

Appendix B
Final Report

**Assessment of Infrastructure for the
Integrated Waste Management Zero
Waste Strategic Plan Development**



**Presented to:
City of San José
Environmental Services Department**



November 3, 2008



Table of Contents

Section 1: Introduction 1-1
 Background..... 1-1
 Methodology 1-2
 Limitations..... 1-2
 Objective..... 1-3

Section 2: Major Findings and Assessments..... 2-1
 Current Waste Management System 2-1
 Summary of Facility Needs Through 2040..... 2-10
 Future Capacity and Land Use Issues 2-14
 Summary of Planned Facility Changes 2-17
 Changes in Movement of Material 2-18

Tables

Table 2.1 - Total Available Capacity of Landfills in the City of San José, 2008 – 2040 2-3

Table 2.2 – Tons Landfilled from the City of San José, per the CIWMB’s Disposal Reporting System..... 2-3

Table 2.3 – Available Capacity – 2007 Tonnages..... 2-9

Table 2.4 – Needs for Recycling Processing Capacity in Excess of Capacity Currently Being Used (Mixed Recyclables for Residential and Commercial Sources) 2-12

Table 2.5 – Needs for C&D Debris Processing Capacity in Excess of Capacity Currently Being Used (Materials from C&D, Self-Haul and Non-Franchised Haulers)..... 2-12

Table 2.6 – Needs for Composting Facility Capacity in Excess of Capacity Currently Being Used (Materials from All Sources) 2-13

Table 2.7 – Minimum Need for Landfill or Other Disposal / Transformation Capacity if All Potential Materials are Recycled or Composted (Non-Recyclable Materials from All Sources) 2-13

Table 2.8 – Current Capacity and Projected Future Capacity By 2013..... 2-18

Table of Contents

R3

Table of Contents

This page intentionally left blank.

R3

Background

In 2007, the City Council of San José (City) requested staff to develop an Integrated Waste Management (IWM) Zero Waste Strategic Plan that will establish policy as it relates to the City's waste management program through the year 2040. The City's objectives are to provide for resource conservation, waste reduction, pollution prevention and a healthy economy. The Zero Waste Strategic Plan development process will address the following key components for achieving Zero Waste:

- Strengthen recycling programs;
- Identify infrastructure requirements for reuse, recycling and composting;
- Establish effective waste prevention programs, incentives and fee structures; and,
- Identify economic development opportunities from expanding solid waste processing facilities and industries using recycled materials as feedstock.

The City passed a resolution establishing the goal of achieving 75 percent waste diversion by 2013, and achieving Zero Waste by 2022. Staff has reviewed Zero Waste plans from other cities and found that many of the initiatives under development by other Zero Waste cities are already being implemented or planned for the City.

R3 Consulting Group Inc., (R3) along with our subcontractor, Environmental Planning Consultants (EPC), were retained by the City of San José to prepare this Assessment of Infrastructure to:

- Summarize the City's current waste management system including all landfills, transfer stations, and waste processing facilities used by the City;
- Identify the need for future facilities, based on a review of the current waste management system and information from the accompanying report, the Needs Assessment; and,
- Develop land use recommendations regarding needs for solid waste management infrastructure to assist with development of the City's General Plan 2040. These land use recommendations may relate to the City's Water Pollution Control Plant or other City or privately controlled property.

In order to meet proposed waste reduction goals, the IWM Zero Waste Strategic Plan will consider key strategies such as food waste composting, reducing packaging, extended producer responsibility, the commercial solid waste system design, improved services for multi-family dwellings, and many other programs. Staff will also evaluate opportunities for generating energy from selected waste materials.

Section 1

Introduction

R3

Introduction

Relationship to Other Studies Being Conducted for the City's IWM Zero Waste Strategic Plan

This Assessment of Infrastructure is only one of a suite of studies that are being conducted to gather information for the City's IWM Zero Waste Strategic Plan. These studies include:

- A Needs Assessment to estimate the amounts and types of waste needed to be diverted now through 2040;
- A review of the Construction and Demolition Diversion Deposit Program (CDDD);
- A Commercial Solid Waste System Redesign and Enhancement Options Study;
- A Waste Characterization Study for Single-Family Waste, MRF Residuals and Commercial Waste; and
- An Analysis of Alternative Financing and Revenue-Generating Mechanisms.

As part of this study we identified and contacted 27 facilities serving the City, including: five landfills, nine recycling and transfer stations, five composting facilities, and eight mixed materials construction and demolition (C&D) debris processing facilities. There are many other facilities that primarily handle a single type of material (such as scrap metal, paper, or concrete). These facilities were excluded from this facility capacity survey.

Methodology

Information for this report was obtained from:

- A review of facility data on the California Integrated Waste Management Board's (CIWMB) Solid Waste Information System (SWIS) website;
- Reports submitted by the facilities to the City;
- Interviews with facility operators and site visits to selected facilities; and,
- Telephone follow-up interviews with site operators for key information.

