- Rubbish/Construction & Demolition Debris Landfill
- Other Features**
- Municipal Planning Area
- County Boundary
- Existing Freeway
- Planned Freeway
- Other Roads

Source: Maricopa Association of Governments

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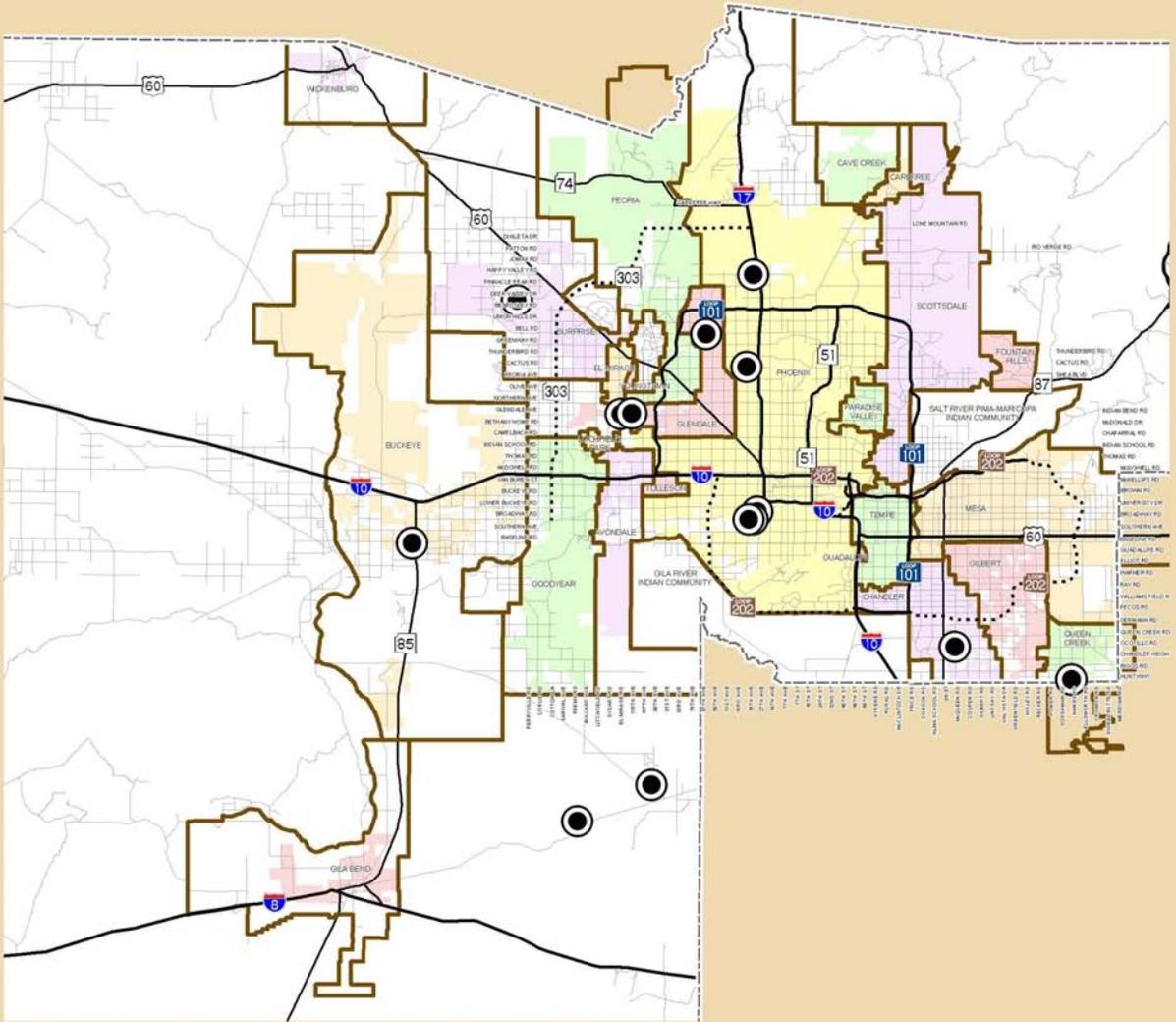
Solid Waste Management Plan

Fig. 6-6



Waste Tire Collection Sites

- Waste Tire Collection Site
- Other Features**
- Municipal Planning Area
- County Boundary
- Existing Freeway
- Planned Freeway
- Other Roads



Source: Maricopa Association of Governments

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# Solid Waste Management Plan

Fig. 6-7



## Permanent Household Hazardous Waste Collection Facilities

Permanent Household Hazardous Waste Collection Facility

Open

Planned

Other Features

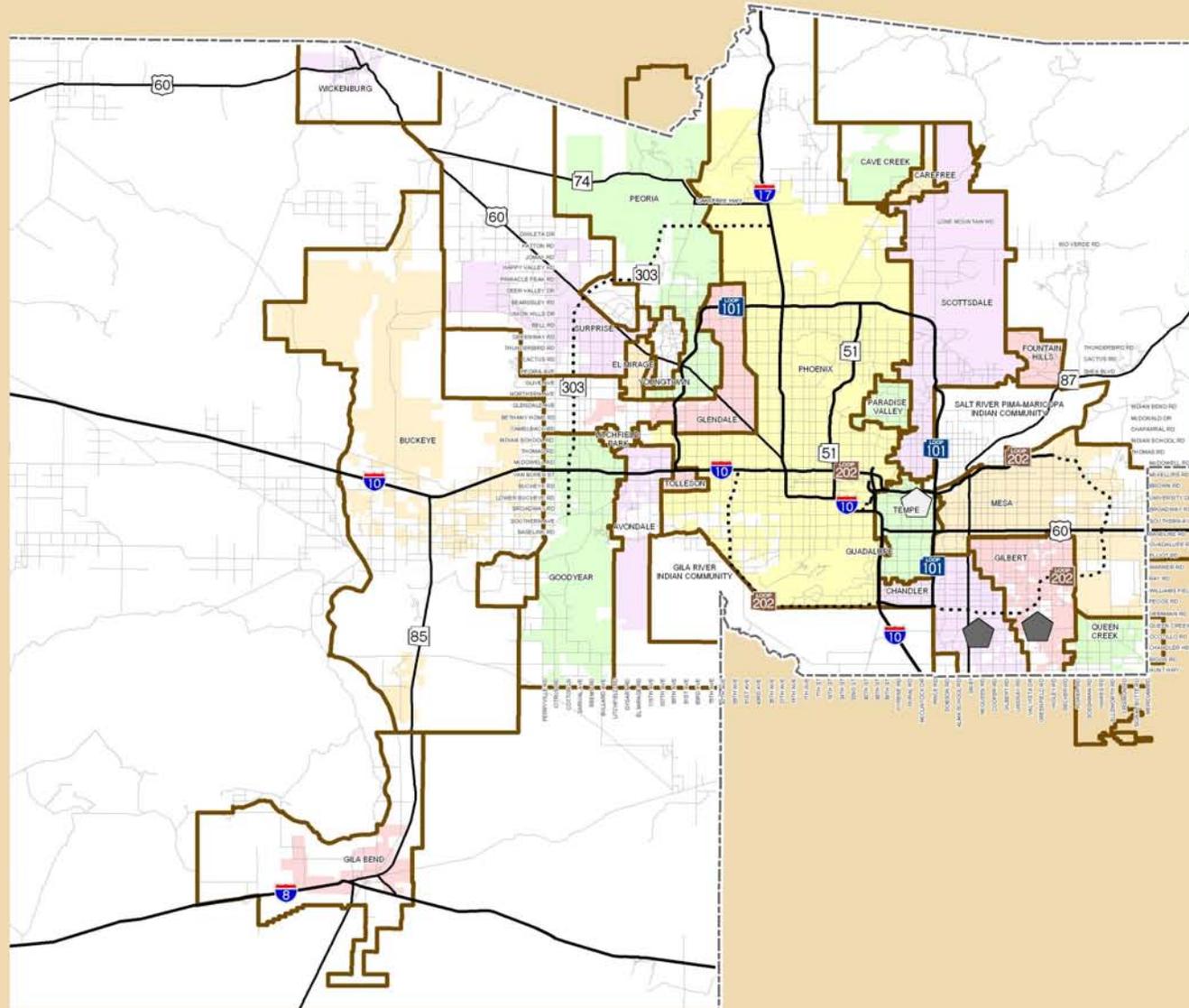
Municipal Planning Area

County Boundary

Existing Freeway

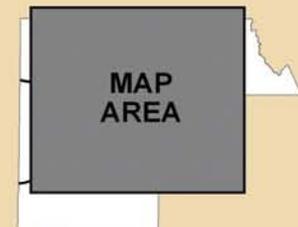
Planned Freeway

Other Roads



Source: Maricopa Association of Governments

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#### **6.4.7 Nonhazardous Liquid Waste Disposal Facilities**

Currently, there are three Maricopa County approved non-hazardous liquid waste disposal sites including Butterfield Station Landfill, AAA Ajax near 7<sup>th</sup> Avenue & Magnolia Street, and Resource Recovery Techniques of Arizona, Inc., near 51<sup>st</sup> Avenue & Van Buren. It is estimated that a total of 44,742,539 million gallons per year of nonhazardous liquid wastes (NHLW) were generated in the MAG region in year 2002. The City of Goodyear 157<sup>th</sup> Avenue Wastewater Treatment Plant accepts septic waste and some waste types from industry such as cooling tower waste. The Superstition Mountain Community Sewer District accepts septic waste only from both Maricopa County and Pinal County. Other facilities that accept some type of NHLW include Northwest Regional Landfill and American Pumping.

In the 1993 MAG Plan, member agencies identified the concern that a possible shortage of NHLW disposal sites may occur as a result of the U.S. Environmental Protection Agency (EPA) solid waste disposal regulations, effective October 9, 1993, prohibiting co-disposal of liquid wastes in solid waste landfills. At the time, NHLW generated in Maricopa County was being treated or disposed at several landfills and the Multi-City Sub-Regional Operating Group (SROG) 91<sup>st</sup> Avenue Wastewater Treatment Plant (WWTP).

Also in 1993, the *Maricopa County Non-Hazardous Liquid Waste Disposal Options Study* was conducted by Malcolm Pimie, Inc. The study was to update and expand the study area of the *Non-Hazardous Liquid Waste Study* performed for the Multi-City SROG. The study also investigated the advantages and disadvantages of various treatment methods and disposal options for waste from septic systems, grease traps, auto related facilities and self service laundries.

Since 1993, three landfills that had previously been used for NHLW disposal have closed. The Maricopa County New River Landfill and the Hassayampa Landfill closed in 1997. The City of Phoenix 27<sup>th</sup> Avenue Landfill, which stopped accepting NHLW in 1993, closed in 1995. The SROG 91<sup>st</sup> Avenue Wastewater Treatment Plant also stopped accepting non-hazardous liquid waste.

Currently, MAG member agencies indicate that assurance of adequate NHLW disposal capacity in the region is still important, but it is not considered a problem waste. Chapter II, Section 7 of the Maricopa County Environmental Health Code requires that all non-hazardous liquid waste be disposed of only in a manner and place approved by the Maricopa County Environmental Services Department.

#### **6.4.8 Medical Waste Incineration Facilities**

According to the Arizona Department of Environmental Quality (ADEQ) and Maricopa County Environmental Services Department (MCESD), there are no medical waste incineration facilities in Maricopa County at this time. Since the 1993 MAG Plan, State and federal level air quality regulations have become more stringent for emissions from medical

waste incineration facilities.

According to the EPA, their 1997 regulations governing emissions from medical waste incinerators included standards that would substantially reduce emissions, but also increase expenses for compliance. EPA anticipated that the use of medical waste incinerators would be largely discontinued and replaced by alternative technologies such as thermal treatment (microwave technologies), steam sterilization (autoclaving), electropyrolysis and chemical mechanical systems. At the State level, rules for handling, treatment, and disposal of biohazardous medical waste were adopted in 1999. In Arizona, a facility plan approval must be obtained from ADEQ to construct a facility that will store, transfer, treat or dispose of biohazardous medical waste generated offsite under R18-13-1410 of the Arizona Administrative Code.

Descriptions of commercial medical waste treatment facilities and transfer stations in Maricopa County are provided in Table 6.2 and their locations are shown in Figure 6-8. In Maricopa County, the privately owned Stericycle Facility, located on the Gila River Indian Community, stopped incinerating medical waste in November 2002. According to ADEQ, the Stericycle Facility currently autoclaves, or steam sterilizes, medical waste. Stericycle is the only approved medical waste treatment facility in Maricopa County and there are two approved medical waste transfer facilities in the County: EnviroSolve at 2844 West Broadway Road in Phoenix and Milum Textile Services at 2600 South Seventh Avenue in Phoenix. In Arizona, several medical waste transporters are currently registered with the State.

## **6.5 ASSESSMENT OF SOLID WASTE MANAGEMENT PROGRAMS**

### **6.5.1 Collection Programs**

Collection programs have been implemented to meet the obligation of each local agency to provide residents with solid waste collection and disposal in a manner that prevents public health hazards or nuisances. Agencies use municipal or private collection services, as appropriate for local conditions.

Some collection programs incorporate transfer stations to mitigate haul costs and provide efficient collection service. Generally, a waste stream of about 500 tons per day is required to support a new transfer station and the facility should be at least 15 miles from the landfill. Some transfer stations also serve as materials recovery facilities where garbage is sorted before it is recycled or sent to a landfill. Some transfer stations consist of large dumpster containers where garbage is picked up and transported to a landfill. Each transfer station is associated with one or more particular landfill.

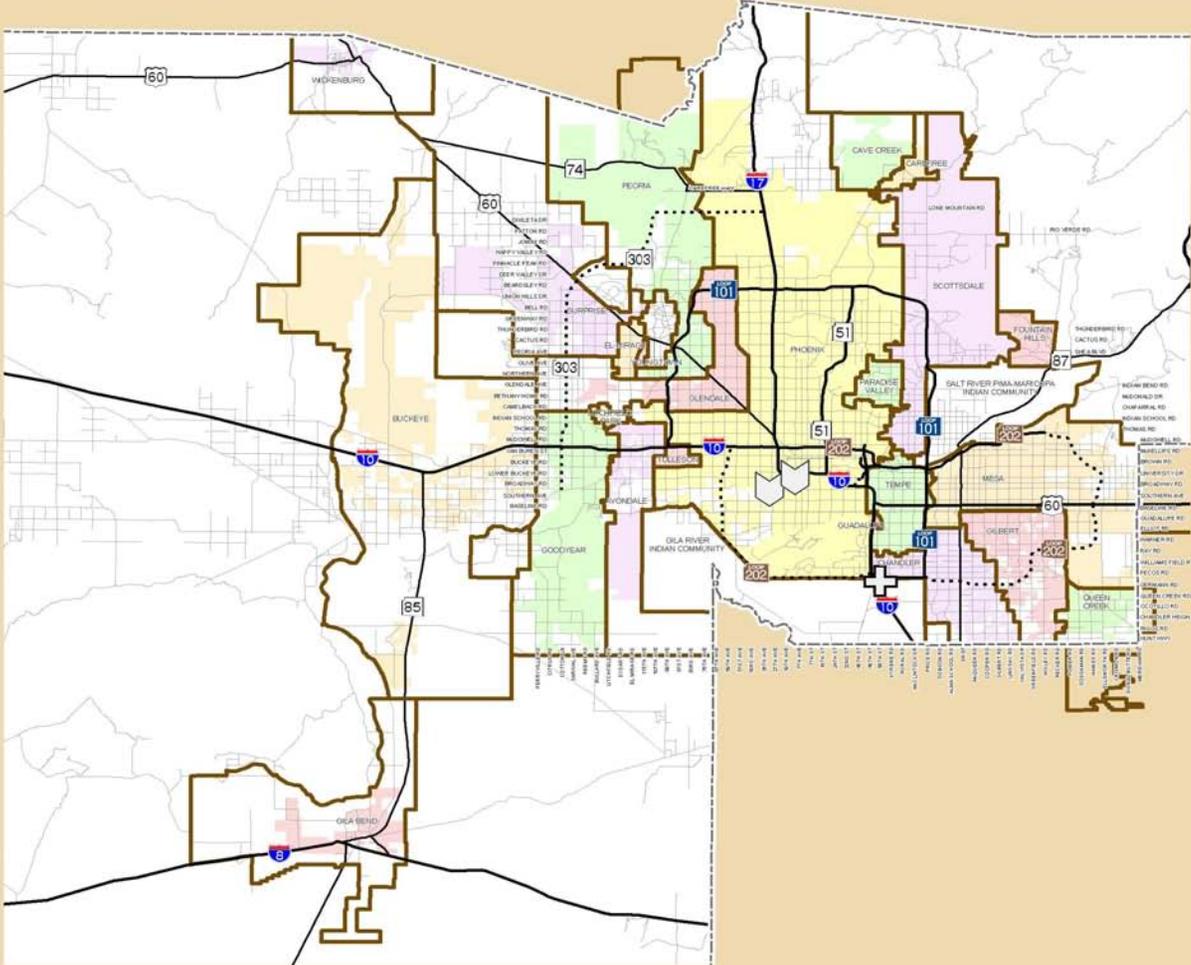
Solid Waste Management Plan

Fig. 6-8



Medical Waste Facilities

- Medical Waste**
- Open Treatment Facility
- Open Transfer Station
- Other Features**
- Municipal Planning Area
- County Boundary
- Existing Freeway
- Planned Freeway
- Other Roads



Source: Maricopa Association of Governments

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### **6.5.2 Recycling Collection Programs**

In Arizona, there is a State level requirement for counties, cities, and towns to provide residents with an opportunity to engage in recycling and waste reduction. In the MAG region, recycling collection programs are implemented by individual agencies, each in a way that is responsive to local needs and conditions.

In 1993, four municipalities in the region had curbside recycling programs including Chandler, Gilbert, Phoenix and Tempe. Since that time, the number of cities with curbside recycling programs has increased to twelve. Five other municipalities are planning or considering initiating a curbside recycling collection program. The number of municipalities in the region offering drop off recycling programs increased from nine in 1993 to seventeen in year 2002.

Currently, twelve municipalities with curbside recycling collection include Avondale, Carefree, Cave Creek, Chandler, Fountain Hills, Gilbert, Glendale, Mesa, Paradise Valley, Phoenix, Scottsdale and Tempe. Private service providers collect the recyclables in Carefree, Cave Creek, Fountain Hills and Paradise Valley. Generally, these programs include twice weekly curbside collection service with one trash pickup and one recycling pickup. Most of the curbside recycling programs have integrated a public outreach and recycling education component.

Drop off recycling opportunities are commonly included in these curbside recycling programs. The City of Surprise is planning a curbside recycling program, and curbside recycling is being considered by Peoria, SRPMIC, Tolleson and Youngtown. The City of Glendale currently works on market development with material mills and brokers and is considering a recycling buy back center. The City of Tempe has a waste reduction goal to reach a recycling goal of up to 30 percent during the current 20 year planning period.

A total of eight municipalities that do not have curbside recycling collection currently provide a recycling drop off program. These jurisdictions include Apache Junction, Gila Bend, Goodyear, Guadalupe, Litchfield Park, Peoria, Salt River Pima Maricopa Indian Community, and Youngtown. Some of these programs include public outreach and recycling education and several of these municipalities are considering expanding their recycling program. In addition, the City of Surprise is planning a pilot recycling program with a public outreach component. A drop off recycling program is currently being considered by Buckeye, El Mirage, and Tolleson.

Some local recycling programs include materials recovery facilities or combined materials recovery transfer facilities. These existing and planned public and private materials recovery facilities and combined material recovery transfer facilities are listed in Table 6.2.

### **6.5.3 White Goods and Bulk Waste Collection Programs**

In order to help divert items such as large appliances and electronics from the waste stream, nine municipalities in the region offer curbside collection and drop off opportunities for residential white goods and/or bulk waste items including Buckeye, Chandler, Gilbert, Glendale, Mesa, Peoria, Phoenix, Scottsdale and Tempe. Generally, these large appliances, such as refrigerators, can be recycled after removal of any regulated substances such as chlorofluorocarbons (CFCs). Electronic waste such as computer can sometimes be recycled or reused. Four other municipalities provide white good and bulk waste drop off opportunities about once each year including Apache Junction, El Mirage, Salt River Pima Maricopa Indian Community and Youngtown.

### **6.5.4 Green Waste Collection Programs**

Several municipalities have residential green waste programs to help divert items such as tree limbs, leaves, and grass clippings from the solid waste stream. Five municipalities presently offer residential curbside green waste collection including Gilbert, Mesa, Phoenix, Scottsdale and Tempe. The City of Glendale provides a monthly loose trash collection service in which green waste is collected with other loose trash and landfilled. There is no segregation of green waste for processing into mulch or cover material. Other cities, such as Buckeye, Gila Bend and Peoria are considering a green waste program. Generally, the green waste collected is hauled to the landfill and ground for uses such as landfill cover and bank stabilization.

Green waste collected by the Gilbert, Mesa and Scottsdale curbside collection programs is generally taken to the Salt River Landfill large scale composting program. Other municipalities in the region have tried large scale composting programs and generally found them to be not economical. The jurisdictions of Avondale, Chandler, Mesa, Gilbert, Glendale, Phoenix, Scottsdale, and Tempe presently encourage composting at the residential level and offer composting brochures, equipment and assistance to residents. The City of Surprise is planning a residential composting assistance program.

### **6.5.5 Household Hazardous Waste Collection Programs**

In 1993, five jurisdictions in the region had a household hazardous waste collection program which generally offered one collection event per year. Since that time, these programs have expanded and collection frequency has been increased. Presently, there are fifteen municipalities in Maricopa County with a household hazardous waste collection program, and frequency of events varies among communities based on local conditions.

Seven municipalities in the region offer several disposal opportunities throughout the year including Chandler, Gilbert, Mesa, Peoria, Phoenix, Scottsdale, and Tempe. Each of these programs include public outreach and public education on safe disposal of household hazardous waste. The City of Tempe Household Products Collection Center is a permanent facility where Tempe and Guadalupe residents can dispose of HHW all year

long. The City of Chandler is constructing a permanent household hazardous waste collection facility to service Chandler residents. The Town of Gilbert also plans a year 2006 opening of a permanent household hazardous waste facility to accept household waste from Gilbert residents.

Eight other municipalities in the region presently provide a once per year household hazardous waste collection event including Apache Junction, Carefree, Cave Creek, Gila Bend, Gila River Indian Community, Glendale, Goodyear and Litchfield Park. Several of these cities are considering increasing the frequency of collection events. Five local agencies, including Avondale, El Mirage, Salt River Pima Maricopa Indian Community, Surprise, and Youngtown, are considering or planning household hazardous waste collection programs.

#### **6.5.6 Commercial Waste Collection/Recycling Programs**

Several jurisdictions provide commercial refuse and recycling collection services to participating commercial businesses. However, for most jurisdictions in the region, the largest portion of commercial waste generated in the city is collected by private haulers. Exceptions are the City of Tempe who collects about 60 percent of commercial waste generated and the City of Tolleson and Town of Gila Bend. Commercial waste generators that choose municipal collection service in Chandler, Gilbert, Mesa, Peoria, Scottsdale and Tempe generally are assessed a fee in accordance with their individual service contract. The Town of Gila Bend and the City of Tolleson both have curbside collection programs for both residential and commercial waste generators.

The City of Chandler has nine neighborhood recycling drop-off sites throughout the City for multi-family households and commercial entities. The Chandler Transfer Facility also provides opportunities for white goods and appliance drop-off for multi-family users. The Town of Gila Bend operates a municipal waste collection service for residential and commercial waste. The City of Tolleson operates a municipal collection system for residential and commercial waste.

The Town of Gilbert Commercial Collection Program provides full service trash and cardboard recycling collection services to Gilbert businesses per individual service agreements, using metal containers, roll-off and compactor service, plastic containers, and recycling containers. Collected trash is taken to the Salt River Landfill and cardboard is taken to River Recycling.

The City of Glendale Recycling Program provides commercial recycling collection from City offices and participating commercial customers. The City of Mesa Recycling Program offers its commercial customers cardboard and newspaper recycling free of charge. Mesa also collects green waste from commercial businesses through roll-off containers.

The City of Peoria collects about 10 percent of the commercial waste generated in the City. The City of Scottsdale offers commercial refuse collection services for a fee to meet the

waste management needs of businesses. Scottsdale also offers commercial recycling opportunities to eligible businesses and multi-family residences. For big jobs such as business, construction, industrial and large residential cleanup projects, the City of Scottsdale offers commercial roll-off boxes.

The City of Tempe collects about 60 percent of the commercial waste generated in the City. For commercial accounts, the City provides metal bulk solid waste containers. Upon request, the City provides bins to businesses for recyclables such as paper and cardboard. The city also offers businesses the option of a bin for commingled recycling collection. The business recycling bins are picked up by City crews on the same days as residential collection.

### ***6.5.7 White Goods/Appliances Collection Programs***

In the region, some jurisdictions have appliance collection programs offering curbside appliance collection by appointment and/or drop off opportunities. Currently, seven jurisdictions in the region have established white goods/appliance collection programs including Chandler, Gilbert, Glendale, Mesa, Phoenix, Salt River Pima Indian Community, and Scottsdale. A minimal service fee is commonly charged to the resident for this waste type to help recover refrigerant removal costs. Some municipalities request that regulated substances be properly removed prior to appliance collection.

