



APPLIED ECONOMICS

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**MARICOPA ASSOCIATION OF GOVERNMENTS  
REGIONAL GROWING SMARTER IMPLEMENTATION:  
SOLID WASTE MANAGEMENT**

**FINAL REPORT**

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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**

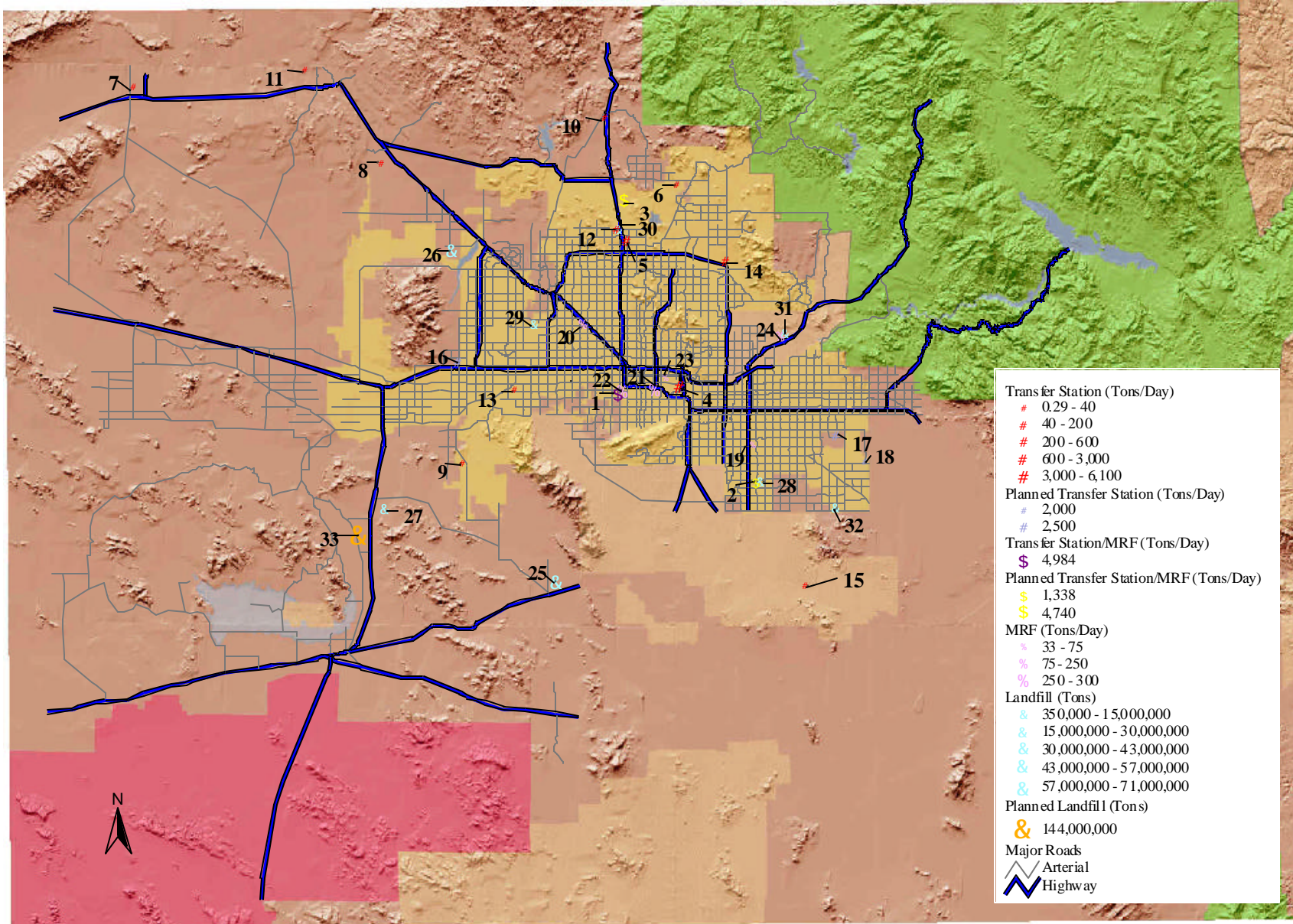
ID	Facility	Owner/Operator	Service Area	Estimated Yr of Closure
23	Butterfield Station	Waste Management	Gila River, Tempe, Phoenix, Chandler, Cave Creek, Carefree	2110
24	Northwest Regional	Waste Management	Surprise, El Mirage, Morristown, Aguila, Wickenburg, Deer Valley, Sun City, Peoria	2102
25	Southwest 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	Phoenix	4,800,000	closed-2006			
Salt River	Salt River Pima						
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.