Limitations

Data Not Available: Most of the facilities studied handle materials from more than one source (either a mix of residential and commercial, or similar materials from more than one jurisdiction). However, detailed data were not available on the sources of materials for all facilities. This report includes as much data as were available, particularly for construction and demolition debris.

R3

Facilities are often permitted to receive more than one material type within their allowed tonnage. Many of the facilities permitted to receive construction wastes may also be permitted to receive municipal solid wastes (MSW). To help clarify the current capacity for C&D materials Table 2.3 of this report lists the mixed C&D processors studied and their permitted capacity. However, the facilities in Table 2.3 are also permitted to receive materials other than C&D, so to the extent that they receive MSW, they reduce the amount of C&D materials they can receive.

Some processing facilities separate mixed loads and ship the residual materials to another processing facility. For example, in 2007 Premier Recycling hauled approximately 14,000 tons of its residual material to the Kirby Canyon Landfill. That same 14,000 tons is shown as received at both Premier and Kirby. Also, the two Zanker landfills each receive materials that get reloaded and shipped to landfills outside the County.

Data Sets: Facilities are issued permits for the maximum tonnage that can be received on any day. It would be rare for a facility to be able to receive the maximum permitted tonnage (and only the maximum permitted tonnage) each day it was operating. Facilities are permitted to operate six or seven days a week, but the wastes or recyclables are only collected five or six days a week. Some material generation rates vary seasonally. So the actual throughput could never be expected to equal the permitted capacity. To more accurately reflect the actual conditions, the permitted capacity for each facility identified in Table 2.1 is based on operating six days a week, rather than seven days a week; except for the four facilities that receive wastes only from the City's residential collection program, which operates five days a week.

Future Capacity and Need: Most facilities contacted cooperated willingly in this survey, however they were reluctant to make predictions about future operations, especially beyond five years.

Objective

The goal of this report is to estimate whether enough facility capacity exists to handle all the recycling and processing needed to accomplish zero waste goals. To determine this, the following objectives must be met:

- Describe the City's current waste management system, identifying the current facilities used to handle the City's waste, including:
 - Landfills;
 - Recycling and Transfer Stations;
 - Composting Facilities; and,
 - Mixed Materials C&D processing facilities;
- Quantify the capacity needed in tons for processing, transfer, and landfill facilities through 2040;

R3

Introduction

- Quantify the “gap” between current facility availability and future facility needs; and,
- Describe the land use necessary to provide the City with sufficient capacity to handle its waste locally.

R3

Current Waste Management System

Landfills

There are currently five operational landfills in the City. Since two of the facilities have nearly identical names, we have included the unique CIWMB permit number as an additional identifier for each facility. The facility closure dates listed below were obtained from the CIWMB's SWIS database.

1. The Guadalupe Mines Landfill [43-AN-0015-01] is owned by Waste Management, has a maximum permitted throughput of 3,650 tons per day (tpd), and is projected to close in 2021. The facility is permitted to accept C&D, mixed municipal wastes, industrial wastes, and yard trimmings.

A total of 240,945 tons were disposed of in the Guadalupe Mines Landfill in 2007. The landfill received 425,963 tons from the City (158,056 tons¹ disposed plus 267,907 tons of C&D) in 2007, for an average of about 1,335 tpd². The tonnage disposed from the City has been increasing over the last four years.

2. The Kirby Canyon Recycling & Disposal Facility [43-AN-0008-01] is owned by Waste Management, and has a maximum permitted throughput of 2,600 tpd. Kirby Canyon Recycling & Disposal is projected to close before 2025. The facility is permitted to accept mixed municipal waste, industrial waste, C&D waste, tires, and yard trimmings.

A total of 208,331 tons were disposed of in the Kirby Canyon Recycling & Disposal Facility in 2007. The landfill received 335,138 tons from the City (19,972 tons disposed plus 315,166 tons of C&D) in 2007, for an average of about 1,075 tpd². The tonnage disposed trend for the City is down from a high of 104,314 tons in 2005, and 61,456 tons in 2006.

3. The Newby Island Landfill [43-AN-0003-01] is owned by Allied Waste, has a maximum permitted throughput of 4,000 tpd, and is projected to close in 2021. The landfill currently is in the process of requesting an expansion that will allow it to operate at least through 2024. The facility is permitted to accept C&D waste,

¹ County Landfill Facility Quarterly Reporting & Fee Remittance Forms and Quarterly Facility Summary for Santa Clara County were only available for the 1st, 2nd and 3rd quarters of the year. Estimates were made by dividing available data by 3 and multiplying the result by 4.

² An average was found by dividing the total tons received by 312 operational days per year.

Section 2

Major Findings and Assessments

R3

Major Findings and Assessments

industrial waste, mixed municipal waste, sludge (biosolids), tires, yard trimmings, and contaminated soil.