Through these municipal programs, household appliances with refrigerants or CFCs (such as air conditioners, refrigerators) first have the regulated substance properly removed at a reclaiming facility and then take recyclable materials to a scrap dealer or other metals recycling facility. In addition, six other jurisdictions provide some type of opportunity for appliance drop off or collection including Buckeye, El Mirage, Litchfield Park, Peoria, Tolleson and Wickenburg.

The City of Chandler White Goods/Appliance Recovery Program offers curbside pickup for residential households and drop-off at the Chandler Transfer Facility for multi-family residents.

The Town of Gilbert Appliance Recycling Program offers residents the opportunity to arrange for curbside pickup and recycling of large home appliances such as refrigerators, freezers, washers, dryers, water heaters and air conditioners. Refrigerators and freezers are taken to Gila River Recycling and all other white goods and metal are taken to Phoenix Steel.

The City of Glendale White Goods/Appliances Recovery Program is operated out of the Glendale Landfill owned by the City. The City of Litchfield Park Annual Household Hazardous Waste Collection Event accepts up to two appliances per resident.

The City of Mesa provides residential curbside appliance collection service and sells them to a local appliance recycler. Residential appliances are also accepted throughout the year

at the City's multiple HHW Collection Events.

The City of Phoenix Appliances & Electronics Collection and Recycling Program provides residents with curbside collection of large appliances and computers. Residents may arrange for pickup and there is a minimal service fee to recover regulated substance removal costs. Materials collected are direct hauled to a recycling facility (scrap metal dealer) or taken first to the 27<sup>th</sup> Avenue Solid Waste Facility for refrigerant removal and then taken to a recycling facility.

The Salt River Pima Maricopa Indian Community has a white goods program at the Salt River Landfill for major appliances such as refrigerators, washers, dryers, and water heaters. The City of Scottsdale Appliance Collection Program provides an opportunity for residents to arrange curbside appliance pick up and the City has developed guidelines for the service.

### **6.5.8 Waste Tire Collection Programs**

Several jurisdictions in the region accept waste tires at their annual household hazardous waste (HHW) collection events including the Towns of Carefree, Cave Creek, Gila Bend, and Gilbert, and the Cities of Apache Junction, Goodyear and Litchfield Park, and the Gila River Indian Community. The City of Goodyear annually receives a Maricopa County permit to dispose tires at Northwest Regional Landfill at no cost. The City of Avondale periodically collects waste tires from illegal dump sites and delivers them to the Northwest Regional Waste Tire Facility. The City of Glendale accepts waste tires from residents at the Glendale Landfill.

For recycling purposes, the City of Chandler Transfer Facility accepts up to 5 tires per resident per year. Also, the City accepts this same amount per resident at the HHW collection events held twice a year. The Town of Gilbert and the City of Mesa accept used tires at multiple HHW collection events held each year. The City of Phoenix Waste Tire Program accepts up to five program tires per year from residents and takes them to the closest permitted disposal facility. The City of Phoenix also accepts waste tires at multiple HHW collection events held each year. Maricopa County operates the Arizona Waste Tire Collection Program in the County and operates Waste Tire Collection Sites.

### **6.5.9 Landfill Gas to Energy and Waste Ethanol Programs**

According to the U.S. Environmental Protection Agency (EPA), landfill gas can be captured, converted, and used as a renewable source of heat, fuel, or energy. Current EPA regulations under the Clean Air Act require some landfill owner/operators to collect and combust landfill gas, either by burning off the gas, flaring it, or installing a landfill gas system. Local agencies in Chandler, Maricopa County, Phoenix, Glendale and SRPMIC are currently evaluating studies regarding this technology.

Waste to Energy, or combustion, is the burning of solid waste to create heat, which may

be converted to electricity. Currently, the City of Chandler is involved in landfill gas to energy technology with two 150-KwH generators and 49 computerized gas wells at the Chandler Landfill. Maricopa County reports that they are conducting a feasibility study to convert methane landfill gas into electricity at the Queen Creek Landfill. Chandler's program may plan for expansion and landfill gas production capacity may allow for a total of five 150-KwH generators.

#### **6.5.10 Sludge Management Programs**

Sludge consists of wastewater treatment plant biosolids and residual sludges from water treatment plants. Non-hazardous sewage sludge or biosolids are regulated by ADEQ under the Arizona Pollutant Discharge Elimination System (AZPDES) Biosolids Requirements [40 CFR 503.9 and A.A.C. R18-9-1001(7)]. Hazardous sewage sludge must be disposed of in accordance with the Resource Conservation and Recovery Act (RCRA).

Currently, there is not a regional program for management of sludges. Each treatment facility operator is responsible for determining the best management options within State and Federal regulatory requirements for sludges produced in their facilities. For biosolids from wastewater treatment plants, a number of disposal options are currently used. These include land application, agricultural application, composting and landfilling.

Current disposal options for water treatment plant residuals include return to the source water, landfilling, and land disposal. Within the region, some monofills have been developed for water treatment residuals. The management prerogative by the individual treatment facility administrators to select among solids management options is anticipated to continue.

#### **6.5.11 Brownfields Cleanup and Redevelopment Programs**

The U.S. Environmental Protection Agency (EPA) defines a brownfield site as "*real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant.*" Examples of brownfield sites include former industrial properties, old gas stations, vacant warehouses, and former dry cleaning operations.

The U.S. General Accounting Office estimates as many as 425,000 brownfields throughout the nation in year 2002. According to the U.S. Department of Housing & Urban Development, there are an estimated 5 million acres of abandoned industrial sites in the nation's cities - about the same amount of land occupied by 60 of the nation's largest cities.

EPA encourages the clean up and redevelopment of brownfields to benefit communities by creating jobs, revitalizing neighborhoods, increasing property values, and reducing potential health risks. For private investors, brownfields redevelopment can mean new business opportunities, improved community and environmental stewardship, and access to untapped urban markets. Partnerships and cooperative efforts between public and

private sectors have been a key aspect of many successful brownfields redevelopment projects.

In Maricopa County, five communities have participated in brownfields cleanup and redevelopment activity: the Cities of Avondale, Chandler, Phoenix and Tempe, and Maricopa County. Most of the brownfield redevelopment projects in the region have actively involved both public and private entities. The City of Avondale has a brownfield project which was redeveloped into a community park. The City of Chandler responded to a private developer's request and participated in the Chandler Gateway West Project, which was converted from an auto shredding area into a successful commercial project. The City does not have an ongoing brownfields redevelopment program. Maricopa County participates in brownfields redevelopment activity through a contaminated property tax reduction program.

The City of Phoenix initiated a Brownfields Land Recycling Program in 1998 to stimulate reinvestment in the available commercial land base in the inner city. The City's goal is to encourage the private sector to examine the advantages of renovating or developing environmentally contaminated properties. Brownfields are a resource for the City because their redevelopment contributes to community revitalization by cleaning up and creating use of blighted, contaminated properties, creating jobs; bringing services to the community; and generating tax revenues.

The program offers various forms of assistance to property owners and developers as they confront obstacles resulting from environmental contamination. Limited financial assistance is available to the private sector for grants for public infrastructure improvements and development fees. Brownfield projects completed in Phoenix have resulted in the restoration of over 235 acres of previously contaminated property, the creation of more than 3,000 jobs and total private investment of approximately \$245 million.

The City of Tempe is participating with a private firm in brownfields redevelopment activities for the Crossfield Project, an area historically used for industrial purposes such as aggregate mining and processing operations, salvage yards, manufacturing and landfills.

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**IDENTIFICATION OF FUTURE  
REGIONAL SOLID WASTE MANAGEMENT NEEDS**

In the Section 7.1 of this needs identification, current and future solid waste management needs of the region are listed by member agency. The primary sources of this information are the MAG Solid Waste Survey and interviews with MAG member agency waste management professionals. From the information gathered, a needs assessment was compiled and is summarized in Section 7.2 of this chapter.

Section 7.3 of the chapter contains a discussion of future needs for integrated waste management and needs regarding management of household hazardous waste are in Section 7.4. Finally, Section 7.5 contains a discussion of siting criteria for future solid waste management facilities.

**7.1 SOLID WASTE MANAGEMENT NEEDS AND CONCERNS**

One of the initial tasks conducted in updating the Regional Solid Waste Management Plan was to conduct an assessment of the local and regional solid waste needs. As part of this assessment, each MAG member agency was invited to identify the current and future needs for their individual jurisdiction.

The solid waste management programs implemented by member agencies are meeting current needs. Programs have been implemented by local agencies to meet the statutory obligation of each local government to provide residents with solid waste collection and disposal in a manner that prevents public health hazards or nuisances. Those jurisdictions not directly involved in solid waste management have indicated that there are one or two reasons for not being directly involved. Either they are conveying waste management responsibilities to the private sector or the costs of developing and operating new services, programs or facilities are too expensive for the individual municipality at this time.

In the needs assessment, some agencies identified concerns regarding anticipated future needs or made suggestions for possible regional programs to be addressed by the MAG Regional Solid Waste Management Plan. The concerns most commonly identified included management of illegal dumping, management of newly emerging waste types such as electronic wastes and wastes containing regulated substances, and encouraging the business community to identify ways they can help reduce the waste streams.

For jurisdictions with minimal or no recycling programs, a need for identification of strategies for recycling, education, and recyclables markets was suggested. In regard to management of waste tires, local level fees and costs are a concern and off-road tires present a challenge due to a lack of State funding for this waste type. For the unincorporated County areas and municipalities with minimal or no existing household

hazardous waste program, management of this waste type was identified as a concern.

The solid waste management concerns identified by each MAG member agency are provided below. Following the list of concerns by jurisdiction is a summary of the solid waste management needs identified.

### **7.1.1 CITY OF APACHE JUNCTION**

Through the City of Apache Junction Household Hazardous Waste Program, the City conducts an Annual HHW Collection Event in conjunction with Pinal County. As population growth occurs, more resources are anticipated to allow the City to look into providing more opportunities.

The City representative indicated that the MAG Plan should give a higher level attention to how new solid waste facilities are sited. The City representative identified illegally dumped wastes as a serious and persistent problem and indicated that the City's proximity to the urbanized area may make illegal dumping more convenient. The City indicated a concern that the Apache Junction open space is threatened by these illegal actions.

### **7.1.2 CITY OF AVONDALE**

The City of Avondale representative indicated that future solid waste management needs for the City representative include making results of comparative studies available to MAG members, continuing efforts to mitigate transportation costs, and developing HHW disposal options. The City representative indicated that illegal dumping presents a challenge and that management of waste tires is of particular concern, largely because the nearest disposal facility is over 25 miles away.

The City indicated that there is documented community interest in HHW disposal programs, but a recent pilot program had very low participation. The City found that improper disposal can be considerable and an accounting of the pilot program showed that the cost was prohibitive.

### **7.1.3 TOWN OF BUCKEYE**

In the future, the Town of Buckeye would like to consider some type of green waste composting or chipping program and an alternative inert landfill for construction and demolition debris. Conceptually, the Town would also like to consider increased involvement in drop off recycling opportunities for the community.

The Town of Buckeye representative requested to keep some suggestions given by the Town in the 1993 MAG Plan as elements which could be addressed in the regional plan. These include an assessment of regional recycling programs which would afford economies of scale, and alternatives for the management of landscape waste and construction and demolition.

#### **7.1.4 TOWN OF CAREFREE**

In regard to integrated regional goals for integrated solid waste management in the future, the Town representative indicated that it would be helpful for Maricopa County to consider several permanent drop-off sites for household hazardous materials.

#### **7.1.5 TOWN OF CAVE CREEK**

The Town of Cave Creek representative indicated a desire to keep the same future solid waste management needs that they had identified in the 1993 MAG Plan. These needs included reducing the need for landfills by addressing two items: methods to promote source reduction (i.e., limiting the amount of allowable packaging items), and options to reduce the amount of wastes disposed in landfills.

#### **7.1.6 CITY OF CHANDLER**

The City of Chandler representative indicated that city public education on proper disposal should continue. It was suggested that Maricopa County should offer HHW disposal sites for residents located in unincorporated areas or establish Intergovernmental Agreements with local agencies to provide the service.

The City representative indicated that illegal dumping is still a concern and that rising costs of waste disposal make it more tempting for some to illegally dump in the desert or vacant lots. It was suggested that the MAG Plan remain a guiding document rather than change to become an enforcement tool.

In regard to regional integrated waste management goals, the City representative suggested that the voluntary recycling reduction per capita goal should be increased to a reasonable percentage such as 40 percent. It was suggested that the business community should be the next target area by local agencies to work at reducing waste and promoting recycling. It was indicated that a uniform voluntary recycling goal for the business community would be helpful. Due to a City's study which indicates that municipal-operated level composting may be uneconomical, it is suggested that the region set a voluntary green waste diversion goal that includes all types of voluntary green waste diversion programs- such as composting by individuals, grasscycling, and mulching programs- rather than focusing on city or regional level composting goals.

Regarding landfilling and transfer station goals, it was suggested that the MAG Solid Waste Advisory Committee needs to review the long term (50 year and beyond) capacity of all current sited landfills compared to total projected waste generation levels for each jurisdiction. It was suggested that adding a seventh "white goods" category to the six existing classes of the MAG Plan classification system for nonhazardous waste. The City suggested that encouragement of newer technologies such as bioreactor landfills should continue and information on the technologies should be available to the cities.

The City representative indicated that there is still a major concern with illegal hazardous or restricted wastes being placed into normal industrial and commercial collection bins. Staff indicated that the continued growth and resulting increased waste generation and subsequent landfilling is a problem for smaller cities and the unincorporated areas, but not for major jurisdictions. It was suggested that the MAG Plan should look into further developing and assisting cities with disposal of used tires, especially off-road tires.

The City indicated that the only concern with medical waste disposal is that this type of waste be properly handled and disposed, and that the regulations be enforced. Regarding wastewater treatment plant biosolids, staff indicated that there is still a concern over whether small facilities throughout the County will properly dispose of sludge. However, it was suggested that this is not a major concern since proper disposal programs have been implemented in the region. The City indicated that one concern with agricultural waste is that many applicators may have large quantities of chemicals they can no longer use and may dispose of them in regular refuse containers.

#### **7.1.7 CITY OF EL MIRAGE**

The City of El Mirage representative indicated that, in the future, the City plans to formalize their existing Semi-Annual Loose Trash Pick-up Program. The City will also be developing a Household Chemical Collection Program in the future. The City will evaluate recycling programs in the future.

#### **7.1.8 TOWN OF FOUNTAIN HILLS**

In the 1993 MAG Plan, the Town representative identified managing the sludge from the Fountain Hills Sanitary District as a problem due to the high costs of hauling and disposal. The Town representative currently indicates that, since 1993, this sludge issue has been properly addressed as the Sanitary District has invested the necessary funds and effort to assure proper sludge management and disposal.

In the 1993 MAG Plan, the Town indicated that recyclables markets should be developed prior to the implementation of large scale recycling programs to minimize the possibility of stockpiling collected materials. The Town representative indicated that, at this time, the Town does not plan to get into providing solid waste or recyclables collection service and it is anticipated that private sector collection will continue.

For current efforts to help minimize illegal dumping, the Town has successfully implemented a wash management policy which prohibits dumping of trash in washes. Enforcement is conducted by the Town's Code Enforcement Officers and the Maricopa County Sheriff's Department.

#### **7.1.9 TOWN OF GILA BEND**

The Town representative identified addressing management of bulky tree and plant limbs,

and expanded recycling opportunities as future solid waste management needs for the Town. It was indicated that the Town would like to get bigger bins for refuse to reduce the frequency of waste bin dumping needed. It was indicated that tree limbs are a challenge because they fill up collection bins quickly but do not weigh much. The Town hopes to help address this issue by possibly obtaining a chipper for limb breakdown in the future.

The two major concerns identified by the Town representative regarding solid waste in the 1993 MAG Plan included illegal dumping and used tire management. At this time, the Town representative indicated that these issues were no longer of significant concern.

#### **7.1.10 GILA RIVER INDIAN COMMUNITY**

The Gila River Indian Community representative indicated that improvements to the existing transfer station are planned. Also, a second transfer station is planned for the west end of the community. This site will be south of Beltline Road (Riggs) and east of 51<sup>st</sup> Avenue. Both proposed transfer stations will be designed to transfer the waste into semi's. The initial start up will have 40-cubic yard containers, but will have the capability to use semi's when there is demand.

#### **7.1.11 TOWN OF GILBERT**

The Town of Gilbert representative suggested several solid waste management elements that could be addressed in the regional plan, including the following:

- Analysis of Southeast Valley (Maricopa and Pinal Counties) landfills and transfer stations to assess the most cost-effective options for reducing waste hauling and disposal costs as existing Southeast Valley landfills reach capacity over the next 5 to 15 years; and
- The collection of household hazardous waste and the development of household hazardous waste outreach/education programs at the regional level.

#### **7.1.12 CITY OF GLENDALE**

The City of Glendale representative indicated that education programs are a vital component of household hazardous waste programs. The City representative inquired what the intended accomplishment would be if the MAG Plan were to bring a higher level attention to how solid waste facilities are sited and asked if such an effort would go beyond the scope of the Arizona Department of Environmental Quality (ADEQ) in the siting process.

The City representative suggested that the MAG Plan remain a planning document and indicated that the Plan does not have authority in itself for enforcement. It was indicated that waste minimization through reduction, recycling, and reuse should remain a relevant regional goal.

### **7.1.13 CITY OF GOODYEAR**

The City of Goodyear representative indicated that a statutory requirement mandating Arizona cities to recycle would ultimately save landfill space and preserve natural resources. The City representative suggested that municipalities should be encouraged to consider the benefits of regionalization or partnerships to combine municipal solid wastes as a financial strategy to control collection and disposal costs.

In regard to HHW safe disposal concerns, the City indicated that transfer stations in the metro area should consider accepting household hazardous waste from neighboring municipalities or communities. The City representative indicated that a potential shortage of Nonhazardous Liquid Waste disposal capacity resulting from Federal and State landfill operation rules is still a concern and suggested that it be prioritized as such.

The City representative suggested that the MAG Plan should provide detailed answers to needs identified rather than just acknowledge that a need or concern exists. It was suggested that the Plan should include new technologies and identify successes and failures experienced at the national level and identify the national trend. It was also suggested that the MAG Plan provide an update on Pay As You Throw Programs and mechanical obstacles or improvements of this application. The City representative indicated that these programs may be the future solid waste program of choice embraced by citizens.

The City representative identified the National Pollutant Discharge Elimination System Phase II Stormwater Management mandate as a concern and suggested that the MAG Plan identify how cities can best implement and enforce this mandate. It was suggested that the MAG Plan should identify advantages and disadvantages associated with neighboring cities providing solid waste services as a region. An example cited was cities that contract solid waste services with private haulers.

The City suggested that the MAG Plan should identify local markets and programs for anticipated future recycling commodities or problem commodities. It was suggested that the Plan identify educational and public outreach program strategies targeting communities with minimal or non-existent recycling programs to include cost and operational advantages supporting automated waste collections versus manual.

The City representative suggested that the MAG Plan should address the common public concerns with automated curbside recycling such as container size, odor, and reduced service. It was suggested that the MAG Plan include operational cost and injury claim statistics from a national level supporting the efficiency of automated collections versus manual. It was suggested that the Plan include real time data reflecting advantages of automated collections versus manual and contact names and numbers of vendors that supply automated curbside collections public education materials.

The City representative suggested that the Plan should identify advantages and

disadvantages of cities presently providing composting programs and the market obstacles. The City inquired what the Plan future forecast is for greenwaste programs in Arizona. City staff inquired what pros and cons are associated with waste combustion with energy recovery in the region and in other parts of the country. The City representative inquired about the results of the planned Maricopa County preliminary evaluation of a waste to energy facility.

The City representative indicated that Tolleson's planned transfer station identified in the 1993 MAG Plan did not materialize and inquired about the City of Tolleson disposal preference in regard to the transfer station being sited within the Goodyear planning area. The City inquired about the long term impact the potential future transfer facility would have on tipping fees, and inquired whether cities should market their solid waste to this facility combined. It was suggested that neighboring municipalities who out source residential refuse collections and practice identical applications should consider regionalization to increase refuse volumes and manipulate service costs for the customer, hauler, and sponsoring entity.

#### **7.1.14 TOWN OF GUADALUPE**

The Town of Guadalupe representatives suggested that perhaps the MAG Regional Solid Waste Management Plan could address options that will assure low cost and safe management for the disposal of wastes. The Town contracts with the private sector for waste collection.

#### **7.1.15 CITY OF LITCHFIELD PARK**

In the 1993 MAG Plan, the City of Litchfield Park indicated that a study assessing economics of recycling programs would be useful. Currently, the City representative identified continued evaluation of the possibility of City providing solid waste collection rather than contracting for private collection services, and evaluating recycling opportunities as future solid waste management needs for the City.

#### **7.1.16 MARICOPA COUNTY**

The Maricopa County representative indicated that there is a need for a regional household hazardous waste facility. The County indicated that it would not be beneficial to set regional goals for composting. It was indicated that the regional goal for waste reduction should continue current practices with local agencies developing achievement targets consistent with local programs and conditions and encouragement of recycled items market development.

The County representative indicated that their Solid Waste Department is conducting a feasibility study to convert methane landfill gas into electricity at the Queen Creek Landfill for future needs. It was suggested that the region should pursue the goal to conduct evaluation of waste to energy options as needed during periodic evaluations of the MAG

Plan.

The County representative indicated that the MAG Plan should give a higher level attention to ways to encourage businesses to identify how they can help reduce the waste stream. It was indicated that the region has not met the 1993 regional goal for landfilling and transfer stations which called for proceeding with development of the remaining planned regional landfills and developing transfer stations on the basis of local or sub-regional needs. It was indicated that there is enough landfill capacity in the region but there should be large transfer stations in each quadrant of the County.

The County representative indicated that illegal dumping is still a serious issue for which the region has not made any real progress. The County indicated that their Used Tire Disposal Program has performed very well.

#### **7.1.17 CITY OF MESA**

The City of Mesa representative indicated that there is an ongoing need to obtain useful data from the private sector of the industry, and lack of this information makes long term planning difficult. It was indicated that, although ADEQ has made strides in standardizing its data collection system, additional attention should focus on making sure that Arizona is accounting for and receiving credit for all practices that are being counted in other states.

The Mesa representative indicated that the MAG Plan should give higher attention to ways to encourage businesses to identify how they can help reduce the waste stream. It was suggested that the MAG Plan give a higher level attention to how new solid waste facilities are sited.

The City representative indicated that household hazardous waste will continue to be a problem until other nonhazardous alternative products are developed. It was suggested that the ability for jurisdictions to site and operate permanent HHW facilities, either individually or jointly, needs to be considered. It was indicated that methods for collecting and handling household hazardous waste for unincorporated areas of the County need to be identified. The City representative indicated that municipalities are absorbing costs for these unincorporated areas by accepting residents who fall within City limits but are not residents of the municipality.

#### **7.1.18 TOWN OF PARADISE VALLEY**

During the meeting, several suggestions were offered that relate to solid waste management. First, it was suggested that more education be directed toward household hazardous waste and the problems with improper disposal of these wastes. Second, it was suggested that direction be provided for developing and implementing regional recycling programs. It was indicated that a regional program involving several communities would provide economies of scale and would be more economically feasible for smaller jurisdictions. However, there are no guidelines existing which could assist in developing

this type of program. Also, the representative indicated that prior to establishing any large scale recycling programs, markets should be located and secured for the collected materials.

#### **7.1.19 CITY OF PEORIA**

For future solid waste management needs, the City of Peoria representative identified a City desire to continue evaluating expansion of their drop off recycling program to add future curbside collection services and public education and outreach. The City is hopeful that more programs for other types of waste management, such as green waste, will be developed if a curbside recycling program is developed.

The City representative indicated a desire to possibly increase the City's portion of commercial waste collected in the future. Currently, about 10 percent of commercial waste generated in the City is collected by the City, while the other 90 percent is collected by the private sector. The City representative suggested that the MAG Plan address assurance of safe, long term disposal capacity that will meet EPA regulations for solid waste facilities be considered. It was suggested that other waste management options to lengthen life expectancy of existing landfills, and options to address recycling methods for commercial wastes collected by private sector be considered.

#### **7.1.20 CITY OF PHOENIX**

The City representative indicated that they would be interested in ways that the new MAG Plan could reduce the waste stream coming from commercial accounts. The City does not provide solid waste services to commercial accounts including large apartments and businesses. The City representative indicated that the creation of encouragements for market development of recycled items is paramount to making recycling collection programs effective and efficient. It was suggested that the MAG Plan should focus and acknowledge those businesses and individuals creating markets for the materials collected.

In regard to siting of solid waste management facilities, the City indicated that communities should plan and zone areas for use as landfills and then put appropriate uses around the landfills. The City representative indicated that long haul costs will be a problem in the future due to the distance at which new landfills are being sited.

Regarding problem wastes, the City representative indicated that illegal dumping is still a serious and persistent problem in the region. It was suggested that electronic and chlorofluorocarbon containing equipment and appliances should be listed as problem wastes.

For used tire management, the City representative indicated that the existing waste tire management program is costly and a study should be done to determine if the associated fee is meeting the needs. It was indicated that tire fires have been a problem and can cause lasting environmental problems which create additional costs for the program.

Regarding new and innovative technologies, the City representative indicated that waste to ethanol technology has yet to be proven, but may have promise for more specific waste streams such as beverage and food waste. It was indicated that bioreactor landfill technology is a promising strategy that may address concerns about the current “dry tomb” landfill technology, but may not be feasible in Arizona due to the amount of water required for operation. The City of Phoenix continues to study the possibility of creating energy from methane gas at its landfills with the goal of utilizing the gas for energy rather than just flaring it. At this time no waste combustion is planned.

In regard to management of household hazardous waste, it was suggested that there should be permanent facilities open during the week and on weekends to make safe disposal convenient and to benefit people and the environment.

Regarding possible improvements to the MAG Plan, the City representative indicated that a public notice campaign about household hazardous waste should be developed and that the MAG Plan should be kept up to date to better serve its purpose. It was suggested that the MAG Plan should remain a planning tool rather than an enforcement tool.

#### **7.1.21 TOWN OF QUEEN CREEK**

At this time, the Town of Queen Creek representative did not identify any particular future solid waste management needs.

#### **7.1.22 SALT RIVER PIMA MARICOPA INDIAN COMMUNITY**

The Salt River Landfill is planning on conducting a pilot program for the recycling of electronics. The Public Works Department plans to expand the curbside recycling pilot program to the remaining SRPMIC residential areas.

#### **7.1.23 CITY OF SCOTTSDALE**

The City of Scottsdale representative identified better communication between participating entities for better uniform reporting as an overall waste management goal of the MAG Plan. The City representative identified evaluation of regional household hazardous waste collection opportunities at permanent facilities as a regional integrated waste management goal. The City representative indicated a desire to have more free avenues of disposal for residents to dispose of used tires.

#### **7.1.24 CITY OF SURPRISE**

The City of Surprise has begun implementation of multiple environmental programs including curbside recycling, Household Hazardous Waste Events, schools recycling, electronics recycling and educational campaigns to introduce composting, mulching and other waste reduction means. Because Surprise has experienced explosive growth, and the logistics involved in transporting large quantities of recyclable materials in the far,

Northwest Valley, representatives have suggested that the plan address the following:

- Analyses of the feasibility of modifying Maricopa County regional landfills into on-site regional resource recovery facilities that include recycling centers, electronics recycling, green waste and composting facilities, and household hazardous waste recycling or disposal facilities: and
- Analyses of the types of recycling programs that are feasible for additional and expanded recycling services for a growing community and expanding development region, e.g., recycling of construction and building materials and cement and asphalt recycling.

#### **7.1.25 CITY OF TEMPE**

The City of Tempe representative indicated that future solid waste management needs include a desire to continue increasing the level of community participation in recycling, expanding recycling education, and expanding automated collection service to the two remaining neighborhoods that are not currently receiving automated service. The City representative indicated that the two neighborhoods with manual collection are constrained by customer preference and perception regarding their current in-ground cans and smaller can size, and that the City hopes to implement automated collection for these areas in the future. The City may possibly develop a recycling education program addition focused on a mobile recycling education trailer to reach schools in various parts of the City.

#### **7.1.26 CITY OF TOLLESON**

The City of Tolleson representative indicated that current and future solid waste management needs include concerns regarding cost per ton, distance traveled to dump, and cost of fuel. The City currently hauls to the 27<sup>th</sup> Avenue Facility located at 27<sup>th</sup> Avenue & Lower Buckeye Road. The City is pursuing evaluation of recycling needs for the community.

#### **7.1.27 TOWN OF WICKENBURG**

The Town of Wickenburg representative indicated that there is preliminary consideration of possible future use of a nearby privately owned transfer facility. In addition, other entities have discussed the potential for a possible future landfill situated west of the Town of Wickenburg.

#### **7.1.28 TOWN OF YOUNGTOWN**

The Town of Youngtown representative indicated that future solid waste management needs include a desire for the City to become more involved in recycling opportunities for the community. The Town has recently increased the number of cleanups conducted from one to two per year for items such as appliances and used tires. The Town also indicated

that the solid waste management needs will increase with the planned development of a 783 home subdivision within the planning area and it is anticipated that collection would be provided by a private hauler.

## **7.2 SUMMARY OF NEEDS IDENTIFIED BY MAG MEMBER AGENCIES**

From the Section 7.1 discussion of needs by member agency, the major elements and the needs most commonly identified have been extracted and are provided below.

1. Solid Waste Facilities Siting Needs- In the initial stages of the update, some identified that there may be value to the MAG Plan giving a higher level attention to how new solid waste facilities are sited. It was then suggested that the MAG Plan should avoid duplicating or going beyond the scope of the Arizona Department of Environmental Quality (ADEQ) facility siting process. It was indicated that responsibility should remain with the local agency for determining planning and zoning for landfills and appropriate land uses for surrounding areas within the scope of Federal and State regulations. In development of the 1993 MAG Plan, the member agencies determined that Federal and State regulations established measures that would adequately meet the need for uniform siting criteria. A detailed description of the solid waste facility regulations and siting criteria is provided in Section 7.5 of this chapter.
2. Illegal Dumping Management Needs- Several municipalities in the Maricopa County area have developed ordinances or city codes prohibiting illegal dumping. Several member agencies identified illegal dumping as a serious and persistent problem. Open dumping of wastes in an unpermitted area causes can raise concerns regarding public and environmental health, property values and quality of life. General challenges for managing illegal dumping in the region include significant cleanup costs, lack of resources for cleanup and monitoring, lacking city and county authority to cite illegal dumpers, and hurdles in prosecuting illegal dumping.
3. Waste Tire Management Needs- The management of waste tires in the region was identified as a challenge due to the distance to nearest waste tire facility and the lack of free disposal options for residents. Management of tires under the Off-Road category were noted as particularly challenging since the ADEQ Used Tire Grant Fund does not provide funding for this waste tire type and this larger type takes up more space when disposing. It was indicated that the ADEQ Waste Tire Grant Fund and Waste Tire Collection Program have been performing well at the State and County level, but there is concern regarding the fees and costs at the local level. It was indicated that evaluation of the associated fees and the program's ability to meet needs may be of value.
4. Mitigation of Transportation Costs Needs- In regard to solid waste transportation costs in the region, it was indicated that long hauling costs will continue to be

challenging due to the distance at which landfills are being sited from the urban core. Siting criteria for solid waste management facilities are included in State and Federal regulations. In addition, public scrutiny of solid waste facility siting processes provides a measure of assurance that unwanted facilities would not be developed.

5. Household Hazardous Waste Management Needs- In regard to management of household hazardous waste, for jurisdictions with minimal or no HHW program, exploration of partnering or regional efforts was suggested. A program to address the unincorporated areas of the County through drop off sites or Intergovernmental Agreements with nearby cities for service was suggested. It was indicated that establishment of permanent regional household hazardous waste facilities for residents may be helpful. A potential regional role in expanding education on safe disposal opportunities for this type of waste and establishment of a public notice campaign was suggested. It was indicated that existing programs should be extended to educate and encourage safe HHW disposal by commercial entities in the region.
6. Waste Reduction and Recycling Needs- For waste reduction and recycling in the region, it was generally indicated that the Plan should continue with local agencies developing achievement targets consistent with local programs and conditions. It was indicated that a regional effort to target the recycling and waste reduction in the business community would be valuable. The creation of encouragements for market development of recycled items was identified as key to effective recycling programs. The importance of gathering recycling data from private waste service providers in addition to municipal programs was identified. It was indicated that, for jurisdictions with minimal or no recycling programs, evaluation of recycling strategies, public outreach strategies, and identification of local recyclables markets would be helpful.
7. Newly Emerging Waste Type Management Needs- In regard to newly emerging challenges, it was indicated that a regional approach may be valuable to study options for management of appliances containing regulated substances and the growing waste stream for electronics waste. It was indicated that waste appliances containing regulated substances such as chlorofluorocarbons and the disposal of large quantities hazardous components in electronic waste has become a challenge for municipal waste management programs.

### **7.3 FUTURE NEEDS IN INTEGRATED WASTE MANAGEMENT**

In addition to landfilling, the integrated waste management strategies identified by the US Environmental Protection Agency (EPA) include resource conservation and source reduction, resource recovery and recycling, and waste combustion with energy conservation. The need for these strategies can be evaluated on the basis of several

factors such as cost considerations, a desire to conserve landfill space, and a statutory requirement to provide citizens with the opportunity to participate in source reduction and recycling.

With the development of new landfills and continued operation of existing landfills during the current planning period, landfill capacity is anticipated to be in excess of needed disposal capacity. However, a continued increase of source reduction and recycling strategies resulting in decreased landfill use could result in overall cost savings. The local governments, acting independently or through intergovernmental agreements, are the implementing entities for source reduction and recycling programs.

A determining factor in evaluation of source reductions or waste diversion strategies could be the need to mitigate transportation costs. Transportation costs associated with hauling waste to the landfills can be an issue due the remoteness of landfills from the centroids of waste generation. In addition to transportation cost savings, implementation of diversion strategies could result in decreased landfill use rates. Other landfill use decreasing strategies, such as mulching operations, could result in overall cost savings by extending landfill life and reducing landfill operations costs over the long term. There are also new and innovative technologies on the horizon, such as bioreactor landfill technology, which would impact the life of the landfill if accepted in regulations at the State and Federal level.

Source reduction strategies adopted for this Plan include the following: investigation of regulations to restrict or ban certain products or materials; encourage the development and implementation of procurement policies that promote the purchase of recycled materials; encourage the development of voluntary source reduction and recycling plans prepared by businesses and industries; continual evaluation by municipal and private waste collection firms of the feasibility of implementing variable fee structures for waste disposal within their jurisdictions; investigation of the development of product taxes for products known to produce excessive quantities of waste or which have hazardous properties; development of public education programs to educate consumers, businesses, industries, schools and other institutions about source reduction; development of backyard landscape waste management and composting promotional campaign(s); and support of strategies for management of certain white goods (appliances).

The implementing agencies for source reduction strategies in the region are the local governments and Maricopa County. In Arizona, cities, towns and counties must provide residents with the opportunity to engage in waste reduction and recycling. Numeric waste stream reduction goals have not been mandated. Local needs in the areas of source reduction, recycling and waste conversion are anticipated to be a function of transportation system costs and local conditions. These conditions could include the costs and benefits of program implementation, and the success of public education programs.

#### **7.4 FUTURE NEEDS FOR MANAGEMENT OF HOUSEHOLD HAZARDOUS WASTES**

Household hazardous waste not managed by collection and proper disposal could be disposed in landfills along with municipal solid waste, stored in residences, or dumped illegally in sewers, storm drains or on land. The storage of hazardous materials in homes can present additional potential hazards to residents and firefighters. The U.S. Environmental Protection Agency and ADEQ encourage local agencies to provide for the collection and disposal of household hazardous wastes as an alternative to illegal disposal practices.

Several municipalities in the region have well established household hazardous waste collection programs with a valuable public outreach and education component. The education component has been important for minimizing future household hazardous waste generation and promoting proper disposal. In the future, potential management options for this type of waste include establishing more permanent household hazardous waste collection centers, evaluation of regional or partnering education and collection efforts, and extending education efforts to the commercial sector.

#### **7.5 CRITERIA FOR SITING SOLID WASTE MANAGEMENT FACILITIES**

Criteria for siting solid waste management facilities has been incorporated into Federal and State regulations. As a result, there is no need to develop an independent series of criteria for use in the MAG region. Beyond mandated siting requirements, public scrutiny of solid waste facility siting processes provides a measure of assurance that unwanted facilities would not be developed.

At the federal level, solid waste disposal facility siting restrictions are included in Subtitle D of the Federal Resource Conservation and Recovery Act (RCRA). These include items such as consideration of airport safety, floodplains, wetlands, fault areas, seismic impact zones, and unstable areas. The Arizona State Legislature adopted the RCRA Subtitle D siting restrictions in 1992, to facilitate establishment of State regulatory powers. Location restrictions for solid waste landfills are listed in Arizona Revised Statutes (A.R.S.) §49-772.

Beyond the federal restrictions, Arizona regulations restrict solid waste disposal facility development in lands with grandfathered irrigation rights, or which are located within one-

half mile of a 100-year floodplain that has 100-year flow in excess of 25,000 cubic feet per second. Facilities associated with mining, agricultural on-site disposal, land reclamation projects, and solid waste transfer or recycling facilities are exempt from some requirements. Other exemptions apply to certain industrial on-site disposal facilities, and for application of solid waste to agricultural land as fertilizer or soil amendment.

Arizona regulations require that any agency selecting a possible site for a solid waste treatment, storage or disposal facility obtain permission from the city or town where the proposed permanent site is located. If the proposed site is in an unincorporated area, permission must be obtained from the County. The State has also adopted legislation requiring public notification and public hearing procedures.

The Arizona Department of Environmental Quality (ADEQ) has primary responsibility for approving and permitting solid waste disposal facilities in Arizona. ADEQ adopts rules and develops guidelines for the facility plan approval process, and uses facility operating permits. The ADEQ Aquifer Protection Permit program assures groundwater protection requirements are addressed in the design of solid waste management facilities not requiring facility plan approval by ADEQ.

Three existing major regional landfills in the region are anticipated to remain open well beyond the current twenty year planning period. The Butterfield Station Landfill is anticipated to remain open until 2110. The Northwest Regional Landfill is anticipated to remain open until year 2102 and Waste Management, Inc. indicates that surrounding vacant land is available for expansion. The Southwest Regional Landfill is anticipated to remain open until year 2051. In addition to these regional landfills, several existing landfills serving within a specific jurisdiction are expected to remain open beyond the planning period.

Two new landfills are planned to open within the twenty year planning period: the City of Phoenix SR 85 Landfill (which has a life expectancy of 80-100 years) and the proposed Southpoint Environmental Landfill. For the Phoenix SR 85 Landfill, the City of Phoenix evaluated the proposed site in accordance with Federal and State criteria, and conducted studies of a biological, geotechnical, environmental and cultural nature. The siting study also included public involvement through community open houses, newsletters, public announcements and advertisements, flyers, a telephone information line, and a Web site.

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**SOLID WASTE MANAGEMENT STRATEGIES**

This chapter contains the solid waste management strategies which were selected during the MAG Regional Solid Waste Management Plan development process. The development process involved evaluation and selection of technically feasible management strategies for identified waste problems. In addition, technically and economically feasible management strategies for the components of integrated solid waste management were developed. The criteria to evaluate waste management options are listed in Table 8.1.

The MAG Solid Waste Advisory Committee reviewed strategies included in the 1993 MAG Plan and provided input on whether the selected strategies were still relevant to address current and future waste problems. In 1993, the Solid Waste Coordinating Committee recommendations were submitted to the MAG Regional Council for approval and inclusion in the MAG Plan.

In this chapter, the selected technically and economically feasible integrated solid waste management approaches are discussed first. These include strategies for source reduction, resource recovery, backyard composting, recycling, landfilling and interim landfilling. For many of these management approaches, a brief discussion of the strategy and the implementation responsibility is included.

Following the discussion of integrated waste management strategies is a listing of management options selected to address specific waste types and waste problems. The waste categories addressed include nonhazardous liquid wastes, medical wastes, regulated and special wastes, household hazardous wastes, wastewater treatment plant biosolids, agricultural wastes, illegal dumping, and commercial and industrial wastes.

**8.1 STRATEGIES FOR INTEGRATED SOLID WASTE MANAGEMENT****8.1.1 Source Reduction Strategies**

- 1) Investigation of restrictions or bans on certain products or materials.

This regulation could apply to items that produce excessive quantities of waste (including packaging) or which have hazardous properties, for which there are less wasteful or less toxic alternatives. The restrictions could be enacted by way of ordinance or legislation.

Some examples of this regulation include the following:

- a) Ordinances banning the use of polystyrene foam food containers by restaurants and food vendors have been adopted by the Cities of Berkeley and Santa Cruz in California and Portland, Oregon.

**TABLE 8.1**

**CRITERIA TO EVALUATE WASTE MANAGEMENT OPTIONS**

1. Impact of the option on the public health.
2. Impact of the option on the environment, including surface and groundwater quality, air quality, and the land.
3. The applicability and impact of any current and anticipated laws and regulations on the option.
4. Public acceptability factors, i.e. public perception of the option, public awareness of the need for this type of option, and the difficulty associated with siting any related facilities.
5. Program costs of the option: capital, building and equipment costs; interest on debt financing; operation and maintenance; public involvement and education; permitting; environmental testing; legal fees; environmental compliance/pollution control; and staff time.
6. Intangible costs of the option: avoided landfill disposal costs; delays due to public opposition (inflation, high costs of temporary option); impact on the local economy.
7. Program revenues generated by the option: material sales; energy sales; tipping fees; permit/license fees, if applicable.
8. Financing issues associated with developing the option: how will the option be financed; will the revenues generated by the option be sufficient in paying the debt incurred from developing the option.
9. The effectiveness and reliability of the option in managing the wastes.
10. The time frame for the option to become operational, and the delays that may be expected based upon experiences in other areas.
11. The compatibility of the option with existing solid waste management system components.
12. The uncertainty and risk associated with the option, including the sensitivity of each option to changes in the local, regional, state, and federal situations.
13. The extent of institutional or political barriers, i.e. who has the ultimate control over the technology, does it require negotiated agreements between two or more local governments, and is it legal for the particular local government or private entity to enter into the required agreements.

- b) The Cities of Minneapolis and St. Paul have enacted ordinances prohibiting all non-degradable, non-returnable and non-recyclable food packaging from use in retail food establishments.
- c) The California Electronic Waste Recycling Act of 2003, created by Senate Bill 20 (the E-waste Bill), bans the disposal of cathode ray tubes in landfills and bans the sale of devices containing specified levels of toxic heavy metals after 2007. The

Act also adds recycling cost fees, reduction incentives, and reporting requirements for hazardous electronic waste retailers and manufacturers and toxic electronic export restrictions.

*Implementation Responsibility.* Restrictions or bans could be mandated by the individual municipalities and Maricopa County, or by the Arizona Legislature. Caution should be exercised in the preparation of the ordinance to promote consistency throughout the MAG region, as well as avoid a shift to less desirable materials.

- 2) Encourage the development of voluntary source reduction and recycling plans prepared by businesses and industries.

To provide assistance with the plan preparation, a waste auditing program would be established in which trained staff travel to the businesses and demonstrate methods that would reduce the amount of waste being generated and disposed.

*Implementation Responsibility.* Maricopa County could develop a regional program or the individual cities and towns could develop individual programs. The Arizona Legislature could also promote statewide source reduction planning.

- 3) Continual evaluation by municipal and private waste collection firms of the feasibility of implementing variable fee structures for waste disposal within their jurisdictions.

The variable fee could be administered through charging by the number of cans used by a customer, the number of bags used, the weight of the waste, or the frequency of service. The purpose of such a fee structure is to discourage waste generation. As an added feature, variable fees can be tied to recycling programs.

*Implementation Responsibility.* Continual evaluation would be the responsibility of the cities, towns and the private sector waste collection firms.

- 4) Investigation of the development of product taxes.

Products known to produce excessive quantities of waste or which have hazardous properties could be taxed, either a fixed or progressive amount, if less wasteful or less toxic alternatives exist. The tax would be designed to both discourage the use of the product and capture the external social costs that are not accounted for in the cost of the product. This is similar to an advance disposal fee. However, the fee is charged to consumers purchasing the products rather than the manufacturers. The revenues generated from the tax could be used to properly manage the disposal of the product or to reduce the undesirable impacts of the product.

*Implementation Responsibility.* The cities and towns could adopt an ordinance requiring a tax on certain products. The Arizona Legislature also could adopt a statewide tax on certain products.

- 5) Development of public education program(s) to educate consumers, businesses, industries, schools and other institutions about source reduction.

This could include a public awareness campaign to provide information on source reduction techniques, developing educational curricula for students about source reduction, and developing literature on source reduction to distribute to residents, industries and businesses.

*Implementation Responsibility:* The individual municipalities and Maricopa County could work together to develop and finance a regional source reduction education program. The program could be administered by Maricopa County or contracted to a group such as Phoenix Clean and Beautiful. The individual cities and towns could develop and administer their own education programs. The Arizona Department of Environmental Quality (ADEQ) also has responsibility to implement and conduct a program of public education under the Arizona Recycling Program.

### **8.1.2 Recycling Strategies**

- 1) Encourage the development and implementation of procurement policies that promote the purchase of recycled materials.

One such policy has been developed in Arizona for the purchase of recycled newspaper. The ADEQ, through the Annual Report on the Arizona Recycling Program, makes recommendations on minimum post-consumer content standards for State adoption. In addition, several cities and towns in the MAG region have developed procurement policies aligned with waste reduction or pollution prevention objectives.

*Implementation Responsibility:* The Arizona Legislature could develop recycled material procurement policies for State agencies and State contracts, while individual cities and towns develop local policies.

- 2) Regional recycling strategies include market development and education. Previously, in 1993, Maricopa County was identified as the regional lead agency. However, Maricopa County has since reduced their solid waste management role. The statewide lead agency is the ADEQ. The Arizona Department of Commerce (ADOC) is also active in development of markets for recycled materials and in development of businesses related to recycling. A statutory requirement in Arizona is that each County, city and town provide its residents with the opportunity to participate in source reduction and recycling. In practice, each MAG member agency evaluates local conditions and determines the most effective recycling format for the community.
- 3) Development of backyard landscape waste management and composting promotional campaign(s).  
Previously, in 1993, the University of Arizona Cooperative Extension Service provided a guide book and training on composting techniques to County residents. It was

envisioned that a widespread promotional campaign to inform residents of the Extension Service Program may be possible.

*Implementation Responsibility.* In 1993, the campaign was envisioned to be developed and administered regionally by Maricopa County, in conjunction with the Extension Service. Also, the option of individual cities and towns administering their own campaigns was identified. Since 1993, many cities and towns have developed programs that encourage and offer assistance for backyard composting at the individual residential level.

#### 4) Implement Materials Recovery Facilities.

A number of arrangements are typical for acquiring sorting and processing services (Materials Recovery Facilities or MRFs) to recover recyclables from the solid waste stream. Such facilities and services can be owned and/or operated by local governments, cooperatives of local governments or the private sector.

*Implementation Responsibility.* Depending upon evaluation of local conditions, local governments may establish municipal sorting and processing centers or use a private service. Either may be done by a municipality independently or through a cooperative effort with other local governments. Private waste hauling companies may also choose either public or private MRFs, if such services are desired or required.

#### 5) Centralized Composting.

Previously, in 1993, it was indicated that waste management strategies using centralized composting would be evaluated when the results of existing pilot programs became available. Evaluation of factors such as separation strategies for compostable green wastes and encouraging the agricultural use of compost to reduce water pollution by nitrates and other fertilizers was envisioned. At that time, a management strategy was adopted for individual agencies to develop mulching operations at landfills or transfer stations on a local or subregional basis.

Since that time, several municipalities have developed mulching operations and found large scale composting operations to be noneconomical due to high production costs and low market values. Although the Salt River Landfill has a large scale composting operation, MAG member agencies have generally suggested a management strategy that promotes backyard composting at the residential level rather than a centralized composting strategy. Many jurisdictions currently encourage backyard composting and provide assistance and equipment to residents.

### **8.1.3 Landfilling Strategy**

Landfilling is anticipated to continue to be the primary means of solid waste management in the MAG region. In total, the projected landfill and transfer station capacity is anticipated to last beyond the current twenty year planning period. The landfill capacity will not be evenly distributed from the geographic perspective, and shifting to alternative landfills may result in a need for more transfer stations. The continued operation of existing regional or subregional landfills and development of the planned City of Phoenix Southern Route 85 Landfill and a proposed landfill south of the urbanized core are anticipated to meet landfill capacity needs during for the planning period.

## **8.2 SELECTED MANAGEMENT STRATEGIES FOR SPECIFIC WASTE TYPES AND PROBLEMS**

### **8.2.1 Nonhazardous Liquid Wastes**

Previously, in the 1993 MAG Plan, it was anticipated that recommendations for a regional solution to manage nonhazardous liquid waste would emerge with completion of a Maricopa County analysis and evaluation of the available management strategies. Phase One of the Maricopa County analysis and evaluation was completed, but shortly thereafter, the County and municipalities generally got out of the nonhazardous liquid waste business due to changes in federal level NHLW regulations. Presently, Maricopa County-approved nonhazardous liquid waste disposal sites are generally owned and operated by the private sector. However, some cities do accept certain types of NHLW, such as septic waste, at their wastewater treatment plants.

### **8.2.2 Medical Wastes**

For the purposes of the MAG Plan, medical waste is a subcategory of commercial and industrial wastes. Previously, in the 1993 MAG Plan, it was anticipated that the potential impacts of new State rules on the MAG Plan would be evaluated after the Arizona Medical Waste Rules were finalized and the Plan would be revised if needed. Presently, the MAG member agencies indicate that medical waste management is appropriately addressed with the Arizona Medical Waste Regulations and this waste type is not currently considered a problem waste.

### **8.2.3 Regulated Wastes and Special Wastes**

Previously, in the 1993 MAG Plan, it was anticipated that the potential impacts of new State rules on the MAG Plan would be evaluated after the Arizona Special Waste Rules were finalized and the Plan would be revised if needed. Presently, the MAG member agencies indicate that special waste management is appropriately addressed with the Arizona Special Waste Regulations in R18-13-1301 through R18-13-1307 of the Arizona Administrative Code (A.A.C.) and this waste type is not currently considered a problem

waste. Wastes that contain petroleum contaminated soils and wastes from auto shredding have been designated as special wastes.

The State of Arizona has also established programs for the management of waste tires, used batteries and used oil. Arizona has established the Arizona Waste Tire Collection Program and State regulations include best management practices for the management of waste tires and used batteries. For used oil, prohibited practices have been identified in A.R.S.§49-803.

During the Plan development process, problem wastes associated with used appliances were identified. Prior to disposal, used appliances must be processed to remove chlorofluorocarbons (CFCs) and other regulated substances such as compressor oils, switches containing mercury, and components containing polychlorinated biphenyls (PCBs).

In the 1993 Plan, a management strategy was adopted, involving a fee to cover the cost of managing these components. At that time, it was envisioned that legislation for advance white goods disposal fees collected at the retail level would be supported. It was also envisioned that ADEQ and the Arizona Department of Revenue would serve as the implementing agencies. This legislation has not materialized.

With the 1993 Plan, a white goods management strategy was also adopted to implement and maintain a white goods revenue collection program apart from other waste management programs to enable the public to clearly associate any fees collected with activities that manage the targeted wastes. This management strategy has materialized and several local governments in the region have established white goods collection and recycling program. Generally, these municipalities collect a minimal fee for disposal to cover the cost of regulated substance removal.

#### **8.2.4 Household Hazardous Wastes**

Previously, in the 1993 MAG Plan, the member agencies had envisioned that household hazardous waste (HHW) collection and management would be implemented on a regional basis with Maricopa County acting as the lead agency. However, Maricopa County has reduced its solid waste management role and this regional management strategy did not materialize as envisioned. Many municipalities in the region have developed household hazardous waste collection programs on an individual or subregional basis. These programs range from several collection events each year to one annual collection event, and a public education and outreach has been an integral component of these programs. In addition, several member agencies with no existing program are considering or planning a future HHW collection program.

Previously, a HHW management strategy was also adopted to evaluate efficient and cost effective strategies and evaluate collection systems and potential permanent HHW collection sites. This strategy has materialized in the region through local governments'

efforts. Within the region, there is one existing municipal permanent HHW collection facility and two more facilities are planned. These facilities are designed to manage HHW from within a particular jurisdiction.

### **8.2.5 Biosolids Generated at Wastewater Treatment Facilities**

The management strategy for biosolids is primarily a continuation of current practices. Previously, in 1993, MAG member agencies identified biosolids as a problem waste. However, since that time, the ADEQ Biosolids Program has implemented Section 503 of the Clean Water Act and regulates biosolids management under 18 A.A.C. 9, Article 10. Incineration of biosolids is regulated by the U.S. EPA and is prohibited in Arizona. At this time, member agencies indicate that this waste type is generally not considered a problem waste at this time.

Currently, the biosolids management strategy is expected to continue with wastewater treatment facility operation conducted in accordance with the Arizona Best Management Practices. Biosolids disposal methods in the region include land application, surface disposal, and landfilling. Any biosolids surface disposal site is regulated under the ADEQ groundwater program and must obtain an Aquifer Protection Permit.

### **8.2.6 Agricultural Wastes**

The management strategy for agricultural wastes is to encourage options other than landfilling, and evaluate agricultural waste problems during annual MAG Solid Waste Plan evaluations. In the MAG region, agricultural wastes do not currently cause significant problems in landfills. All the substantial dairy and livestock operations have manure management programs in place, and most use stockpiling and land application strategies.

### **8.2.7 Illegal Dumping**

The management strategies adopted to deal with the persistent illegal dumping problem include the following:

- Develop an ordinance to strengthen the powers of agencies that handle illegal dumping and the penalties for those caught illegally dumping in Maricopa County. A model ordinance was included in the 1993 MAG Plan Appendix B.
- Develop an illegal dumping education program for the public.
- Establish volunteer watch programs for areas that are continually used by illegal dumpers.
- Support legislation to grant citation authority to city and County staff involved with handling illegal dumping of waste.

- Investigate the establishment of an environmental court in Maricopa County.

### **8.2.8 Commercial/Industrial Waste Problems**

The waste management strategies to mitigate problems associated with commercial and industrial waste include the following:

- Publicize State and County databases as sources of information for users and generators of hazardous materials.
- Encourage joint investigations of illegally disposed hazardous materials with the Office of the Attorney General.

## **8.3 NEW AND INNOVATIVE SOLID WASTE MANAGEMENT TECHNOLOGIES**

In the MAG Survey of member agencies for the current MAG Plan update, several member agencies indicated that conducting evaluation of new and innovative solid waste management technologies is important for understanding the future of solid waste management. In this section, some technologies that hold potential for reducing the volume of waste going to the landfill are described. However, there are State and Federal regulations that may present limitations and special permits are generally required.

There are currently available technologies that impact waste diversion rates which may be selected in the future by a city or town in the region, depending on evaluation of local conditions. For example, alternatives to landfilling such as recycling, composting, landfill gas to energy, combustion, pyrolysis and organic fermentation, could potentially change the required capacity and functions of solid waste facilities if selected for implementation.

### **8.3.1 Composting**

Composting is the process by which organic material is decayed and used to fertilize and condition land. Composting of municipal solid waste as an alternative to landfilling has had limited success in the Maricopa County area and on a national level. Mixed municipal solid waste composting is only conducted by about 19 facilities nationwide, and most facilities are less than 100 tons per day. In the MAG region, several municipalities indicate that composting at the city-wide scale has largely proven to be uneconomical. However, many cities and towns in Maricopa County encourage and offer assistance and equipment to residents for backyard composting.

### **8.3.2 Landfill gas to energy**

Landfill gas (LFG) is created when organic waste in a landfill naturally decomposes. Instead of allowing landfill gas to escape into the air, it can be captured, converted, and used as an energy source. Use of landfill gas in this way helps reduce odors and hazards associated with landfill gas emissions. Current U.S. Environmental Protection Agency (EPA) regulations under the Clean Air Act require many larger landfills to collect and combust landfill gas using options such as flaring the gas or installing a landfill gas use system. Landfill gas to energy projects can generate revenue from the sale of gas and offset the need for non-renewable resources such as coal and oil.

Since 1994, the EPA Landfill Methane Outreach Program has established a voluntary program promoting partnerships among state, local and private entities in exploring the use of landfill gas as a local energy resource. In the MAG region, several municipalities conduct continuous evaluation of research conducted on landfill gas technologies.

### **8.3.3 Combustion**

Combustion or waste-to-energy (WTE) is the burning of solid waste to create heat, which may be converted to electricity. This process creates a residual material which requires possible treatment and disposal in a landfill. Generally, the number of WTE plants in the nation has declined since 1984 to only about 100 presently operating facilities. Consideration of combustion facilities in the MAG region is a complicated issue due to the U.S. Environmental Protection Agency designation of Maricopa County as an air quality nonattainment area for certain constituents.

### **8.3.4 Pyrolysis**

Pyrolysis is the process of chemically decomposing solid waste using heat in an oxygen-reduced environment. The process produces a gas that can be used similar to natural gas fuel in power generation equipment. Pyrolysis also produces an ash waste product that requires landfilling. This technology is especially costly when power generation equipment is added and would require a large capital investment.

### **8.3.5 Organic Fermentation**

In organic fermentation, acid is used in a dilute form as a catalyst waste-to-ethanol (acid hydrolysis technology) to hydrolyze the cellulose into sugar, which then can be fermented and distilled into ethanol, a useable fuel. Traditionally, corn grain has been the chief feedstock for ethanol production in the U.S. Recently, this process has been proposed for municipal solid waste containing high cellulose materials. One of the primary uses for ethanol is blending it with gasoline to help reduce carbon monoxide emissions.

### **8.3.6 *Bioreactor Landfill Technology***

Bioreactor landfill technology uses the addition of liquid and air to enhance microbial processes to accelerate the degradation of refuse. Anticipated benefits of this technology include increased landfill capacity due to volume reduction and reduction of long term landfill gas maintenance costs. Unlike the standard “dry tomb” landfills, bioreactor landfill refuse must be kept extremely moist to achieve accelerated degradation. There are no full scale bioreactor landfills in operation in the U.S. at this time. Generally, a large volume of water is required to operate bioreactor technology landfill, and this may be a significant consideration for the Maricopa County area due to its arid desert climate.

Since 1995, the U.S. EPA has provided limited regulatory flexibility for regulated entities to conduct pilot projects that demonstrate the ability to achieve superior environmental performance, and four pilot projects have been approved to operate as bioreactors. The EPA plans to identify specific bioreactor standards or recommend operating parameters using information collected on the advantages and disadvantages of this technology through case studies of existing landfills. The EPA indicates that potential benefits of bioreactor landfills include faster waste degradation, improved leachate quality and reduced leachate disposal costs, and reduction in waste volume leading to increased landfill life.

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**POSSIBLE METHODS TO FINANCE SOLID WASTE MANAGEMENT FACILITIES AND PROGRAMS**

This chapter provides an overview of the finance mechanisms which could possibly be used to develop solid waste management facilities and programs in the MAG region. Conventional financing mechanisms are discussed, followed by a discussion of possible funding sources for specific management strategies included in the plan. In addition, possible sources of funding for management approaches targeting specific waste types are briefly discussed.

The availability of financing methods is controlled by factors such as the magnitude of the project, financial status of the issuing public entity, voter acceptance, legal constraints on debt limits or long-term contracts, and allocation of project financial risks. In practice, the agencies and entities implementing solid waste management facilities and programs will evaluate the available financing options and select the method indicated by existing conditions.

Debt incurred to develop solid waste management facilities may be recovered by means of user fees. Arizona Revised Statutes §49-742 states that user fees may be established or waived by a county, city or town to cover all or part of the cost of development, construction, operation, administration and financing of solid waste management activities.

It is a local government decision whether to provide solid waste services alone, in conjunction with other local governments, or by arrangement with private firms to provide part or all of the solid waste management services. Arrangement with private sector companies may or may not alter the total cost that local residents pay for solid waste management. Also, such arrangements do not eliminate local government responsibilities.

Public sector capital financing for solid waste management facilities and programs is generally drawn from either borrowed funds or current revenues. The types of financial instruments available include public borrowing, general obligation bonds, and municipal revenue bonds. Generally, public entities use general fund revenues and increased user fees to fund landfill expansions. Participation by the private sector can provide additional sources of capital.

Private sector financing of solid waste management facilities is usually accomplished with industrial revenue bonds or leveraged leasing. Generally, private operators pay for landfill expansions through their own capital sources and then pass the cost through landfill tipping fees. The following sections examine different types of financing which may be considered for solid waste management projects and programs.

## **9.1 FUNDING MECHANISMS FOR SOLID WASTE PROJECTS AND PROGRAMS**

### ***9.1.1 General Obligation Bonds***

General obligation bonds are long term tax-exempt instruments secured by the full faith and credit of a political jurisdiction which has the ability to levy taxes. The local government guarantees the general obligation bond, based on its ability to levy on taxable real property to pay the principal and interest on the bonds. General obligation bond financing may not be available to communities with limited remaining debt capacity, or a poor credit rating. The credit rating of the municipality determines the price and marketability of the bonds. Under A.R.S. §48-719, general obligation bonds may be used for any public infrastructure purposes consistent with the General Plan.

Limitations on the use of general obligation bond debt are chiefly political or institutional. Authorization to issue general obligation bonds requires a referendum. While general obligation bonds are the least expensive method of financing, because their execution can be complex and time consuming, most communities combine solid waste management bond issues with other projects in general bond obligation packages.

### ***9.1.2 Revenue Bonds***

Municipal or County revenue anticipation bonds are backed by a pledge of the net revenue received from the project. Under A.R.S. §48-720, revenue bonds may be used for public infrastructure purposes consistent with the General Plan. Voter approval is not usually required for a revenue bond issue, and local government debt or taxing limitations usually do not apply, because the bonds are not backed by the taxing power of a local government. Because of the increased risk, the interest rate is higher than for general obligation bonds. The bonds are paid with user fees. For example, a landfill tipping fee schedule would be designed to repay the costs of facility development bonds.

Since revenue bonds are not secured by a taxing power, they come under close scrutiny by the investment community. In order to accurately forecast revenues, an economic and technical analysis of the project is needed. Investors seek reasonable assurance that project revenues will be stable and sufficient to pay debt service.

A need to maintain control of the waste stream is generally associated with solid waste management projects funded with revenue bonds. This may be achieved through long term contracts which will ensure sufficient waste quantities, resulting in stable revenues to the project. Projects financed by revenue anticipation bonds may require a guarantee of facility performance, put-or-pay type waste disposal agreements, binding energy or material purchase contracts, and various types of insurance.

In some instances, municipalities have pledged tax revenues as additional security for a revenue bond issuance. While the issuing entity relies on project revenues to pay principal and interest on the bonds, the project enjoys a secondary guarantee backed by the full faith and credit of the municipality. In addition, this type of arrangement may allow the bonds to be considered general obligation bonds and sell at a lower interest rate. However, there may be legal barriers to secondary security mechanisms.

### **9.1.3 Industrial Development Revenue Bonds**

Industrial development revenue bonds are similar to municipal revenue bonds, except that the credit of a private firm may be substituted for that of a municipality. Industrial revenue bonds essentially permit the issuance of tax-exempt debt on behalf of a private owner for a public purpose. A public hearing and approval by elected officials or a legislative body may be required, but voter approval is not usually needed.

Industrial development revenue bonds are closely studied by the investment community, and security features are usually included to enhance marketability. Financial responsibility may be assured by structuring the bonds as guaranteed corporate debt, as pure revenue bonds, or as a combination of revenue bonds with corporate guarantee. The investment community must be satisfied that the corporate financial position is sufficient to make debt service payments. The investment community may further base its support of the project upon assurance that project revenues will be stable. This could be achieved through guaranteed availability of sufficient solid waste, or a secured long-term energy or recycled materials market.

### **9.1.4 Leveraged Leasing**

Leveraged leasing is a complex method of financing based upon transfer of tax benefits associated with the acquisition and ownership of a solid waste management facility from the public sector to the private sector. Limitations on transfer of tax benefits may be based on the test of who assumes various project risks. The potential tax benefits, combined with the availability of tax-exempt debt financing, serve to attract private capital. In examining leveraged leasing, the investment community seeks conservatively structured financing packages. Primary concerns are the ability of the public agency to make timely lease payments, and the collateral value of the project.

Leveraged leasing differs from traditional leasing in that both private and public sectors provide capital to the project. The public sector contribution is usually generated through a bond financing method. Compared with project financing through conventional methods, use of a leveraged leasing strategy can result in lower total indebtedness of the public entity.

### **9.1.5 Current Revenue Financing**

Current revenues can be an alternative source of funds for solid waste management

programs, including source reduction and recycling strategies, which may not require large capital outlays. For example, sufficient current revenue funds may be available to enable implementation of a recycling program. General fund revenue sources include property taxes and sales taxes.

Current revenue financing is dependent upon the ability to generate surplus capital. There are usually no legal constraints, and voter approval is generally not required. However, current revenue financing is often limited to small scale facility and equipment purchases, and is generally not available for major capital expenditures often associated with solid waste management facilities.

### **9.1.6 Lease Agreements**

A lease agreement may be used by the public sector to utilize solid waste disposal facilities or equipment, while avoiding major capital outlays. In conventional lease agreements, the lessor purchases and holds title to the asset and the lessee pays rent for the use of it during the lease term. The lessee will generally not own the asset at the completion of the lease period. However, the lessee may have an option to purchase the asset at the end of the lease agreement. Lease arrangements may be limited by restrictions on multi-year contracts between the public and private sectors.

## **9.2 FUNDING MECHANISMS FOR SPECIFIC MANAGEMENT OPTIONS**

This section examines possible funding mechanisms for specific management strategies which are included in the plan. The specific strategies encompass source reduction, resource recovery and recycling and landfilling.

### **9.2.1 Source Reduction Strategies**

Seven source reduction strategies are included in this plan. Some of the strategies involve taxes or procurement policies, which would not require significant amounts of funding. The implementation responsibilities and possible sources of funding identified with each of the source reduction strategies is discussed below.

- Investigation of restrictions or bans on certain products or materials.

Restrictions or bans could be mandated by the individual municipalities and Maricopa County, or by the Arizona Legislature. In the event that an ordinance were enacted at the regional level, the costs for preparation and administration could be financed through a portion of the landfill tipping fees from the municipal and County landfills.

- Encourage the development and implementation of procurement policies that promote the purchase of recycled materials.

The Arizona Legislature could develop recycled material procurement policies for State agencies and State contracts, while individual cities and towns develop local policies. Costs would vary depending on the materials being purchased with recycled content. The use of limited price preference allowances could assure that recycled materials which cost significantly more than virgin products are not purchased.

- Encourage the development of voluntary source reduction and recycling plans prepared by businesses and industries.

Maricopa County could develop a regional program or the individual cities could develop independent programs. The Arizona Legislature could also promote statewide source reduction planning. Monies obtained from other revenue generating source reduction fees or taxes could be used to fund the program. In addition, grant funding through the Arizona Department of Environmental Quality (ADEQ) programs such as Waste Reduction Assistance, Waste Reduction Initiative Through Education, and Recycling Research & Development, may be a source of funding for initial implementation.

- Continual evaluation by municipal and private waste collection firms of the feasibility of implementing variable fee structures for waste disposal within their jurisdictions.

Continual evaluation would be the responsibility of the cities, towns and the private sector waste collection firms. Possible funding sources for evaluation of weight or volume based systems could include a portion of waste collection fees.

- Investigation of the development of product taxes.

The cities and towns could adopt an ordinance requiring a tax on certain products known to produce excessive quantities of waste, or which have hazardous properties. The Arizona Legislature also could adopt a statewide tax on certain products.

- Development of public education programs(s) to educate consumers, businesses, industries, schools and other institutions about source reduction.

The individual municipalities and Maricopa County could work together to develop and finance a regional source reduction education program. The program could be administered by Maricopa County or contracted to a group such as Phoenix Clean and Beautiful. In addition, the individual cities and towns could develop and administer their own education programs.

Monies obtained from other revenue generating source reduction fees and taxes described above could be used to partially or completely fund the education program. Another option could be to use a portion of the monies collected from landfill tipping fees to finance the program, as many other states and counties have done. In addition, the grant funding offered through the ADEQ Recycling Program may be a source of

funding for initial implementation.

- Development of backyard landscape waste management and composting promotional campaign(s).

Monies obtained from other revenue generating source reduction could be used to partially or completely fund the promotional campaign and publishing of guidebooks. Another option would be to use a portion of the monies collected from landfill tipping fees for financing the campaign. In addition, the grant funding offered through the ADEQ Recycling Program may be a source of funding for initial implementation.

Currently, decentralized management of yardwastes in backyard composting programs is implemented at the local government level. Several individual agencies provide information services to promote successful composting. The backyard composting programs are usually implemented at minimal cost, using current revenues or a minimal fee for composting equipment.

### **9.2.2 Resource Recovery Strategies**

Local governments are responsible for implementation of recycling collection and resource recovery programs. Resource recovery is defined here as the sorting and other processing of solid waste to recover materials for reuse and recycling. Both curbside and drop-off type recycling programs have been implemented in the MAG region. Generally, in the curbside recycling programs implemented by MAG member agencies, the local government agency either owns a material recovery facility or has entered into a contract arrangement with a facility owner. Municipalities with their own material recovery facilities generally conduct their own recycling sorting, packaging and transport, and others enter into a contract arrangement with a private firm. These contracts generally include the local government agency collecting commingled recyclables and paying a tipping fee at the material recovery facility.

Initial capital costs may include outlays for containers, collection equipment, education and literature, and equipment used to support inspection. Local governments have used current revenue methods for program implementation. Waste collection fees are usually adjusted to recover implementation costs and to fund recurring program costs.

### **9.2.3 Landfilling**

Landfilling is anticipated to continue in the MAG region through the current planning period through continuing operations at several existing regional or subregional landfills, and development of newly planned or proposed landfills. Generally, the available financing options may include revenue bonds, general obligation bonds, and possibly privatization agreements.

### **9.3 POSSIBLE FUNDING MECHANISMS FOR MANAGEMENT OPTIONS FOR SPECIFIC WASTE TYPES**

Possible funding mechanisms for management strategies targeting specific waste types are discussed in this section. The specific waste categories include commercial wastes, regulated wastes and yardwastes.

#### **9.3.1 Commercial Wastes**

Management options in the plan for addressing commercial and industrial waste problems include publication of State and County databases as sources of information on users and generators of hazardous materials, and encouragement of joint investigations of illegally disposed hazardous materials with the State of Arizona Attorney General's Office. Stiff fines are provided for many types of illegal dumping, which could help recover the costs expended by municipalities or the County in paying for the proper disposal of hazardous materials.

#### **9.3.2 Regulated Wastes**

Programs for the management of lead acid batteries, used oil and used tires have been implemented by the State of Arizona. The fee schedules associated with the programs have been designed to sustain the programs. The same funding mechanisms could be applied to wastes that become regulated in the future.

#### **9.3.3 Yard Wastes**

Generally, options for centralized programs for management of yardwastes include mulching, and possibly, composting. Since the 1993 MAG Plan, centralized municipal yardwaste programs in the region have moved predominantly toward the mulching option. Centralized composting programs in the region have been found non-economical, and efforts have shifted to encouraging backyard composting by residents. However, the Salt River Landfill currently operates a centralized composting program.

For the future, a centralized yardwaste program would be implemented by local landfill operators or solid waste collection entities. Two or more MAG member agencies would possibly form multi-jurisdictional operating groups to implement centralized yardwaste management programs. Possibly, current revenue monies could be used to fund the purchase of equipment, and other startup costs. Waste collection fees or landfill tipping fees could possibly be used to fund the recurring program costs.

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**IMPLEMENTATION OF THE REGIONAL  
SOLID WASTE MANAGEMENT PLAN**

The implementation responsibilities of the cities, towns, Maricopa County and the State of Arizona are provided in this section. This section includes an action plan for implementing the Regional Solid Waste Management Plan. The action plan for implementing the MAG Plan outlines responsibilities for effecting the recommendations in the Plan, and a tentative schedule for implementation.

In addition to the facilities implementation, the roles of entities responsible for implementing the solid waste management strategies and programs are described. Both the public agencies and private sector are anticipated to continue to be involved in solid waste management in the MAG region. A listing of the regional, local and private sector solid waste management roles is provided.

This chapter also includes a description of processes for tracking Plan implementation and waste generation. Generally, MAG data collection mechanisms have included MAG solid waste information collection surveys, interviews with public and private solid waste service providers, and the MAG Solid Waste Information System (SWIMS) database.

**10.1 IDENTIFICATION OF MUNICIPAL, COUNTY, STATE AND PRIVATE  
SECTOR IMPLEMENTATION RESPONSIBILITIES**

Table 10.1 contains the Action Plan for Implementation of the MAG Regional Solid Waste Management Plan. The table lists the management strategies and programs identified through the Plan development process and identifies implementation responsibilities and a tentative implementation schedule.

**10.2 IDENTIFICATION OF LOCAL AND REGIONAL SOLID WASTE  
MANAGEMENT RESPONSIBILITIES**

In Arizona, the State requires each county, city or town to provide or contract for public facilities for the safe and sanitary disposal of solid waste generated within its jurisdiction. In addition, cities, towns and counties must provide residents with the opportunity to engage in recycling and waste reduction. By dividing responsibilities for programs that fulfill some of these requirements, agencies in the MAG region may meet their solid waste management obligations in a cost effective manner. In addition, the private sector is anticipated to continue to be involved in solid waste management in the MAG region. The identification of local and regional solid waste management responsibilities involving Maricopa County, local governments, and the private sector is provided in Table 10.1.

	<b>TABLE 10.1</b>	
	<b>ACTION PLAN FOR IMPLEMENTATION OF THE MAG REGIONAL SOLID WASTE MANAGEMENT PLAN</b>	
WASTE CATEGORY/MANAGEMENT STRATEGY	RESPONSIBILITY *	ANTICIPATED DATE/COMMENTS
INTEGRATED WASTE MANAGEMENT STRATEGIES:		
<u>Source Reduction</u>		
<ul style="list-style-type: none"> <li>Investigation of regulations to restrict or ban certain products or materials.</li> </ul>	LG, MC, State	Continual evaluation.
<ul style="list-style-type: none"> <li>Encourage the development of voluntary source reduction and recycling plans prepared by businesses and industries.</li> </ul>	LG, MC, State	Continual evaluation.
<ul style="list-style-type: none"> <li>Continual evaluation by municipal and private waste collection firms of the feasibility of implementing variable fee structures for waste disposal within their jurisdictions.</li> </ul>	LG, MC, PS	Continual evaluation.
<ul style="list-style-type: none"> <li>Investigation of the development of product taxes for products known to produce excessive quantities of waste or which have hazardous properties.</li> </ul>	LG, State	Continual evaluation.
<ul style="list-style-type: none"> <li>Development of public education programs to educate consumers, businesses, industries, schools and other institutions about source reduction.</li> </ul>	MC, LG, ADEQ	Pending availability of funding.
<u>Recycling</u>		
<ul style="list-style-type: none"> <li>Market development and education.</li> </ul>	MC, LG, ADEQ, ADOC	Ongoing cooperative effort.
<ul style="list-style-type: none"> <li>Encourage the development and implementation of procurement policies that promote the purchase of recycled materials.</li> </ul>	LG, MC, State	Continual evaluation.
<ul style="list-style-type: none"> <li>Development of backyard landscape waste management and composting promotional campaign(s).</li> </ul>	LG, MC, ADEQ	Currently implemented by some MAG member agencies.
<ul style="list-style-type: none"> <li>Implement Materials Recovery Facilities.</li> </ul>	LG, PS	Depends on evaluation of local or subregional conditions.
Develop mulching and/or composting operations for municipal solid waste.	LG, MC, PS	Depends on evaluation of local or subregional conditions.

	<b>TABLE 10.1</b>	
	<b>ACTION PLAN FOR IMPLEMENTATION OF THE MAG REGIONAL SOLID WASTE MANAGEMENT PLAN</b>	
<u>Waste Conversion, With Energy Conservation</u>		
Investigate the feasibility of new landfill technologies such as waste-to-energy and landfill gas to energy.	LG, MC, PS	Ongoing evaluation.
<u>Landfilling</u>		
<ul style="list-style-type: none"> <li>Proceed with development of planned expansions of existing landfills and planned new future landfills to service various areas of the MAG region.</li> </ul>	LG, PS	Depends on evaluation of local or subregional conditions.
<ul style="list-style-type: none"> <li>Continue to operate local landfills.</li> </ul>	LG, PS	Ongoing operations.
<ul style="list-style-type: none"> <li>Implement transfer stations and combined materials recovery transfer stations.</li> </ul>	LG, MC, PS	Depends on evaluation of local or subregional conditions.
<b>PROBLEM WASTES AND WASTE MANAGEMENT PROBLEMS:</b>		
<u>Illegal Dumping</u>		
<ul style="list-style-type: none"> <li>Evaluate development of an ordinance to strengthen the powers of agencies that handle illegal dumping and the penalties for those caught illegally dumping wastes in Maricopa County.</li> </ul>	MC, LG	Ongoing evaluation. A model ordinance was made available through MAG in 1993 Plan.
<ul style="list-style-type: none"> <li>Develop an illegal dumping education program for the public.</li> </ul>	LG, MC	Pending availability of funding.
<ul style="list-style-type: none"> <li>Evaluate establishment of volunteer watch programs for areas that are continually used by illegal dumpers.</li> </ul>	LG, MC	Some local agencies have developed this type of program. Depends on evaluation of local conditions.
<ul style="list-style-type: none"> <li>Investigate feasibility of support for legislation to grant citation authority to city and county staff involved with handling illegal dumping of waste.</li> </ul>	LG, MC, MAG	Implementation would be at the discretion of the local governments.
<ul style="list-style-type: none"> <li>Investigate the establishment of an environmental court in Maricopa County.</li> </ul>	MC, LG	The City of Phoenix conducted an analysis of this type of program in 1992. The City elected not to proceed with an environmental court.
<u>Commercial and Industrial Wastes</u>		
<ul style="list-style-type: none"> <li>Publicize State and County databases as sources of information on users and generators of hazardous materials.</li> </ul>	MC, LG, State	Continuous program.

**TABLE 10.1**

**ACTION PLAN FOR IMPLEMENTATION OF THE MAG  
REGIONAL SOLID WASTE MANAGEMENT PLAN**

<ul style="list-style-type: none"> <li>Encourage joint investigations of illegally disposed hazardous materials with the Attorney General's Office.</li> </ul>	MC, LG, State	Continuous program.
<u>Nonhazardous Liquid Waste</u>		
<ul style="list-style-type: none"> <li>Select and implement nonhazardous liquid waste disposal facilities.</li> </ul>	PS, LG	Implemented mostly by private sector at this time. Some local governments accept certain types of NHLW such as septic waste.
<u>Wastewater Treatment Plant Residuals</u>		
<ul style="list-style-type: none"> <li>Select and implement management options, possibly including monofills for alum sludges, at regional landfills or other appropriate sites.</li> </ul>	LG, MC, PS	Depends on evaluation of local or subregional conditions.
<u>Wastewater Treatment Plant Biosolids</u>		
<ul style="list-style-type: none"> <li>Select and implement appropriate management options.</li> </ul>	LG, MC, PS	Depends on evaluation of local conditions.
<u>Medical Wastes</u>		
<ul style="list-style-type: none"> <li>Implement treatment facilities.</li> </ul>	PS	Depends on evaluation of local conditions.
<u>White Goods (Appliances)</u>		
<ul style="list-style-type: none"> <li>Investigate establishment of appliance collection and recycling programs.</li> </ul>	LG, PS	Some local governments have established appliance collection and recycling programs. Depends on evaluation of local conditions.
<u>Electronic Wastes (e-waste)</u>		
<ul style="list-style-type: none"> <li>Investigate establishment of electronic waste collection and recycling programs.</li> </ul>	LG, PS	Some local governments have established electronic waste collection and recycling programs. Depends on evaluation of local conditions.
<u>Household Hazardous Waste Collection</u>		
<ul style="list-style-type: none"> <li>Investigate establishment of HHW collection programs which include education component.</li> </ul>	LG, MC	Many local governments have established HHW collection programs. Depends on evaluation of local conditions.

	<b>TABLE 10.1</b>	
	<b>ACTION PLAN FOR IMPLEMENTATION OF THE MAG REGIONAL SOLID WASTE MANAGEMENT PLAN</b>	
<u>Public Education</u>		
<ul style="list-style-type: none"> <li>Investigate establishment of public education programs and public information programs.</li> </ul>	LG, State	Many local governments have public education and public information programs. Depends on evaluation of local conditions.
<u>Developing Model Ordinances</u>		
<ul style="list-style-type: none"> <li>Develop model ordinances which can be adopted by local governments.</li> </ul>	MC	As needed.
<u>Recycling Market Development</u>		
<ul style="list-style-type: none"> <li>Evaluation of market development options.</li> </ul>	LG, MC, State	Continual evaluation.
<ul style="list-style-type: none"> <li>Public information and education on recycling.</li> </ul>	LG, MC, State	Many local governments have established public education on recycling programs and may work in conjunction with ADEQ.
<u>SWIMS Database Maintenance</u>		
<ul style="list-style-type: none"> <li>SWIMS database maintenance and updates.</li> </ul>	MAG	Staff; on an as needed basis.
<ul style="list-style-type: none"> <li>Data collection and reporting to MAG.</li> </ul>	LG, MC, PS	Annual reporting.
<u>Plan Evaluations</u>		
<ul style="list-style-type: none"> <li>Coordination with MAG periodic Plan evaluations.</li> </ul>	LG, MC, PS	As determined by annual needs evaluation.
<ul style="list-style-type: none"> <li>Approve Plan revisions.</li> </ul>	MAG	MAG Regional Council.
<ul style="list-style-type: none"> <li>ADEQ- Arizona Department of Environmental Quality</li> <li>ADOC- Arizona Department of Commerce</li> <li>MC- Maricopa County</li> <li>LG- Local Governments; MAG member agencies</li> <li>MAG- Maricopa Association of Governments</li> <li>PS- Private Sector</li> </ul>		

### **10.2.1 Regional Roles for Maricopa County**

Maricopa County has indicated that the following are existing or possible future regional roles which are or could be undertaken in the future to assist MAG communities in addressing management of municipal solid waste. In any taking on of greater responsibilities, the County could require additional staff. Before implementation of any new roles or programs, sources of additional funding would need to be identified.

1. Implementation and Ownership of Transfer Facilities at Subregional Level:

Currently, Maricopa County owns and operates several rural transfer stations for residential wastes including the Cave Creek, Aguila, Morristown, New River, Rainbow Valley and Wickenburg transfer stations. The County has indicated that they anticipate to continue to be involved in owning and operating transfer stations in outlying areas of the County.

2. Investigation of waste to energy or landfill gas to energy options:

Maricopa County is currently conducting a feasibility study to convert methane landfill gas into electricity at the Queen Creek Landfill.

3. Waste Tire Collection Facilities:

Currently, Maricopa County administers the Arizona Waste Tire Collection Program, owns several waste tire collection sites, and encourages waste tire recycling to help reduce illegal dumping.

4. Enforce regulations in unincorporated areas and coordinate with local, State and federal agencies.

5. Data collection and reporting to MAG for Plan updates and solid waste information management system (SWIMS) database updates, on solid waste disposed in landfills or other County facilities, quantities recycled, and other solid waste management programs.

6. Developing model ordinances related to solid waste, that could also be adopted by local governments. An example is an illegal dumping ordinance. In addition, Maricopa County develops solid waste regulations for the areas under County jurisdiction.

### **10.2.2 Solid Waste Management Roles For Local Governments**

In addition to providing support for regional programs, many solid waste management functions are conducted by local governments. The following is a list of current and potential future roles for local governments:

1. Implementation of local facilities and programs. Operation of collection systems, disposal systems, transportation systems, or other waste management facilities and programs.
2. Implementing local recycling programs and locating markets for recyclable materials.
3. Management of sludges from water treatment and wastewater treatment facilities.
4. Participate in household hazardous waste collection programs, provide sites for periodic collection events and provide personnel to staff outreach collection events.
5. Adopt or develop ordinances and bylaws pertaining to solid waste management.
6. Enforcement of local ordinances; conduct inspections; clean up of illegal dump sites.
7. Coordination with MAG in periodic plan evaluations.
8. Data collection and reporting for Plan updates and solid waste information management system (SWIMS) updates on solid waste disposed in municipal landfills, quantities recycled and other local solid waste management programs.
9. Possibly provide funding or partial funding for regional solid waste management facilities and programs.
10. Provide education programs specific to community solid waste management programs.

### **10.2.3 Solid Waste Management Roles for the Private Sector**

In the MAG region, private companies currently participate in waste collection, separation, recycling, treatment and disposal programs. It is anticipated that the private sector will continue to be involved in solid waste management. The following is a list of current and potential future roles for the private sector:

1. Conduct daily solid waste management practices (collection, transport, separation and disposal).
2. Siting, financing, developing and operating solid waste management facilities.
3. Implementing recycling programs and locating markets.
4. Data collection and reporting for Plan updates and solid waste information system (SWIMS) database updates on solid waste disposed in privately owned landfills,

quantities recycled and other solid waste management programs.

### **10.3 PROCESSES FOR TRACKING PLAN IMPLEMENTATION AND WASTE GENERATION**

Periodically, MAG staff conducts solid waste information collection efforts to update data tables in the MAG Solid Waste Management Plan. Since the 1993 MAG Solid Waste Plan, updates of the solid waste data have been conducted in May 1998, February 1999, March 2001 and March 2003 for data regarding the residential and commercial solid waste generation, solid waste facilities summary, member agency solid waste management plans, and solid waste management service areas. The current update of the MAG Solid Waste Plan has been conducted using computer applications tools such as database spreadsheet applications and Geographic Information Systems technology. The 1993 MAG Plan was produced using the Solid Waste Information Management System (SWIMS) database, developed with the MAG 1991 Regional Waste Stream Study.

The SWIMS database has been used as one recording method for solid waste information in the region. The SWIMS was designed to incorporate information on waste generation by waste type and geographic area. SWIMS was designed to evaluate the relationships between waste generation and disposal in combination with the MAG socioeconomic database and to be used to project future waste quantities and landfill capacities. The information management system was designed to determine projected quantities of waste under a variety of scenarios, and to update both the assumptions and the corresponding projections. Waste projections were to be carried out at the traffic analysis zone (TAZ) level, and then aggregated to the municipal and county levels based on municipal-specific generation rates for each category of solid waste.

The SWIMS database has been updated on an as needed basis. Information provided by public agencies and private solid waste management firms have been recorded using SWIMS. In the 1993 MAG Plan, it was anticipated that Maricopa County would continue its role in regional solid waste management and would conduct standardization of waste categories for data reporting to facilitate annual data collection and SWIMS updating. However, since 1993, the Maricopa County role in regional solid waste management has decreased to consist mainly of operating transfer stations in outlying unincorporated areas and operating the State Waste Tire Collection Program.

In the 1993 MAG Plan, it was anticipated that standardization of nonhazardous liquid waste (NHLW) tracking would also be conducted to help facilitate SWIMS updates. This standardization was to occur using a uniform NHLW manifest developed by local governments who tracked NHLW at that time, including Phoenix, Scottsdale and Maricopa County. However, these local governments no longer own or operate NHLW disposal facilities. Currently, NHLW disposal sites in the region are largely privately owned and operated and any tracking of NHLW disposed is conducted by the individual site owner.

The objectives of the public participation for development and maintenance of the MAG Plan are manifold. Public participation promotes public awareness of solid waste management problems, the planning process, and the effects of various management strategies. An additional objective is to encourage active participation from a variety of interest groups in the plan development process. As a result of participation, both the interested and affected constituencies can be identified. Finally, providing for public participation can encourage a spirit of openness and trust among elected officials, agencies and the public.

Development of the current update of the MAG Regional Solid Waste Management Plan was identified in the *MAG Fiscal Year 2003 Unified Planning Work Program & Annual Budget*, which was approved by the MAG Regional Council on May 22, 2002. The opportunities for public participation during the subsequent plan development process are documented in this chapter. The MAG Solid Waste Advisory Committee (SWAC) was directly involved in the development of the plan update and in the public participation process. Notice of public meetings conducted by the SWAC regarding the current MAG Plan update were sent to interested parties and Title VI parties.

### **11.1 PUBLIC HEARINGS AND PUBLIC MEETINGS**

The MAG Regional Solid Waste Management Plan is evaluated and updated periodically. The process includes public meetings of the MAG Solid Waste Advisory Committee (SWAC), who makes solid waste management recommendations to the MAG Management Committee. The MAG Management Committee considers the SWAC recommendations and makes recommendations to the MAG Regional Council, the official decision-making body of MAG. Meeting agendas were available to the public, and were provided to interested parties. Throughout the process, a number of interested private sector companies and private citizens were notified of meetings.

In addition to these public meetings, a formal public hearing was conducted on the Draft Revision of the MAG Regional Solid Waste Management Plan. On November 3, 2004, the MAG Solid Waste Advisory Committee reviewed the draft Plan and authorized MAG staff to conduct a public hearing on the draft Plan. The public hearing was advertised at least 45 days in advance, and the document was made available for public review at least 30 days in advance of the hearing. A public hearing notice was sent to interested parties, including a Title VI mail list, at least 30 days prior to the public hearing. The public hearing was conducted by the MAG Solid Waste Advisory Committee on January 11, 2005 with a court reporter present. The court reporter prepared an official transcript of the hearing. No written or verbal comments were received.

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**MAG APPROVAL OF THE REGIONAL SOLID WASTE MANAGEMENT PLAN**

This chapter describes the plan development and approval process, and the process regarding continual plan evaluation. The MAG Solid Waste Advisory Committee (SWAC) is involved in development of the plan and subsequent periodic evaluations and updates. The SWAC provides technical expertise and makes recommendations to the MAG Management Committee. The Management Committee reviews SWAC recommendations and makes recommendations to the MAG Regional Council, the official decision-making body of MAG. Following local review and adoption, the MAG Regional Solid Waste Management Plan will be transmitted to the Arizona Department of Environmental Quality (ADEQ) and the U.S. Environmental Protection Agency.

The role of local, regional, State and Federal entities in the MAG Regional Solid Waste Management Plan development is described in this chapter. The MAG Solid Waste Plan development process culminates with approval of the Plan by the MAG Regional Council. The process of continual plan evaluation is summarized in the final section of this chapter.

**12.1 PLAN UPDATE REVIEW PROCESS**

In the MAG Regional Solid Waste Management Program, review occurs at local, State and Federal levels. At the local level, the review consists of three interrelated components: advisory group review, jurisdictional review and public review.

**12.1.1 *Advisory Committee Review of the Plan***

The MAG Solid Waste Advisory Committee assisted in the development of the Regional Solid Waste Management Plan and overall plan document review. The MAG Solid Waste Advisory Committee is comprised of representatives of various local government agencies, economic interests, environmental interests, and the private citizenry selected by MAG to provide technical expertise in the areas of concern.

The Committee reviewed and commented on critical points in plan development, authorized that a public hearing be conducted on the draft plan revision, and made recommendations on the Plan. In addition, the SWAC provided insight into past, present and future facility planning.

This Committee reviewed and commented on program outputs and the work of MAG staff including the Scope of Work and the Survey of MAG Member Agencies for Revision of the MAG Regional Solid Waste Management Plan. The SWAC was involved in the public participation process for the plan revision. The SWAC reviewed and commented on the draft final plan update. The SWAC conducted the public hearing on the draft plan.

### **12.1.2 *Jurisdictional Review of the Plan***

Each of the MAG cities and towns, Maricopa County, the Gila River Indian Community, and the Salt River Pima Maricopa Indian Community have participated actively in reviewing the Plan, particularly those elements applicable to their area. Each jurisdiction had an opportunity to directly participate in plan development and to review and indicate their preferences regarding plan elements before a decision was made by the MAG Regional Council.

### **12.1.3 *Public Review of the Plan***

The MAG Solid Waste Plan revision development process was conducted in public meetings. Meeting agendas were available to the public and were provided to interested parties and Title VI parties. A formal public hearing was conducted on the draft Plan revision and the hearing was advertised at least 45 days in advance. At least 30 days prior to the public hearing, the draft document was available for public review and a hearing notice was sent to interested parties. A court reporter was present at the January 11, 2005 hearing and a transcription was prepared. No written or verbal comments were received on the draft plan.

## **12.2 MANAGEMENT OF THE REGIONAL SOLID WASTE MANAGEMENT PLAN**

The MAG Regional Council, Management Committee, and Solid Waste Advisory Committee have major roles in developing and managing the MAG Regional Solid Waste Management Plan.

### **12.2.1 *MAG Regional Council***

The MAG Regional Council serves as the governing body of the Maricopa Association of Governments and is responsible for establishing and directing all MAG policies and activities. Membership is composed of elected officials appointed by each MAG member agency.

For solid waste management planning, the MAG Regional Council maintains the MAG Regional Solid Waste Management Planning Program and the corresponding process. The Regional Council reviews pertinent solid waste management planning information; authorizes solid waste studies as appropriate; adopts the MAG Regional Solid Waste Management Plan; and approves plan updates.

### **12.2.2 *MAG Management Committee***

The MAG Management Committee is composed of the chief administrator from each MAG member agency, representing each city, town and Indian Community in the planning area

as well as the County. The Management Committee reviews solid waste management information and recommendations from the MAG Solid Waste Advisory Committee. The MAG Management Committee then makes recommendations on solid waste matters to the MAG Regional Council.

### **12.2.3 MAG Solid Waste Advisory Committee**

The MAG Solid Waste Advisory Committee provides recommendations on solid waste issues that affect the MAG region such as the update of the MAG Regional Solid Waste Management Plan. The Committee evaluates integrated solid waste management options and recommends technically and economically feasible management strategies. The Committee is comprised of representatives of various local government agencies, economic interests, environmental interests, and the private citizenry. The Committee serves in an advisory capacity to the MAG Management Committee and Regional Council on pertinent solid waste management matters.

## **12.3 PROCESS OF CONTINUAL PLAN EVALUATION**

The need to revise the MAG Regional Solid Waste Management Plan will be considered annually to ensure the timeliness and accuracy of the plan. The MAG Solid Waste Advisory Committee will consider the effects of new solid waste legislation, new solid waste management rules, and new best management practices. New or innovative technologies will be considered. The Solid Waste Advisory Committee will ascertain whether a need exists to initiate a plan update process.

If a plan update is needed, the Solid Waste Advisory Committee will develop a scope of work defining the issues and specific areas of the plan to be addressed. The MAG Solid Waste Advisory Committee recommendation to update the plan will be forwarded to the MAG Management Committee and ultimately to the MAG Regional Council for approval. Upon MAG Regional Council approval, the Solid Waste Advisory Committee will proceed with the plan revision.

Revisions of the MAG Regional Solid Waste Management Plan address the specific waste stream components, management facilities, and programs affected by new rules, best management practices or legislation. During annual plan update needs evaluations, an assessment of facilities and programs in meeting current and future solid waste management needs will be conducted.

Information obtained during updates of the data tables contained in the MAG Plan will be used to update the MAG Regional Solid Waste Management Plan listing of solid waste facilities and programs. In addition, the solid waste facilities inventory will be updated as needed to include any new facilities. These tasks will be completed by MAG staff.

The procedure for the conduct of plan updates is comparable to the plan development

process and includes a public hearing on the revisions. Plan updates will address specific waste management needs identified by MAG member agencies. In addition, plan updates provide an opportunity for consideration of new or innovative technologies. The MAG Solid Waste Advisory Committee will work in cooperation with local, regional, State and Federal agencies, and the private sector. Updates will be established through the MAG solid waste planning process, culminating in approval by the MAG Regional Council.

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## DEFINITIONS FOR REFERENCE

The following list of solid waste management planning related definitions is provided for reference. Generally, the definitions are derived from Title 49 of the Arizona Revised Statutes, Title 18 of the Arizona Administrative Code, Part 243 of 40 Code of Federal Regulations, the Arizona Department of Environmental Quality (ADEQ) and the U.S. Environmental Protection Agency (EPA).

### Autoclaving

Using a combination of heat, steam, pressure, and time to achieve sterile conditions.

### Biohazardous Medical Waste

Is composed of one or more of the following:

- (a) Cultures and stocks: discarded cultures and stocks generated in the diagnosis, treatment or immunization of a human being or animal or in any research relating to that diagnosis, treatment or immunization, or in the production or testing of biologicals.
- (b) Human blood and blood products: discarded products and materials containing free-flowing blood or free-flowing blood components.
- (c) Human pathologic wastes: discarded organs and body parts removed during surgery.
- (d) Medical sharps: discarded sharps used in animal or human patient care, medical research, or clinical laboratories. This includes hypodermic needles, syringes, pipettes, scalpel blades, blood vials, needles attached to tubing, broken and unbroken glassware, and slides and coverslips.
- (e) Research animal wastes: animal carcasses, body parts, and bedding of animals that have been infected with agents that produce, or may produce, human infection.

### Brownfields Site

Real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant.

### Bulky Waste

Large items of solid waste such as household appliances, furniture, large auto parts, trees, branches, stumps, and other oversize wastes whose large size precludes or complicates their handling by normal solid wastes collection, processing or disposal methods.

### Closed Solid Waste Facility

Means any of the following:

- (a) A solid waste facility that ceases storing, treating, processing or receiving for disposal solid waste before the effective date of design and operation rules for that type of facility adopted pursuant to A.R.S. §49-761.
- (b) a public solid waste landfill that meets any of the following criteria: (i) ceased receiving solid waste prior to July 1, 1983; (ii) ceased receiving solid waste and received at least two feet of cover material prior to January 1, 1986; (iii) received approval for closure from the department.

(c) A public composting plant or a public incinerating facility that closed in accordance with an approved plan.

#### Commercial Solid Waste

All types of solid wastes generated by stores, offices, restaurants, warehouses, and other non-manufacturing activities, excluding residential and industrial wastes.

#### Conditionally Exempt Small Quantity Generator Waste

Hazardous waste in quantities as defined by rules adopted pursuant to A.R.S. §49-922.

#### Construction & Demolition Landfill

A Non-Municipal Solid Waste Landfill that only accepts construction or demolition waste as defined in A.R.S. §49-241.

#### Construction Debris

Solid waste derived from the construction, repair or remodeling of buildings or other structures.

#### Demolition Debris

Solid waste derived from the demolition of buildings or other structures.

#### Existing Solid Waste Facility

A solid waste facility that begins construction or is in operation on the effective date of the design and operation rules adopted by the ADEQ Director pursuant to A.R.S. §49-761 for that type of solid waste facility.

#### Garbage

All animal and vegetable wastes resulting from the processing, handling, preparation, cooking, and serving of food or food materials.

#### Hazardous Waste

Garbage, refuse, sludge from a waste treatment plant, water supply treatment plant or air pollution control facility, or other discarded materials, including solid, liquid, semisolid or contained gaseous material, resulting from industrial, commercial, mining and agricultural operations or from community activities which because of its quantity, concentration or physical, chemical or infectious characteristics may cause or significantly contribute to an increase in mortality or an increase in serious irreversible or incapacitating reversible illness or pose a substantial present or potential hazard to human health or the environment if improperly treated, stored, transported, disposed of or otherwise managed or any waste identified as hazardous pursuant to A.R.S. §49-222.

#### Home Generated Medical Waste

Any medical waste generated in the home environment, workplace environment, or any kind of public building environment.

### Household Hazardous Waste

Solid waste as described in 40 Code of Federal Regulations section 261.4(b)(1) as incorporated by reference in the rules adopted pursuant to chapter 5 of A.R.S. § Title 49. Any material that can be classified as hazardous waste that is derived from households and generated in quantities typical of households. This type of waste may come from single or multiple family dwellings, hotels and motels, and other types of residences.

### Industrial Solid Waste

The solid waste generated by industrial processes and manufacturing.

### Inert Material

(a) Material that satisfies all of the following conditions: (i) is not flammable; (ii) will not decompose; (iii) will not leach substances in concentrations that exceed applicable aquifer water quality standards prescribed by A.R.S. §49-201, paragraph 17 when subjected to a water leach test that is designed to approximate natural infiltrating waters.

(b) Includes concrete, asphaltic pavement, brick, rock, gravel, sand, soil and metal, if used as reinforcement in concrete, but does not include special waste, hazardous waste, glass or other metal.

### Infectious Waste

(1) Equipment, instruments, utensils and formites of a disposable nature from the rooms of patients who are suspected to have or have been diagnosed as having a communicable disease and must, therefore, be isolated as required by public health agencies;

(2) Laboratory wastes, such as pathological specimens and disposable formites attendant thereto;

(3) Surgical operating room pathologic specimens and disposable formites attendant thereto; and similar disposable materials from outpatient areas and emergency rooms.

### Facility Plan

Any design or operating plan for a solid waste facility or group of solid waste facilities.

### Land Disposal

Placement of solid waste in or on land.

### Medical Sharps Container

A vessel that is rigid, puncture resistant, leak proof, and equipped with a locking cap.

### Medical Waste

Any solid waste which is generated in the diagnosis, treatment or immunization of a human being or animal or in any research relating to that diagnosis, treatment, or immunization, or in the production or testing of biological, and includes discarded drugs but does not include hazardous waste as defined in A.R.S. §49-921 other than conditionally exempt small quantity generator waste.

### Medical Waste Treatment Facility

A solid waste facility approved by ADEQ under A.R.S. §49-762.04 to accept and treat

biohazardous medical waste from off-site generators.

#### Municipal or County Solid Waste

Any garbage, trash, rubbish, refuse, sludge from a waste treatment plant, water supply treatment plant or pollution control facility and other discarded material, including solid, liquid, semisolid, or contained gaseous material but not including domestic sewage or hazardous waste.

#### Municipal Solid Waste Landfill

Any solid waste landfill that accepts household waste, household hazardous waste or conditionally exempt small quantity generator waste.

#### New Solid Waste Facility

A solid waste facility that begins construction or operation after the effective date of design and operating rules that are adopted pursuant to A.R.S.§49-761 for that type of solid waste facility.

#### Non-Municipal Solid Waste Landfill

A landfill that is not a municipal solid waste landfill as defined in A.R.S.§49-701.

#### On Site

The same or geographically contiguous property that may be divided by public or private right-of-way if the entrance and exit between the properties is at a crossroads intersection and access is by crossing the right-of-way and not by traveling along the right-of-way. Noncontiguous properties that are owned by the same person and connected by a right-of-way that is controlled by that person and to which the public does not have access are deemed on site property. Noncontiguous properties that are owned or operated by the same person regardless of right-of-way control are also deemed on site property.

#### Public Solid Waste Facility

A transfer facility and any site owned, operated or utilized by any person for the storage, processing, treatment or disposal of solid waste that is not generated on site.

#### Putrescible Waste

Waste materials capable of being decomposed rapidly by microorganisms.

#### Recycling

The process of collecting, separating, cleansing, treating and reconstituting post-consumer materials that would otherwise become solid waste and returning them to the economic stream in the form of raw material for reconstituted products which meet the quality standards necessary to be used in the marketplace, but does not include incineration or other similar processes.

#### Recycling Facility

A solid waste facility that is owned, operated or used for the storage, treatment or processing of recyclable solid waste and that handles wastes that have a significant

adverse effect on the environment.

### Refuse

All putrescible and nonputrescible solid and semisolid wastes, except human excreta, but including garbage, rubbish, ashes, manure, street cleanings, dead animals, abandoned automobiles and industrial wastes.

### Remediation

Action taken to address a contaminant by reducing the level of the contaminant in the environment or preventing or reducing exposure to the contaminant.

### Reuse

The return of a commodity into the economic stream for use in the same kind of application as before without change in its density.

### Rubbish

Nonputrescible solid wastes, excluding ashes, consisting of both combustible and noncombustible wastes, such as paper, cardboard, waste metal, tin cans, yard clippings, wood, glass, bedding, crockery and similar materials.

### Sludge

The accumulated semiliquid suspension of settled solids deposited from wastewaters or other fluids in tanks or basins. It does not include solids or dissolved material in domestic sewage or other significant pollutants in water resources, such as silt, dissolved materials in irrigation return flows or other common water pollutants.

### Solid Waste

Any garbage, trash, rubbish, waste tire, refuse, sludge from a waste treatment plant, water supply treatment plant or pollution control facility and other discarded material, including solid, liquid, semisolid or contained gaseous material.

### Solid Waste Facility

As defined in A.R.S. §49-701, a solid waste facility is a transfer facility and any site owned, operated or utilized by any person for the storage, processing, treatment or disposal of solid waste, conditionally exempt small quantity generator waste or household hazardous waste but does not include the following:

- (a) A site at which less than one ton of solid waste that is not household waste, household hazardous waste, conditionally exempt small quantity generator waste, medical waste or special waste and that was generated on site is stored, processed, treated or disposed in compliance with A.R.S. §49-762.07, subsection F.
- (b) A site at which solid waste that was generated on site is stored for ninety days or less.
- (c) A site at which nonputrescible solid waste that was generated on site in amounts of less than one thousand kilograms per month per type of nonputrescible solid waste is stored and contained for one hundred and eighty days or less.
- (d) A site that stores, treats or processes paper, glass, wood, cardboard, household textiles, scrap metal, plastic, vegetative waste, aluminum, steel or other recyclable material.

and that is not a waste tire facility, a transfer facility or a recycling facility.

(e) A site where sludge from a wastewater treatment facility is applied to the land as a fertilizer or beneficial soil amendment in accordance with sludge application requirements.

(f) A closed solid waste facility.

(g) A solid waste landfill that is performing or has completed postclosure care before July 1, 1996 in accordance with an approved postclosure plan.

(h) A closed solid waste landfill performing a onetime removal of solid waste from the closed solid waste landfill, if the operator provides a written notice that describes the removal project to ADEQ within thirty days after completion of the removal project.

(i) A site where solid waste generated in street sweeping activities is stored, processed or treated prior to disposal at a solid waste facility authorized under this chapter.

(j) A site where solid waste generated at either a drinking water treatment facility or a wastewater treatment facility is stored, processed, or treated on site prior to disposal at a solid waste facility authorized under this chapter, and any discharge is regulated pursuant to chapter 2, article 3 of this title.

(k) A closed solid waste landfill where development activities occur on the property or where excavation or removal of solid waste is performed for maintenance and repair provided the following conditions are met: (i) When the project is completed there will not be an increase in leachate that would result in a discharge. (ii) When the project is completed the concentration of methane gas will not exceed twenty-five per cent of the lower explosive limit in on-site structures, or the concentration of methane gas will not exceed the lower explosive limit at the property line. (iii) Protection has been provided to prevent remaining waste from causing any vector, odor, litter or other environmental nuisance. (iv) The operator provides a notice to ADEQ containing the information required by A.R.S.§49-762.07, subsection A, paragraphs 1, 2 and 5 and a brief description of the project.

(l) Agricultural on-site disposal as provided in A.R.S.§49-766.

(m) The use, storage, treatment or disposal of by-products of regulated agricultural activities as defined in A.R.S.§49-201 and that are subject to best management practices pursuant to A.R.S.§49-247 or by-products of livestock, range livestock and poultry as defined in A.R.S.§3-1201, pesticide containers that are regulated pursuant to title 3, chapter 2, article 6 or other agricultural crop residues.

(n) Household hazardous waste collection events held at a temporary site for not more than six days in any calendar quarter.

(o) Wastewater treatment facilities as defined in A.R.S.§49-1201.

(p) An on-site single family household waste composting facility.

(q) A site at which five hundred or fewer waste tires are stored.

(r) A site at which mining industry off-road waste tires are stored or are disposed of as prescribed by rules in effect on February 1, 1996, until the ADEQ director by rule determines that on-site recycling methods exist that are technically feasible and economically practical.

(s) A site at which underground piping, conduit, pipe covering or similar structures are abandoned in place in accordance with applicable state and federal laws.

### Solid Waste Facility Plan

A plan or the individual components of a plan, such as the design, operational, closure, or post-closure plan, or the demonstration of financial responsibility as required by A.R.S.

§49-770, submitted to ADEQ for review and plan approval.

#### Solid Waste Landfill

A facility, area of land or excavation in which solid wastes are placed for permanent disposal. Solid waste landfill does not include a land application unit, surface impoundment, injection well, compost pile or waste pile or an area containing ash from the on-site combustion of coal that does not contain household waste, household hazardous waste or conditionally exempt small quantity generator waste.

#### Source Reduction

Any action which causes a net reduction in the generation of solid waste, including the use of nonrecyclable materials, replacing disposable materials and products with reusable materials and products, reducing packaging, reducing the amount of yard waste generated, establishing garbage rate structures with incentives to reduce the amount of wastes that generators produce and increasing the efficiency of the use of paper, cardboard, glass, metal, plastic and other materials in the manufacturing process.

#### Special Waste

A solid waste as defined in A.R.S. §49-701.01, other than a hazardous waste, that requires special handling and management to protect public health or the environment and that is listed in A.R.S. §49-852 or in rules adopted pursuant to A.R.S. §49-855.

#### Transfer Facility

A site that is owned, operated or used by any person for the rehandling or storage for ninety days or less of solid waste that was generated off site for the primary purpose of transporting that solid waste. Transfer facility includes those facilities that include significant solid waste transfer activities that warrant the facility's regulation as a transfer facility.

#### Treated Medical Waste

Biohazardous medical waste that has been treated and that meets the treatment standards of R18-13-1415. Treated medical waste that requires no further processing is considered solid waste.

#### Underground Storage Tank

A tank or combination of tanks and underground pipes and impact valves connected to tanks being used or having been used to contain regulated substances and which has at least ten percent of the total volume of the tank and underground portions of pipes connected to the tank underground.

#### Used Oil

Any oil which has been refined from crude or synthetic oil and, as a result of use, storage or handling, which has become unsuitable for its original purpose due to the presence of impurities or loss of original properties but which may be suitable for further use and may be economically recyclable.

### Waste Stream

The solid waste material output of a community, region or facility.

### Waste Tire

Does not include tires used for agricultural purposes as bumpers on agricultural equipment or as ballast to maintain covers at an agricultural site, or any tire disposed of using any of the methods in A.R.S. §44-1304, subsection D, paragraphs 1 through 3, 5 through 8 and 11 and means any of the following:

- (a) A tire that is no longer suitable for its original intended purpose because of wear, damage or defect.
- (b) A tire that is removed from a motor vehicle and is retained for further use.
- (c) A tire that has been chopped or shredded.

### Waste Tire Facility

A solid waste facility at which five thousand or more waste tires are stored outdoors on any day.

**RESOLUTION TO ADOPT THE MAG REGIONAL  
SOLID WASTE MANAGEMENT PLAN**

WHEREAS, the Maricopa Association of Governments (MAG) is a voluntary association of twenty-five incorporated cities and towns within Maricopa County and the contiguous urbanized area, the Fort McDowell Yavapai Nation, the Gila River Indian Community, the Salt River Pima Maricopa Indian Community, Maricopa County, the Arizona Department of Transportation, and the Citizens Transportation Oversight Committee; and

WHEREAS, the Governor of Arizona designated MAG as the regional solid waste planning agency and authorized MAG to undertake areawide solid waste management planning, pursuant to the Federal Resource Recovery and Conservation Act (RCRA) of 1976; and

WHEREAS, the MAG Regional Solid Waste Management Plan provides guidelines for achieving the objectives of environmentally sound management and disposal of solid waste, resource conservation, and maximum utilization of valuable resources; and

WHEREAS, the MAG Regional Solid Waste Management Plan provides a means for coordinating regional planning and implementation under the State Solid Waste Plan, as directed by Section 4003(1) of the Resource Conservation and Recovery Act.

WHEREAS, the MAG Regional Solid Waste Management Plan is consistent with the Resource Conservation and Recovery Act recommendations for substate (regional) plans developed under the State plan.

WHEREAS, the MAG Solid Waste Advisory Committee did conduct a public hearing on the draft MAG Regional Solid Waste Management Plan on January 11, 2005 for the purpose of soliciting comments and recommendations from the interested or affected parties, including the general public, and explaining major issues within the plan; and

WHEREAS, the MAG Solid Waste Advisory Committee has reviewed and recommended approval of the MAG Regional Solid Waste Management Plan to the MAG Management Committee; and

NOW, THEREFORE, BE IT RESOLVED BY THE MARICOPA ASSOCIATION OF GOVERNMENTS REGIONAL COUNCIL as follows:

Section 1. That the MAG Regional Council adopts the MAG Regional Solid Waste Management Plan; and

Section 2. That the MAG Regional Council authorizes the forwarding of the MAG Regional Solid Waste Management Plan to the Arizona Department of Environmental Quality and the U.S. Environmental Protection Agency.

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Bruce Henning, City of Phoenix  
Chair of the MAG Solid Waste Advisory  
Committee

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Date

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Mayor Keno Hawker, City of Mesa  
Chair of the MAG Regional Council

---

Date

## APPENDIX B

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40 Code of Federal Regulations Parts 257 and 258 Solid Waste Disposal Facility Criteria.

40 Code of Federal Regulations Part 255 Identification of Regions and Agencies for Solid Waste Management.

MODEL ORDINANCE TO CONTROL ILLEGAL DUMPING  
[PIMA COUNTY] ORDINANCE NO. [1987-219]  
AN ORDINANCE RELATING TO SOLID WASTE

Adding [Chapter 8.54] which defines unlawful disposal of solid waste, how responsibility for waste is determined and sets penalties for unlawful disposal.

SECTION I. TITLE [8] of the [Pima County] Code is amended by adding Chapter [8.54] to read as follows:

[8.54] SOLID WASTE

[8.54].010 PURPOSE

To preserve and secure the health, comfort, welfare and safety of the general public by regulating the uncontrolled disposal of solid waste within the County.

[8.54].020 DEFINITIONS

For purposes of this chapter the following definitions shall apply:

1. "Approved site" means a site permitted and approved by the State Department of Environmental Quality or the [Pima County] [Health Department] as a site for the disposal of solid waste.

2. "Permitted contractor" is a person who has a valid permit from the State Department of Environmental Quality or the [Pima County] Health Department to recover and transport solid waste.

3. "Person" means any public or private corporation, company, partnership, firm, association or society of persons, or entity, including governmental entities, as well as a natural person.

4. "Solid waste" means all putrescible and non-putrescible solid and semi-solid wastes, including any garbage, trash, rubbish, sludge, ashes, dead animals, abandoned vehicles, infectious wastes, hazardous wastes, manure, street and parking lot cleanings, industrial wastes, and other described material, but not including domestic sewage.

[8.54].030 RESPONSIBILITY FOR STORAGE AND DISPOSAL OF SOLID WASTE

A. Any person generating, producing, storing or any person who has received any solid waste shall be responsible for the proper storage, removal, transport and disposal of that solid waste. Solid waste, while being transported, shall be covered, tied or otherwise secured so waste will not be blown or dropped from the transport vehicle.

B. Where solid waste is generated, produced, stored or received upon a leased premises; both the landlord and the tenant are responsible for compliance with the provisions of this chapter regardless of the provisions of the tenancy, except that neither party is responsible for actions outside the scope of their actual or constructive knowledge which were conducted by the other party in violation of this chapter.

C. In addition to other persons who may be responsible as set forth in this section, for the purpose of this chapter, a person generating solid waste is responsible for the lawful storage, removal, transport and disposal of that solid waste until it is legally deposited in an approved site or collected by a permitted contractor.

D. When solid waste is dumped or deposited in violation of this chapter and three or more items in the solid waste identify the same person as the owner or recipient of that item, there shall be a rebuttal presumption that the person is responsible for the unlawful dumping of solid waste.

E. The owner of the real property on which solid waste is located is responsible for complying with the provisions of this chapter even if the solid waste was placed on their property without their knowledge or consent.

F. Any person who be contact, agreement or otherwise arranges for the recovery, transport, disposal or dumping of solid waste is responsible for complying with the provisions of this chapter regarding that solid waste.

#### [8.54].040 UNLAWFUL STORAGE AND DISPOSAL OF SOLID WASTE

A. IT is unlawful to store or accumulate solid waste in a manner that is a hazard to the public health and safety, as determined by the Director and continues to be stored or accumulated in such a manner for more than fifteen days after receipt or written notice from the [Director] of the hazardous condition.

B. It is unlawful to collect and transport solid waste unless the person is responsible for that waste pursuant to the provision of §[8.54].030 or the person is a permitted contractor.

C. It is unlawful for person to dump, deposit or dispose of solid waste any place within [Pima County] other than at an approved site.

#### [8.54].050 RECOVERY OF DISPOSAL COSTS

A. If a person violates section [8.54].040 and [Pima County] arranges for or executes the lawful disposal of the solid waste, that person shall be responsible to [Pima County] for all reasonable costs and expenses associated with the transportation and disposal of the solid waste.

B. If a person violates section [8.54].040(c), and the owner of the property on which the solid waste was unlawfully dumped, deposited or disposed of arranges for or executes the lawful disposal of the solid waste the person violating this chapter shall be responsible to the property owner for all reasonable costs and expenses associated with the transportation and disposal of the solid waste.

C. If [Pima County] or a property owner files suit to collect their reasonable costs and expenses as provided in subsections A and B of this section, the court may award a reasonable amount as attorney's fees to the prevailing party.

[8.54].060 PENALTY

A. Any person who violates subsections A and B of section[8.54].040 shall be guilty of a class two misdemeanor and in addition, shall be subject to a civil penalty in an amount not to exceed \$1,000.00, as provided in A.R.S. §49-791.

Section 2. Effective date. The provisions of this ordinance will be effective after the expiration of thirty days from the date of enactment.

PASSED and ADOPTED by the Board of Supervisors of Pima County Arizona, this  
\_\_\_\_ [8th] \_\_\_\_ day of \_\_\_\_\_ [December] \_\_\_\_\_, 19[87]\_\_\_\_\_.

(signature section):

## **PUBLIC PARTICIPATION DOCUMENTS**



APPLIED ECONOMICS

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**MARICOPA ASSOCIATION OF GOVERNMENTS  
REGIONAL GROWING SMARTER IMPLEMENTATION:  
SOLID WASTE**

**FINAL REPORT**

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**March 2003**

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## ***1.0 INTRODUCTION***

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The purpose of the solid waste analysis is to provide a comprehensive look at future demand for landfill capacity in Maricopa County. As the population of the county continues to grow, landfill space will be used up at an ever-increasing rate, and recycling will become increasingly important. Several of the area's landfills will reach capacity in the near future, and the cost of siting and construction a new landfill is significant. This paper will highlight issues and challenges that will face the region, as well as local municipalities relative to future landfills.

This paper utilizes information from the MAG Regional Solid Waste Management Plan, the MAG Solid Waste Information System (SWIMS) and waste management provider interviews. These sources were used to compile an inventory of existing facilities and their respective capacities; project the future waste stream by community including the level of recycling; and identify where and when existing capacity may be exhausted between 2000 and build out. The analysis covers five points in time: 2000, 2010, 2025, 2040 and build out.

The paper is organized as follows. Section 2.0 provides an overview of the organizational structure of waste management in the County—who are the owners and operators of current facilities including landfills, transfer stations and material recovery facilities (MRFs). Section 3.0 details the current and projected capacity of these facilities and describes planned expansions. Section 4.0, which has not been completed yet, will present the projections for the future waste stream, based on projected population and employment growth in the MAG region. Finally, Section 5.0, which has not been completed yet, will compare the projected capacity with the projected waste stream to identify where and when new facilities will be needed.

## 2.0 ORGANIZATIONAL STRUCTURE

The process of disposing of solid waste involves three different types of facilities: transfer stations, landfills and material recovery facilities (MRFs). Some MRFs are combined with transfer stations where waste is sorted and transferred into trucks within the same physical facility for transport to landfills. Currently in Maricopa County there are 13 transfer stations, 6 MRFs and combination MRF/transfer stations and 7 landfills that process residential and commercial waste. These facilities are operated by a combination of public and private sector organizations. A map of landfills, transfer stations and MRFs is shown on the following page.

### 2.1 Landfills

An inventory of existing and planned landfill facilities and their service areas with corresponding ID numbers to Map 1 are shown in Figure 1. This inventory includes only landfills in Maricopa County and does not include private rubbish or construction debris landfills. Beginning in 1988, the County opened the first of four planned regional landfills. However, soon thereafter, the county got out of the regional landfill business selling the Northwest Regional Landfill in north Phoenix. Regional landfills opened to date include Northwest Regional, Southwest Regional and Butterfield Station. Waste Management Inc owns and operates both the Northwest Regional Landfill and Butterfield Station, while Allied Waste operates the Southwest Regional Landfill owned by the Buckeye Pollution Control Agency. These regional landfills are in remote areas along the urban periphery and each service a large part of the metro area.

FIGURE 1  
MARICOPA COUNTY LANDFILL INVENTORY

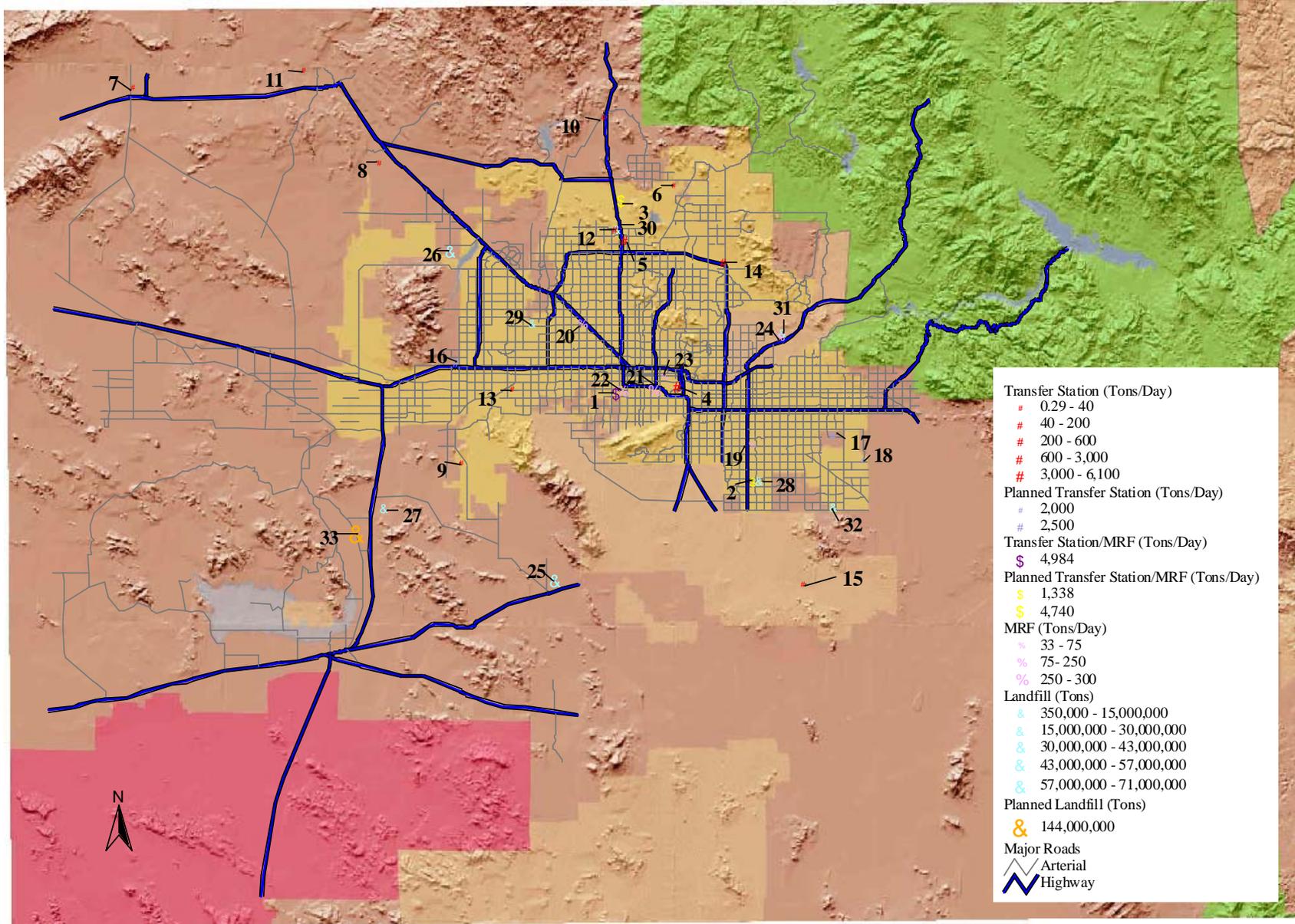
ID	Facility	Owner/Operator	Service Area	Estimated Yr of Closure
23	Butterfield Station	Waste Management	Gila River, Tempe, Phoenix, Chandler, Cave Creek, Carefree	2110
24	Northwest Regional	Waste Management	Surprise, El Mirage, Morristown, Aguila, Wickenburg, Deer Valley, Sun City, Peoria	2102
25	Southwest Regional	Allied Waste-operator/Buckeye Pollution Control - owner	Litchfield Park, Buckeye, Gila Bend, Avondale, Goodyear	2051
26	Chandler	City of Chandler	Chandler only	2006
27	Glendale	City of Glendale	Glendale	2046
28	Skunk Creek	City of Phoenix	Phoenix	2006
29	Salt River	Salt River Pima Maricopa Tribe	Mesa, Scottsdale, Gilbert	2015
NA	Queen Creek	Allied Waste	Queen Creek	2005
30	State Route 85 (planned)	City of Phoenix	Phoenix, Buckeye	2085

In addition to these large regional landfills, there are several smaller landfills operated by the City of Glendale, City of Chandler and City of Phoenix and the Salt River Pima Maricopa Tribe. The City of Phoenix is planning a large new landfill on State Route 85 that will open around 2005. The SR 85 site was approved by the city in January 2002, and is currently going through the ADEQ permitting process. The SR85 landfill will be used both by the City of Phoenix and the Town of Buckeye. There is one more proposed landfill by Southpoint Environmental Services that is not included in Figure 1. Southpoint has obtained a special use permit from the county for a proposed landfill in Mobile that could serve customers

currently using Butterfield Station or Salt River. However, since they have not yet begun the environmental permitting process or submitted any information to ADEQ, sufficient information was not available to include this landfill in the report.

Each landfill has a capacity in terms of million cubic yards or tons. The specific capacity of each landfill is discussed in Section 3.0.

**MAP 1  
TRANSFER STATION, MRF, AND LANDFILL LOCATIONS  
IN MARICOPA COUNTY**



## 2.2 Transfer Stations and Material Recovery Facilities

Transfer stations are generally warehouse facilities where garbage is transferred from collection trucks to other vehicles that transport it to a landfill. A number of these modern transfer stations also serve as MRFs where garbage is sorted before it is recycled and/or sent to a landfill. Some older transfer stations are outdoor dumpsites with large containers where garbage is picked up for transport to a landfill. Each transfer station is associated with particular landfills as shown in Figure 2. The map key corresponds to the locator map on the previous page.

**FIGURE 2**  
**INVENTORY OF TRANSFER STATIONS AND MATERIAL RECOVERY FACILITIES**

Map Key	Facility	Owner/Operator	Service Area	Related Landfill
<b>Transfer Station/MRF</b>				
1	27th Avenue Transfer Recovery	City of Phoenix	Phoenix (south)	Skunk Creek (will go to SR85 in when open)
2	Chandler (planned) Transfer Recovery	City of Chandler	Chandler	Chandler or Butterfield
3	North Phoenix (planned) Transfer Recovery	City of Phoenix	Phoenix (north)	SR 85
<b>Transfer Station Only</b>				
4	Sky Harbor	Waste Management	Tempe, Phoenix (south)	Butterfield Station
5	Deer Valley	Waste Management	Phoenix	Northwest Regional
6	Cave Creek	Maricopa County	Cave Creek/Carefree	Northwest Regional
7	Aguila	Maricopa County	Aguila	Northwest Regional
8	Morristown	Maricopa County	Morristown	Northwest Regional
9	Rainbow Valley	Maricopa County	Rainbow Valley	Southwest Regional
10	New River	Maricopa County	New River	Northwest Regional
11	Wickenburg	Maricopa County	Wickenburg	Northwest Regional
12	Skunk Creek	City of Phoenix	Phoenix (north)	Goes to MRF first
13	Avondale	City of Avondale	Avondale	Glendale
14	Scottsdale	City of Scottsdale	Scottsdale	Salt River
15	Sacaton	Gila River Community	Gila River Community	Butterfield Station
16	West Valley (planned)	Waste Management	West Valley	Northwest Regional
17	East Valley (planned)	Waste Management	East Valley	Butterfield Station
18	Cactus Waste (planned)	Cactus Waste	East Valley	Planned Landfill in Pinal County
<b>MRF Only</b>				
19	Abitibi	Abitibi	Chandler, Mesa, Gilbert	Salt River
20	Glendale	City of Glendale	Glendale	Glendale
21	19th St & University	Hudson Baylor	Phoenix (south), Scottsdale	Skunk Creek
22	Western Organics-27th Ave	Western Organics	Phoenix	Skunk Creek
23	Recycle America	Waste Management	Tempe* Salt River Indian	Butterfield Station
24	Salt River Recycling	Hudson Baylor	Community, Scottsdale,	Salt River

\* Can serve any area of Maricopa County

Some transfer stations are located in urban areas and serve particular cities. The cities of Chandler, Avondale and Scottsdale and the Gila River Indian Community operate local transfer stations that serve their municipalities. The City of Phoenix operates a recyclable materials transfer station adjacent to the

landfill at Skunk Creek that serves the north half of the city for transfer of recyclables only, and one on 27<sup>th</sup> Avenue that serves the south half of the city for MSW and recyclables. Phoenix is in the process of building a new North MSW transfer station/MRF on Dixileta Road, just east of I-17, that will open in approximately 2005. Chandler also has a transfer station/MRF scheduled to open in 2004. There are also several privately owned transfer stations within the urban area including Sky Harbor, Lone Butte, Deer Valley, East Valley and West Valley that are operated by Waste Management Inc. Additionally, Maricopa County operates six transfer stations in outlying areas of the county.

In addition to combination transfer station/MRFs, there are several facilities that are exclusively used for recycling that are operated by private businesses including Hudson Baylor which has MRFs at 19<sup>th</sup> Street and University and adjacent to the Salt River Landfill that serve Scottsdale and parts of Phoenix; Western Organics which has a facility adjacent to the Phoenix 27<sup>th</sup> Avenue Transfer Station; and Abitibi which operates a MRF in Chandler that serves the southeast valley.

## 3.0 PROJECTED WASTE CAPACITY

### 3.1 Landfill Capacity

The first step in analyzing future regional solid waste management is to quantify current and projected capacity. Existing and planned landfills are the most important component. Figure 3 shows a timeline of available capacity in 2000, 2010, 2025, 2040 and at build out. The general service area for each landfill is also shown in the table. Although it is possible to expand the capacity of a landfill by increasing the height, modifying the shape of the cover, or increasing the compaction of the trash, this capacity data provides a best guess estimate of the amount of remaining volume at each site. All capacity estimates have been verified with the landfill operators.

FIGURE 3  
CURRENT AND PROJECTED LANDFILL CAPACITY

Facility	Owner/Operator	Service Area	Remaining Capacity (Tons)				
			2002	2010	2025	2040	Build Out
Butterfield Station	Waste Management	Gila River, Tempe, Phoenix, Chandler, Cave Creek, Carefree Surprise, El Mirage, Morristown, Aguila, Wickenburg, Deer Valley, Sun	70,980,000				
Northwest Regional	Waste Management	City, Peoria	56,400,000				
Southwest Regional	Allied Waste- operator/County-owner	Litchfield Park, Buckeye, Gila Bend, Avondale, Goodyear	15,600,000				
Chandler	City of Chandler	Chandler only	350,000	closed-2006			
Glendale	City of Glendale	Glendale	3,000,000	19,667,000			
Skunk Creek	City of Phoenix Salt River Pima	Phoenix	4,800,000	closed-2006			
Salt River	Maricopa Tribe	Mesa, Scottsdale, Gilbert	8,940,000		closed-2015		
Queen Creek	Allied Waste	Queen Creek	500,000	closed-2005			
State Route 85 (planned)	City of Phoenix	Phoenix	na	144,000,000			
<b>County Total</b>			<b>160,570,000</b>	<b>163,667,000</b>			

Notes: Assumes 0.6 tons per cubic yard or 1200 lbs per cubic yard

Based on the remaining space in the eight currently operating landfills, the County has a capacity of 160.6 million tons. As of 2005, the new State Route 85 landfill will be in operation and will add an additional 144 million tons and the City of Glendale facility will be expanded to 19.7 million tons. Note that 25 percent of the total remaining capacity must be allocated to fill dirt, therefore reducing the space available for actual waste. The number of years that it will take to use up this capacity will depend on the projected rate of population growth. The other critical factor is the rate of recycling, which will reduce the flow of waste going to landfills. These issues will be analyzed in greater detail in Section 4.0.

### 3.2 Transfer Station and Material Recovery Facility Capacity

Transfer stations, which serve specific landfills, also have a limited capacity. Although, transfer stations can be expanded depending on available land at existing sites, or new transfer stations can be built relatively easily. For the purpose of this analysis, the inventory includes currently operational facilities and planned facilities. In general, a waste stream of about 500 tons per day is required to support a new transfer station. In addition, the transfer station must be 15 miles or more from a landfill; otherwise it is more cost effective to transport trash directly to the landfill.

As noted above, some transfer stations also serve as MRFs. For the purpose of this analysis, the capacity of transfer stations and MRFs are shown together in Figure 4. Although for combination facilities the

transfer capacity and the recovery capacity are shown separately. At the current time there is excess recycling capacity, but in the future as the level of recycling increases, additional MRFs will likely be required.

**FIGURE 4  
CURRENT AND PROJECTED TRANSFER STATION AND MRF CAPACITY**

Facility	Service Area	Transfer/Recovery Capacity (tons/day)		
		2000/2002	2010	Build Out
<b>Transfer Station/MRF</b>				
27th Avenue	Phoenix (south)			
Transfer		4,619		
Recovery		365		
Chandler (planned)	Chandler			
Transfer			1,216	
Recovery			122	
North Phoenix (planned)	Phoenix (north)			
Transfer			4,254	
Recovery			486	
<b>County Total</b>				
<b>Transfer</b>		<b>4,619</b>	<b>5,470</b>	
<b>Recovery</b>		<b>365</b>	<b>608</b>	
<hr/>				
Facility	Service Area	Transfer/Recovery Capacity (tons/day)		
		2000/2002	2010	Build Out
<b>Transfer Station Only</b>				
Sky Harbor	Tempe, Phoenix (south)	6,078		
Deer Valley	Phoenix	3,039		
Cave Creek	Cave Creek/Carefree	0.29		
Aguila	Aguila	0.29		
Morristown	Morristown	0.29		
Rainbow Valley	Rainbow Valley	0.29		
New River	New River	0.29		
Wickenburg	Wickenburg	0.29		
Skunk Creek	Phoenix (north)	182		
Avondale	Avondale	12		
Scottsdale	Scottsdale	608	1,216	
Sacaton	Gila River Community	40		
WM West Valley (planned)	West Valley		2,500	
WM East Valley (planned)	East Valley		2,500	
Cactus Waste (planned)	East Valley		2,000	
<b>County Total</b>		<b>9,961</b>	<b>6,216</b>	
<b>MRF Only</b>				
Abitibi	Chandler, Mesa, Gilbert	33		
Glendale	Glendale	250		
19th St & University	Phoenix (S. of Cactus), Scottsdale	300		
Salt River Recycling	Mesa, Scottsdale, Salt River Indian Community	288		
Western Organics-27th Ave	Phoenix	67		
Recycle America	Metro Area	250		
<b>County Total</b>		<b>1,188</b>		

Based on the inventory of existing transfer stations and combination transfer/MRF facilities there is a regional transfer capacity of 14,580 tons per day. However, it is important to note that not all waste goes through a transfer station. Depending on the distance of the community from a landfill, some waste goes directly to a landfill. With the five new facilities that are planned, and the expansion of the Scottsdale facility, there will be additional transfer capacity of 13,685 tons per day by 2010. In terms of recovery capacity for exclusive recycling facilities and combination transfer station/MRFs, the current seven facilities can handle up to 1,553 tons per day.<sup>1</sup> The addition of the new North Phoenix and Chandler combination facilities will add an additional 608 tons per day in recovery capacity by 2010.

### **3.3 Expansion Procedures and Funding Sources**

Most providers follow essentially the same process for increasing capacity, which may include expanding an existing facility, or siting a new facility. Funding sources vary depending on whether it is a public or private entity. Private operators pay for expansions through their own capital sources then pass on the cost through tipping fees. Public entities normally use general fund revenues and increased user fees to fund expansions. The following is a review of the information obtained from each landfill and/or transfer station operator. Note that no information was available from Hudson Baylor, which operates two MRFs that serve Phoenix and Scottsdale.

**Waste Management.** Waste Management operates two landfills--Butterfield Station and the Northwest Regional Landfill; one construction landfill-Lone Butte; and two transfer stations-Sky Harbor and Deer Valley. In terms of landfills, the easiest way to increase capacity is by getting a permit to increase the height of the landfill, either by digging deeper underground, or by increasing the height of the walls. This approach does not require acquisition of additional land around the site. However, in the areas surrounding Butterfield Station and the Northwest Regional landfill, there is adequate vacant land surrounding the landfill to expand outward if needed.

Waste Management does not expand their transfer stations, but rather builds additional facilities. The process for siting new facilities involves determining the market size needed to build a new transfer station, identifying the area it will serve, and identifying an available site. Generally, the market area must be able to generate at least 500 tons/day, and must be at least 25 miles from a landfill. Since Waste Management is a private company, all expansions and new facilities are funded through private capital and passed on through tipping fees. There are currently two new regional transfer stations planned, one in the East Valley at 80<sup>th</sup> Street and Warner Road and one in the West Valley at Perryville and McDowell Roads. Both have been approved and are scheduled to open in 2004.

**Allied Waste.** Allied Waste operates the Southwest Regional Landfill in Buckeye, and the Queen Creek Landfill that is scheduled to close in 2005. The Southwest Regional Landfill currently has a remaining life of 50 years, although there is land available surrounding the site that is owned by the Town of Buckeye and could be purchased for expansion. Although Allied Waste is not planning any additional facilities at this time, their siting criteria generally include topography, soil composition, groundwater depth and location relative to roads and airports. All expansions are funded through private capital and repaid through tipping fees.

**Abitibi.** Abitibi, which recently purchased Valley Recycling, operates a paper recycling center in Chandler that serves the cities of Chandler, Mesa and Gilbert. They are not looking to expand at this time, due to competition from the Hudson Baylor MRF at the Salt River Landfill.

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<sup>1</sup> Note that this inventory excludes facilities that handle specialized types of recyclables. Although these facilities increase overall recycling capacity in the region, they do not add capacity for general curbside recycling.

**City of Phoenix.** The City of Phoenix operates the Skunk Creek Landfill and Transfer Station, and the 27<sup>th</sup> Avenue Transfer Station/MRF. The City is currently going through the permitting process for the new State Route 85 landfill, and recently sited the North Transfer Station/MRF in May 2001. The Skunk Creek Landfill cannot be expanded and will reach capacity in 2006. The North Transfer Station/MRF will have a large enough capacity to service the north half of Phoenix.

The City's process for siting a new landfill involves exclusionary criteria first to eliminate sites that are not consistent with ADEQ requirements such as flood plains, and sites with mountainous terrain or developed areas. Once these sites have been eliminated, remaining vacant sites are ranked based on soil type, groundwater depth, distance from flood plains, bedrock geology, traffic impacts, distance to roadways, distance to utilities and location relative to existing development. Both the landfill and the transfer station will be paid for through commercial tipping fees and resident solid waste collection fees.

**City of Glendale.** Glendale currently operates a landfill and an adjacent MRF. The City is planning to expand the landfill by another 120 acres in about 10 years resulting in a 40 plus year capacity. Expansions are paid for through user fees.

**City of Scottsdale.** Scottsdale currently operates a transfer station to serve Scottsdale residents. They have several options for expansion of their existing facility including adding more loading bays for trucks or constructing a new building adjacent to the existing station. The City has a reserve fund in their budget to cover the capital cost.

**City of Chandler.** Chandler currently operates a landfill, and is planning a transfer station/MRF to serve local residents. Their existing landfill is approaching capacity and cannot be expanded. It was expanded in 1999 by 9.6 acres, and will be at capacity by 2005. The planned transfer station/MRF is expected to open in 2005. The process for siting this new facility focused on location relative to existing development and flood plains. It will be paid for through increased user fees.

**Maricopa County.** The County operates six transfer stations in outlying areas. It is not their policy to expand transfer stations, which currently serve very small communities. There is currently no need for additional capacity. Their transfer stations consist of 40-yard containers that are open to the public two days per week.

**Salt River Pima Maricopa Indian Community.** The Salt River Community operates the Salt River Landfill and MRF. They have three acres of tribal land that is available to expand their MRF. Although the Salt River Community does not have to comply with state regulations on tribal land, they have met those regulations voluntarily in terms of distance from flood plains, faults or seismic activity. No land is available to expand the landfill, which is projected to close in 2015. They may be able to extend the life of the landfill by arching the cover and by using heavy trash compactors. The MRF expansion will be funded through user fees.

**Gila River Indian Community.** The Gila River Community operates a transfer station in Sacaton. It is simply a 40-yard bin that serves members of the community. All trash that is collected in trucks on the reservation goes directly to the landfill. The Gila River Community is not looking to expand beyond two 40-yard bins, as they do not want to store additional trash and there is limited demand.

## ***4.0 PROJECTED WASTE STREAM***

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The projected waste stream is the amount of waste that will be generated by future population and employment. The projections cover five points in time including 2000, 2010, 2025, 2040 and build out. Generation rates from the MAG Solid Waste Information Management System (SWIMS) database were used to produce the waste stream projections. SWIMS is a planning instrument that incorporates socioeconomic, waste generation, waste disposal and recycling assumptions about the MAG region and individual municipalities in order to produce projections of future waste streams and their impacts on recycling volumes and landfill capacity. The SWIMS database is able to produce projections for six different classes of waste: residential, commercial/industrial, liquid and semisolid, construction, medical and green waste. This analysis is limited to residential and commercial/industrial waste.

### **4.1 Solid Waste Generation Rates**

For residential waste, which includes both single family and multi family residences, generation rates are based on data from local jurisdictions. The average residential generation rate countywide is 3.07 pounds per capita per day, although there are variations among local municipalities (Figure 5). The residential generation rates were applied to projected population by MPA to estimate waste generation. For commercial/industrial waste, which includes commercial, office, educational, institutional and industrial waste, the generation rates based on local jurisdiction data were applied to projected employment by MPA. In developing both residential and commercial/industrial rates, local data for 2000 was used wherever possible. If not available, 1997 data was used by MAG to project 2000 rates. If neither 1997 nor 2000 data was available, a metro area average was used based on communities of comparable size with a comparable amount of waste. Commercial and industrial rates were adjusted slightly in some cases, as part of the most recent SWIMS update, to ensure they were between 1.4 and 6.0 pounds per capita per day. The generation rates in the model do not vary over time.

**FIGURE 5  
SOLID WASTE GENERATION RATES FROM SWIMS**

Jurisdiction	Pounds per Capita per Day	
	Residential	Comm/Industrial
Avondale	2.826	2.830
Buckeye	2.175	1.400
Carefree	2.826	2.830
Cave Creek	2.826	2.830
Chandler	2.450	3.004
El Mirage	2.826	2.830
Fountain Hills	2.826	2.830
Gila Bend	2.789	1.551
Gila River Indian Community	2.826	2.830
Gilbert	2.798	4.895
Glendale	2.380	5.584
Goodyear	3.545	1.815
Guadalupe	2.826	2.830
Litchfield Park	2.826	2.830
Maricopa County	2.826	2.830
Mesa	2.964	2.579
Paradise Valley	4.429	2.405
Peoria	1.968	5.409
Phoenix	2.894	2.584
Queen Creek	6.193	2.814
Salt River Pima-Maricopa Indian Community	2.826	2.830
Scottsdale	3.536	2.413
Surprise	1.959	1.999
Tempe	2.441	3.236
Tolleson	4.391	1.400
Wickenburg	4.025	2.583
Youngtown	3.661	3.958

Source: MAG 2000 SWIMS model.

#### **4.2 Projected Population and Employment**

Existing generation rates shown above were applied to the most current MAG population projections. The projections by MPA for the relevant time periods are shown in Figures 6 and 7. However, since landfill capacity must be calculated annually, the projections from MAG, which are in 10-year increments, were interpolated to yield annual population and employment projections.

**FIGURE 6  
PROJECTED POPULATION BY MPA**

City	2000	2010	2025	2040	Buildout
Avondale	37,800	71,100	108,950	114,800	115,000
Buckeye	16,700	76,600	328,150	586,800	837,900
Carefree	3,000	4,100	4,950	5,000	5,100
Cave Creek	3,900	5,200	9,450	13,300	13,300
Chandler	185,300	260,400	286,600	289,900	291,800
El Mirage	8,700	34,700	47,950	51,400	51,400
Fountain Hills	20,500	24,800	31,050	31,500	31,800
Gila Bend	2,300	2,900	12,000	65,200	122,400
Gila River	2,700	3,200	4,700	9,500	9,600
Gilbert	114,300	211,700	282,050	287,800	311,700
Glendale	230,300	294,900	310,300	313,400	315,200
Goodyear	21,200	66,600	248,650	366,200	373,800
Guadalupe	5,200	5,200	5,200	5,300	5,300
Litchfield Park	3,800	8,800	14,350	14,800	15,000
Maricopa County	85,300	91,700	149,500	615,500	1,343,900
Mesa	441,800	535,200	632,050	649,000	651,300
Paradise Valley	14,100	15,200	15,900	16,200	16,300
Peoria	114,100	165,600	300,000	383,500	391,800
Phoenix (N of Cactus)	401,294	544,213	798,677	916,268	934,196
Phoenix (S of Cactus)	949,178	1,156,544	1,294,821	1,344,849	1,356,377
Queen Creek	8,900	19,400	84,550	93,600	94,000
Salt River	6,500	7,400	7,500	7,500	7,600
Scottsdale	204,300	261,500	297,500	301,600	304,500
Surprise	37,700	119,400	278,050	644,400	677,600
Tempe	158,900	175,500	183,150	187,200	188,400
Tolleson	5,000	6,200	6,300	6,400	6,400
Wickenburg	7,400	7,700	14,400	33,200	33,500
Youngtown	3,000	5,600	6,800	7,300	7,400
<b>Total*</b>	<b>3,093,172</b>	<b>4,181,357</b>	<b>5,763,547</b>	<b>7,361,417</b>	<b>8,512,573</b>

Source: Maricopa Association of Governments Draft 2 Projections, 2002; Town of Gilbert.

**FIGURE 7  
PROJECTED EMPLOYMENT BY MPA**

City	2000	2010	2025	2040	Buildout
Avondale	9,000	29,400	59,400	74,000	94,100
Buckeye	7,100	27,600	138,400	299,200	563,500
Carefree	1,500	2,800	3,450	3,400	3,400
Cave Creek	800	2,000	3,100	3,200	3,300
Chandler	73,000	117,500	148,850	162,200	195,000
El Mirage	1,900	7,700	21,300	30,800	37,900
Fountain Hills	4,300	8,000	9,400	9,200	9,900
Gila Bend	1,200	1,900	8,300	35,600	124,000
Gila River	3,700	5,000	8,350	20,300	57,200
Gilbert	35,000	70,400	133,750	150,000	164,500
Glendale	84,500	130,200	176,200	204,100	224,800
Goodyear	13,900	43,800	150,550	215,800	289,700
Guadalupe	600	1,700	1,800	1,900	2,000
Litchfield Park	1,200	3,800	4,900	4,700	5,000
Maricopa County	31,800	33,600	52,800	162,500	221,200
Mesa	172,000	242,600	320,950	352,600	386,300
Paradise Valley	5,400	5,600	6,000	6,000	6,100
Peoria	28,400	53,100	125,600	181,000	213,900
Phoenix (N of Cactus)	129,175	193,010	325,834	423,622	492,183
Phoenix (S of Cactus)	612,140	698,834	842,549	910,716	995,656
Queen Creek	1,700	6,300	33,300	42,200	59,800
Salt River	7,300	7,800	15,050	41,200	50,400
Scottsdale	152,100	184,100	219,000	228,300	242,000
Surprise	9,000	29,400	89,250	206,900	289,200
Tempe	160,100	183,200	213,100	215,200	217,000
Tolleson	12,800	16,500	28,400	43,700	47,800
Wickenburg	4,100	5,000	9,250	20,800	28,800
Youngtown	1,200	1,700	1,700	1,700	1,800
<b>Total*</b>	<b>1,564,915</b>	<b>2,112,544</b>	<b>3,150,533</b>	<b>4,050,838</b>	<b>5,026,439</b>

Source: Maricopa Association of Governments Draft 2 Projections, 2002.

In some cases the projections for ultimate build out are substantially higher than the 2040 projections, such as in unincorporated Maricopa County, and Gila Bend. This is particularly true for population. Ultimate build out is based on the total carrying capacity of the land using known future land use designations. It is entirely possible that ultimate build out may never occur, especially in the unincorporated county.

The average annual population growth rate from 2000 to 2010 is highest in West Valley communities that are just now beginning to experience rapid growth. These include Buckeye, Surprise, Goodyear and El Mirage. Buckeye has an astounding estimated annual growth rate of 36 percent over the next ten years. El Mirage is projected to grow by 30 percent per year, and Surprise and Goodyear are project to grow by 21 percent per year through 2010. Neighboring Litchfield Park is projected to grow at 13 percent per year. The only other community with an annual growth rate over 10 percent is Queen Creek, although very rapid growth in this outlying East Valley community is not projected to occur until after 2010. The

remaining 20 communities in Maricopa County are projected to grow at an annual average rate of 2.9 percent from 2000 to 2010.

Employment growth from 2000 to 2010 will be highest in the West Valley as well. El Mirage, Buckeye, Avondale, Surprise, Goodyear and Litchfield Park, and Queen Creek in the East Valley are all projected to have employment growth in excess of 20 percent per year.

In the period from 2010 to 2025, Buckeye and Goodyear are projected to continue to grow at very rapid rates of 22 and 18 percent, respectively. Considering that the population base in these communities will be 250,000 to 300,000 by 2010, these are amazingly high growth rates. Queen Creek is also projected to boom in the 2010 to 2025 period with an average annual growth rate of 22 percent. The other rapidly growing community during this time period is Gila Bend with a growth rate of 21 percent, but a population base of less than 3,000. The remaining communities are projected to grow at an annual average rate of 3.1 percent from 2010 to 2025, up slightly from the previous period.

Employment will continue to grow rapidly from 2010 to 2025 in Buckeye and Queen Creek with 27 to 29 percent annual increases. In addition, Gila Bend is projected to have employment growth of 22 percent per year during this time period. Other communities with employment growth in excess of 10 percent per year include Goodyear, El Mirage and Surprise.

From 2025 to 2040, the only areas that are projected to have population growth rates in excess of 20 percent per year are Gila Bend and unincorporated Maricopa County. The remaining communities are projected to grow at an annual average rate of 1.7 from 2025 to 2040. This is only about half the growth rate from the previous period due to the larger population base and the reduced amount of developable land remaining.

Employment growth will also slow after 2025 with many communities increasing their employment base at 2 percent per year or less. However, unincorporated Maricopa County and Gila Bend are projected to continue to grow at 14 and 22 percent, respectively. Other areas that will continue to experience above average economic growth during this time period include Buckeye, Gila River, Salt River, Surprise and Wickenburg.

From 2040 to build out, annual population growth rates in most communities are projected at less than 1 percent as infill development slowly uses up all developable land. The exceptions are Gila Bend, unincorporated Maricopa County and Buckeye, which are projected to grow between 4 and 12 percent per year.

In terms of employment growth, Buckeye, Gila Bend and the Gila River Indian community are the only areas that are projected to experience a high rate of employment growth after 2040. All of these communities are projected to grow between 9 percent and 25 percent per year from 2040 to build out.

#### **4.3 Projected Waste Generation**

The next step is to apply the population and employment projections to the waste generation rates, and then convert from pounds per day to tons per year. For residential waste generation was assumed to occur 365 days per year, while for commercial waste, a factor of 260 days per year was used. The results are shown in Figure 8. Generally, the amount of waste generation corresponds closely to total population and employment and growth rates by community. *The information shown in Figure 8 does not incorporate any assumptions about recycling.*

**FIGURE 8**  
**PROJECTED GROSS RESIDENTIAL AND COMMERCIAL WASTE GENERATION**  
**TONS PER YEAR**

City	2000	2010	2025	2040	Buildout
Avondale	22,807	47,488	78,046	86,434	93,931
Buckeye	7,921	35,431	155,452	287,393	435,173
Carefree	2,099	3,145	3,822	3,830	3,881
Cave Creek	2,306	3,418	6,015	8,037	8,074
Chandler	111,342	162,291	186,244	192,932	206,589
El Mirage	5,186	20,730	32,567	37,842	40,453
Fountain Hills	12,155	15,734	19,473	19,632	20,044
Gila Bend	1,412	1,859	7,780	40,358	87,288
Gila River	2,754	3,490	5,496	12,368	25,993
Gilbert	80,575	152,785	228,982	242,256	263,674
Glendale	161,363	222,594	262,675	284,274	300,083
Goodyear	16,995	53,420	196,381	287,823	310,175
Guadalupe	2,903	3,307	3,344	3,433	3,469
Litchfield Park	2,401	5,937	9,204	9,363	9,576
Maricopa County	55,695	59,658	96,533	377,244	774,535
Mesa	296,637	370,829	449,484	469,264	481,808
Paradise Valley	13,086	14,037	14,728	14,971	15,083
Peoria	60,947	96,810	196,055	264,997	291,110
Phoenix (N of Cactus)	255,317	352,238	531,241	626,194	658,696
Phoenix (S of Cactus)	706,909	845,543	966,849	1,016,170	1,050,795
Queen Creek	10,681	24,232	107,746	121,231	128,122
Salt River	6,038	6,686	9,405	19,024	22,460
Scottsdale	196,334	228,691	260,670	266,233	272,402
Surprise	15,815	50,321	122,585	284,115	317,369
Tempe	138,121	155,232	171,217	173,904	175,196
Tolleson	6,336	7,971	10,217	13,082	13,828
Wickenburg	6,813	7,335	13,684	31,372	34,279
Youngtown	2,622	4,616	5,418	5,752	5,870
<b>Total</b>	<b>2,203,572</b>	<b>2,955,827</b>	<b>4,151,316</b>	<b>5,199,527</b>	<b>6,049,957</b>

Source: Maricopa Association of Governments Draft 2 Projections, 2002; Applied Economics, 2003; City of Scottsdale; Town of Gilbert.

#### 4.4 Recycling Rates

The key variable in the final waste generation projections is the assumed rate of recycling. For this analysis, current and projected recycling rates were set based on guidance from Arizona Department of Environmental Quality (ADEQ). According to ADEQ, the recycling rates in Maricopa County for 1999 were 23.2 percent by volume and 18.5 percent by weight. This is the most current data available. For the purpose of determining the impact on landfill capacity, the percent recycling by volume is the relevant figure.

Local recycling rates are substantially lower than the national average. Based on data from the Environmental Protection Agency, *Municipal Solid Waste in the United States: 2000 Facts and Figures*, the national average recycling rate is 30.1 percent. The recycling rate varies by type of material, but this

figure represents an average for all material types. For the purpose of this analysis, it is assumed that Maricopa County will reach the current national average rate by 2020. This is consistent with the “national scenario” from the MAG *Regional Recycling Information Exchange Case Scenarios* completed in 1999.

As of 2000, there were curbside recycling programs in Chandler, Gilbert, Glendale, Mesa, Phoenix, Scottsdale and Tempe. Avondale began its recycling program in January 2003. The rate of recycling in these communities was calculated to yield a total recycling rate that is equal to 23.2 percent of all residential and commercial/industrial waste in Maricopa County in 2000. Thus, the “adjusted” recycling rate for 2000 is 26.2 percent for communities where a curbside program exists. The target rate, 23.2 percent in 2000, increases annually through 2020, as does the “adjusted” rate. Estimates of annual recycling volumes are shown in Figure 9.

Based on information provided by David Janke at ADEQ and by MAG staff, some assumptions were made about implementation of curbside recycling in additional communities in the future. For this analysis, Goodyear, Peoria and Surprise were added to the recycling totals beginning in 2010. Buckeye was added in 2015. Buckeye will be in a unique position once the new SR 85 landfill opens in 2010. Since the City of Phoenix owns this landfill and will run trucks from existing transfer station/MRFs to the landfill in Buckeye, it is possible that Buckeye could negotiate to have recyclables picked up by trucks from the City of Phoenix and backhaul the recyclables to a Phoenix MRF, given that these trucks would otherwise return from the landfill empty.

The results of the recycling estimates are shown in Figure 9. The estimates are shown in tons per day. The “adjusted” recycling rate for communities with curbside programs rises from 27.5 percent in 2003 to 32.8 by 2020, allowing the county as a whole to achieve the target 2000 national recycling level of 30.1 percent. The “adjusted” recycling rate continues to increase beyond 2020 to account for additional waste generated in communities without recycling programs. By 2040, the “adjusted” rate is 35.0 percent, and by build out it is estimated at 37.4 percent.

**FIGURE 9**  
**AMOUNT OF WASTE DIVERTED TO MATERIAL RECOVERY FACILITIES**  
**TONS PER DAY**

City	2000	2010	2025	2040	Buildout
Avondale	0	41	78	93	110
Buckeye	0	0	150	296	488
Carefree	0	0	0	0	0
Cave Creek	0	0	0	0	0
Chandler	88	143	189	209	243
El Mirage	0	0	0	0	0
Fountain Hills	0	0	0	0	0
Gila Bend	0	0	0	0	0
Gila River	0	0	0	0	0
Gilbert	64	135	238	269	313
Glendale	103	177	222	238	247
Goodyear	0	45	190	295	346
Guadalupe	0	0	0	0	0
Litchfield Park	0	0	0	0	0
Maricopa County	0	0	0	0	0
Mesa	239	319	445	495	547
Paradise Valley	0	0	0	0	0
Peoria	0	88	209	303	360
Phoenix (N of Cactus)	196	299	520	655	742
Phoenix (S of Cactus)	568	742	976	1,092	1,214
Queen Creek	0	0	0	0	0
Salt River	0	0	0	0	0
Scottsdale	101	158	189	189	189
Surprise	0	42	119	293	356
Tempe	119	147	187	202	217
Tolleson	0	0	0	0	0
Wickenburg	0	0	0	0	0
Youngtown	0	0	0	0	0
<b>Total</b>	<b>1,479</b>	<b>2,336</b>	<b>3,712</b>	<b>4,630</b>	<b>5,371</b>

Source: Maricopa Association of Governments Draft 2 Projections, 2002; Applied Economics, 2003; City of Scottsdale; City of Mesa.

#### 4.5 Landfill Capacity Requirements

The next step in the analysis is to combine the information about waste generation and recycling to determine how much landfill capacity would be used up each year. In addition to generation less recycling, it is also necessary to adjust the volume going to landfills by 25 percent to account for fill dirt. Figure 10 shows the estimated amount of landfill capacity required in Maricopa County by 2010, 2025, 2040 and build out. By build out, the residents and business of Maricopa County will use 5.1 million tons per year of landfill capacity.

**FIGURE 10**  
**TOTAL AMOUNT OF LANDFILL CAPACITY REQUIRED\***  
**TONS PER YEAR\*\***

City	2000	2010	2025	2040	Buildout
Avondale	28,509	40,687	61,772	65,453	67,028
Buckeye	9,902	44,288	126,087	223,996	321,436
Carefree	2,624	3,931	4,778	4,787	4,852
Cave Creek	2,882	4,272	7,518	10,046	10,092
Chandler	98,875	137,754	146,414	145,646	147,418
El Mirage	6,483	25,913	40,709	47,302	50,567
Fountain Hills	15,194	19,668	24,341	24,539	25,055
Gila Bend	1,766	2,324	9,725	50,448	109,110
Gila River	3,442	4,362	6,870	15,459	32,492
Gilbert	71,336	129,451	177,740	180,068	186,739
Glendale	154,884	197,308	227,045	246,818	262,391
Goodyear	21,243	46,037	158,669	224,972	230,004
Guadalupe	3,629	4,134	4,180	4,291	4,337
Litchfield Park	3,002	7,421	11,505	11,703	11,970
Maricopa County	69,618	74,572	120,666	471,555	968,169
Mesa	261,622	318,178	358,790	360,574	352,871
Paradise Valley	16,357	17,547	18,410	18,714	18,854
Peoria	76,183	80,723	149,613	192,937	199,603
Phoenix (N of Cactus)	229,640	304,033	426,998	483,881	484,631
Phoenix (S of Cactus)	624,489	718,322	763,181	771,987	759,780
Queen Creek	13,352	30,290	134,683	151,539	160,152
Salt River	7,548	8,358	11,756	23,780	28,075
Scottsdale	199,136	213,910	239,789	246,743	254,454
Surprise	19,769	43,671	98,875	221,453	234,354
Tempe	118,419	126,938	128,577	125,379	119,980
Tolleson	7,920	9,964	12,771	16,352	17,285
Wickenburg	8,516	9,169	17,105	39,215	42,848
Youngtown	3,277	5,770	6,773	7,190	7,338
<b>Total*</b>	<b>2,079,616</b>	<b>2,628,994</b>	<b>3,495,341</b>	<b>4,386,829</b>	<b>5,111,886</b>

Source: Maricopa Association of Governments Draft 2 Projections, 2002.

\*Includes 25 percent fill dirt allowance.

\*\*1200 lbs = 1 cubic yard =0.6 tons, based on 365 days per year for residential waste generation and recycling and 260 days per year for nonresidential waste generation.

#### 4.6 Alternatives to Landfilling

The estimates listed in this report on Transfer Station and Landfill capacity requirements are conservative, as it is feasible that currently available alternative technologies for diversion of waste could be implemented in the near future. When referring to time periods from 20 to 50 years in the future even more alternatives maybe developed and utilized. The type of diversion in the future could change the required capacity and functions of solid waste facilities. The currently available conservation methods can be divided into five components: recycling, composting, combustion, pyrolysis, and organic fermentation.

### Composting

Composting is the process by which organic material is decayed and used to fertilize and condition land. Composting of MSW as an alternative to landfilling has had limited success. Today, there are only 19 facilities nationwide composting mixed MSW. Most of the facilities are less than 100 tons per day.

### Combustion

Combustion, also called waste-to-energy (WTE), is the burning of solid waste to create heat, which may be converted to electricity. The residual material created by this process requires possible treatment and disposal in a landfill. In general, the number of WTE plants has declined since 1984, and today there are only about 100 of these facilities in operation.

### Pyrolysis

Pyrolysis is the process of chemically decomposing solid waste utilizing heat in an oxygen-reduced environment. A gas is produced that can be used similar to natural gas fuel in power generation equipment. The process also produces an ash waste product that requires landfilling. A recently opened solid waste energy and recycling plant in Australia uses the pyrolysis technology for processing waste. This technology is especially costly when power generation equipment is added and would require a large capital investment.

### Organic Fermentation

Acid is used in a dilute form as a catalyst waste-to-ethanol (acid hydrolysis technology) to hydrolyze the cellulose into sugar, which then can be fermented and distilled into ethanol a useable fuel. Traditionally, grain, mainly corn, has been the chief feedstock for ethanol production in the United States. This process has been recently proposed for municipal solid waste containing high cellulose materials. One of the primary uses for ethanol is blending it with gasoline, which helps reduce carbon monoxide emissions.

### Bioreactor Landfills

These landfills utilize microbial processes to accelerate the degradation of refuse. The refuse within a bioreactor landfill must be kept extremely moist in order to achieve the accelerated degradation, unlike standard landfills that are kept dry. Benefits include increased landfill capacity due to volume reduction and reduction of long-term landfill gas maintenance costs. There are no full-scale bioreactor landfills in operation in the United States; therefore the long-term effects of accelerated degradation are unknown.

Note that while the technologies described above do hold potential for reducing the volume of waste currently going to landfills, there are State and Federal regulations that may present limitations and special permits are generally required. In the future, technology could be developed to help offset some of the regulatory limitations.

## 5.0 NET CAPACITY ANALYSIS

### 5.1 Projected Net Landfill Capacity

Comparing the amount of landfill capacity required annually to the amount of capacity available, it is possible to calculate remaining net capacity in each of the five time periods. Since these calculations must be made on an annual basis, it was necessary to assume a specific year for build out, which in this case is 2050. Figure 11 shows these remaining capacity figures by landfill.

**FIGURE 11  
PROJECTED REMAINING LANDFILL CAPACITY**

Facility	Service Area	Remaining Capacity (Tons)			
		2010	2025	2040	2050
Butterfield Station	Gila River, Tempe, Phoenix, Chandler, Cave Creek, Carefree	62,828,632	50,374,675	33,349,533	21,801,005
Northwest Regional	Surprise, El Mirage, Morristown, Aguila, Wickenburg, Deer Valley, Sun City, Peoria	54,027,609	48,763,546	38,322,429	25,459,319
Southwest Regional	Litchfield Park, Buckeye, Gila Bend, Avondale, Goodyear, Tolleson	14,456,400	11,754,224	6,851,333	2,796,359
Chandler	Chandler only	0	0	0	0
Glendale	Glendale	19,667,000	16,459,037	12,862,327	10,308,658
Skunk Creek	Phoenix	0	0	0	0
Salt River	Mesa, Scottsdale, Gilbert	3,351,156	0	0	0
Queen Creek	Queen Creek	288,368	0	0	0
State Route 85 (planned)	Phoenix, Buckeye	146,366,631	128,556,513	107,069,956	91,795,684
<b>County Total</b>		<b>300,985,796</b>	<b>255,907,996</b>	<b>198,455,579</b>	<b>152,161,026</b>

Source: Applied Economics, 2003.

Notes: Assumes 0.6 tons per cubic yard or 1200 lbs per cubic yard

Note that by build out or 2050, there is a sizeable amount of remaining capacity at Butterfield Station, the Northwest Regional and State Route 85 landfills, and a moderate amount at Glendale. On a regional basis, the 153.44 million tons of remaining capacity at build out would last approximately 30 more years beyond 2050, assuming no more population or employment growth. Of course, these calculations are heavily dependent on the actual level of future recycling and the number of communities with curbside recycling programs.

The Southwest Regional landfill will reach capacity within a year after 2050, based on the assumptions used in this analysis and the current population and employment projections. The Chandler and Skunk Creek landfills will close before 2010, and the Salt River and Queen Creek landfills will close before 2025. For this analysis, the waste from Mesa, Gilbert and Scottsdale that is currently going to Salt River was diverted to Butterfield Station after the Salt River landfill capacity was exhausted, and the waste from Phoenix (south of Cactus) was diverted to the new SR85 landfill after 2010. Similarly, the waste from Buckeye was diverted from the Southwest Regional landfill to the SR85 landfill after 2010. Based on information from Allied Waste, the Town of Queen Creek is likely to divert waste to a landfill in Pinal County once the Queen Creek landfill closes. Thus, Queen Creek waste was excluded from the analysis after the closure of the Queen Creek landfill since this study only includes landfills in Maricopa County. Note that these assumptions are subject to change, but they only affect the balance between landfills, not the net regional capacity. Also, some of these shifts to alternative landfills would require additional

transfer stations. For example, when the Salt River landfill closes, additional transfer stations would be required if Mesa, Gilbert and Scottsdale are to use Butterfield Station.

## **5.2 Projected Net Transfer Station and MRF Capacity**

The final component is the analysis of transfer station and recycling capacity. This is less straightforward than the landfill analysis because not all waste goes to a transfer station, thus not all communities are included. These calculations are based on the stated service area for each facility; however, communities that are served by private haulers may ultimately use multiple transfer stations and MRFs depending on the choice of each hauler.

Figure 12 shows the net transfer/recycling capacity by community. In some cases, different parts of the same community are served by different facilities, so the total capacity is combined. For transfer stations and MRFs that serve multiple communities such as the Sky Harbor transfer station or the Salt River or Abitibi MRFs, the capacity was divided equally between the communities.

**FIGURE 12  
PROJECTED WASTE GENERATION AND RECYCLING VOLUMES  
COMPARED TO TRANSFER/RECOVERY CAPACITY**

Community/Facility	Transfer/Recovery Net Capacity (tons/day)			
	2010	2025	2040	2050
<b>Phoenix-South, Tempe</b>				
Transfer (27th Ave, Sky Harbor)	8,499	8,330	8,291	8,298
Recovery (27th Ave, Hudson Baylor, Western Organics, Recycle America)	33	(241)	(372)	(509)
<b>Phoenix-North</b>				
Transfer (N. Phoenix, Deer Valley, Skunk Creek)	6,737	6,418	6,257	6,230
Recovery (N. Phoenix)	187	(34)	(169)	(256)
<b>Chandler (planned)</b>				
Transfer	863	831	827	809
Recovery (Chandler, 1/3 Abitibi)	(10)	(56)	(76)	(110)
<b>Cave Creek/Carefree</b>				
Transfer (Maricopa County)	(20)	(29)	(35)	(35)
<b>Wickenburg</b>				
Transfer (Maricopa County)	(22)	(41)	(93)	(104)
<b>Avondale</b>				
Transfer (City of Avondale)	(89)	(148)	(162)	(173)
Recovery (no existing capacity)	(41)	(78)	(93)	(110)
<b>Scottsdale</b>				
Transfer (City of Scottsdale)	523	426	407	386
Recovery (Salt River Recycling, 19th St/Univ)	46	15	15	15
<b>Gila River</b>				
Transfer (Sacaton)	28	22	(2)	(54)
<b>Glendale</b>				
Recovery (City of Glendale)	73	28	12	3
<b>Mesa/Gilbert</b>				
Transfer (no existing capacity required until after 2010)	0	1,111	1,079	1,058
Recovery (Abitibi, Salt River Recycling)	(287)	(517)	(598)	(694)
<b>Peoria</b>				
Transfer (WM West Valley)	230	(219)	(545)	(699)
Recovery (no existing capacity)	(88)	(209)	(303)	(360)
<b>Goodyear</b>				
Recovery (no existing capacity)	(45)	(190)	(295)	(346)
<b>El Mirage</b>				
Transfer (WM West Valley)	253	215	196	186
<b>Surprise</b>				
Transfer (WM West Valley)	437	144	(506)	(684)
Recovery (no existing capacity)	(42)	(119)	(293)	(356)
<b>Buckeye</b>				
Recovery (no existing capacity)	0	(150)	(296)	(488)
<b>County Total</b>				
<b>Transfer Net Capacity</b>	<b>17,440</b>	<b>17,059</b>	<b>15,715</b>	<b>15,216</b>
<b>Recovery Net Capacity</b>	<b>(175)</b>	<b>(1,551)</b>	<b>(2,469)</b>	<b>(3,210)</b>

Source: Applied Economics, 2003.

Note: Figures show total transfer/recovery capacity less recyclables for MRFs and non-recyclables for Transfer stations. Note that this analysis assumes all waste for each service area goes through the transfer station which may not be the case in larger communities.

The results show that adequate transfer capacity in Phoenix, Chandler, Mesa, Gilbert and Scottsdale to support build out levels of waste generation. For Mesa and Gilbert this analysis assumes that when the Salt River Landfill closes in approximately 2015 and they would begin to use Butterfield Station they could also use the Waste Management East Valley transfer station. Alternatively, Mesa and Gilbert could use the planned Cactus Waste transfer station in Mesa instead and haul waste to the planned Cactus Waste landfill Pinal County.

Note that for Peoria, Surprise and El Mirage the amount of capacity is simply an estimate of the share of capacity at the planned Waste Management West Valley transfer station that would be allocated to these communities. Additional transfer capacity would be required by 2025 for Peoria and by 2040 for Surprise. Additional transfer capacity will be needed in Avondale, Wickenburg and Cave Creek/Carefree by 2010, and in Gila River by 2040. However, on a regional basis, there would still be 15,216 tons per day of unused transfer capacity projected at build out.

Based on the assumed level of recycling, all of the communities in the analysis except Scottsdale will have additional recovery capacity needs. By build out it is projected that Maricopa County as a region will require 3,210 tons per day of additional recycling capability. For Phoenix (south of Cactus) and Tempe additional recovery capacity will be required by 2025, and for Avondale, Chandler, Mesa and Gilbert, additional recovery capacity will be required by 2010. The addition of the planned North Phoenix transfer station/MRF will provide adequate recovery capacity for North Phoenix through 2025. Additional capacity will also be required to account for new recycling programs in Peoria, Goodyear, Surprise and Buckeye, which are included in this table even though there are no MRFs currently serving these communities.

### **5.3 Conclusions**

On a regional level, it appears there is adequate landfill and transfer station capacity to meet the needs of area residents and businesses through build out and beyond, although that capacity is not evenly distributed from a geographic perspective. Additional recycling capacity will likely be required by 2010, although it is much less difficult to construct additional MRFs than to site new landfills.

In terms of landfills, the communities using the Southwest Regional landfill will need to be diverted to another facility between 2030 and 2040. This includes Litchfield Park, Gila Bend, Tolleson, Avondale, Goodyear, Peoria and Fountain Hills. Capacity does exist at other landfills in the area to accommodate the waste generated by these communities. However, after 2015 when the Salt River Landfill is projected to close there will be no more landfills in the Southeast Valley. Although sufficient capacity may exist in western and southern Maricopa County to absorb the solid waste from Mesa, Scottsdale, Chandler and Gilbert, the cost to these communities of transfer station construction and long haul operations could be considerable. These economic factors may provide a strong incentive for the development of an eastern or southeastern regional landfill, possibly in coordination with Pinal County, as the region moves toward build out. More options need to be considered and encouraged to ensure a situation that meets the needs of all cities in the region.