A total of 608,655 tons were disposed of in the Newby Island Landfill in 2007. The landfill received 608,663 tons from the City (an average of about 1,950 tpd²). The City disposed of 392,063 tons¹ at Newby Island Landfill (an average of about 1,255 tpd²) in 2007; the tonnage received trend is down from the high in 2006.

4. The Zanker Road Materials Processing Facility (ZMPF) [43-AN-0001-01] is owned by Zanker Road Resource Management, Limited. It has a maximum permitted throughput of 1,250 tpd, with no closure date projected because few tons are disposed of annually on-site. The facility is permitted to accept C&D waste, and other designated inert materials (but no MSW).

A total of 11,882 tons were disposed of in the ZMPF in 2007. The landfill received 194,196 tons from the City in 2007; and disposed of 3,969 tons¹, for an average of about 13 tpd². The remainder was processed for recycling. The tonnage received from the City has been decreasing over the last three years.

5. The Zanker Road Landfill (ZRL) [43-AN-0007-01] is owned by Zanker Road Resource Management, Limited. It has a maximum permitted throughput of 2,600 tpd, with no closure date projected because they use so little capacity annually. The facility is permitted to accept C&D, yard trimmings, industrial wastes, and tires.

A total of 7,780 tons were disposed of in the ZRL in 2007. The landfill received 296,600 tons from the City in 2007 and disposed of 3,699 tons¹, for an average of about 12 tpd². The tonnage received at ZRL from the City has been decreasing over the last three years¹.

The total permitted landfill capacity of the five operating landfills in the City is 14,450 tpd, or 5,275,000 tons per year, based on operating seven days a week, or almost 4,500,000 tons per year based on operating six days a week. The total tonnage received at these landfills from the City is approximately 1,850,500 tons per year. The actual tonnage disposed of from the City in these landfills in 2007 was less than 578,000 tons, or only about 1,850 tpd on average.

The Guadalupe Mines, Kirby Canyon, and Newby Island landfills are projected to close some time between 2020 and 2025. Because they bury so little tonnage, the ZMPF and the ZRL are expected to continue operating beyond 2025.

R3

TABLE 2.1 Total Available Capacity of Landfills in the City of San José, 2008 - 2040								
Capacity	2008	2010	2015	2020	2025	2030	2035	2040
Tons/Day	14,450	14,450	14,450	14,450	4,200	4,200	4,200	4,200
Tons/Year (in millions)	5.3	5.3	5.3	5.3	1.5	1.5	1.5	1.5

Note: This table reflects the closure of the Guadalupe Mines, Kirby Canyon and Newby Island landfills between 2020 and 2025, and the ZMPF and ZRL continuing to operate. However, at the current fill rates, if all of the wastes from the City were diverted to the two Zanker Road facilities they would only have about one year of capacity, and hence would also have to close before 2025. Additionally, if the current trend of less waste being landfilled each year continues, the actual closure dates for the Guadalupe Mines, Kirby Canyon and Newby Island landfills could be much later.

TABLE 2.2 Tons Landfilled from the City of San José, per the CIWMB's Disposal Reporting System						
Municipal Solid Waste	2002*	2003*	2004*	2005*	2006*	2007**
Newby Island Sanitary Landfill	404,334	420,268	393,447	405,638	434,832	392,063
Guadalupe Sanitary Landfill	79,648	86,876	76,730	89,099	131,433	158,056
Potrero Hills Landfill	72,441	68,066	78,985	51,361	54,288	69,369
Kirby Canyon Landfill	81,408	76,529	85,875	104,314	61,456	19,972
Altamont Landfill	2,993	1,063	2,740	2,216	23,124	16,931
John Smith Road Class III Landfill	-	2	1	11,565	17,960	15,301
West Contra Costa Landfill	n/a	8	20	21,449	5,667	6,786
CWMI - Nonhazardous Co-disposal	316	16,119	236	335	120	4,203
Zanker Material Processing Facility	6,011	9,612	12,872	7,968	5,613	3,969
Zanker Road Class III Landfill	9,143	7,941	7,330	6,986	5,530	3,699
Forward, Landfill	941	1,403	2,204	2,376	3,902	1,974
Crazy Horse Sanitary Landfill	n/a	n/a	1,736	2,573	1,411	1,111

R3

Major Findings and Assessments

TABLE 2.2 Tons Landfilled from the City of San José, per the CIWMB's Disposal Reporting System						
Municipal Solid Waste	2002*	2003*	2004*	2005*	2006*	2007**
Vasco Road Sanitary Landfill	266	538	908	758	4,474	987
OX Mountain Sanitary Landfill	631	713	948	824	749	809
Azusa Land Reclamation Co, Inc.	341	584	858	771	400	653
Monterey Region WMD / Marina LF	196	332	294	453	380	419
B-J Dropbox Sanitary Landfill	63	140	814	234	164	338
Pacheco Pass Sanitary Landfill	2,194	1,378	146	223	26	193
Fink Road Landfill	65	26	75	41	17	108
Bakersfield S.L.F.(BENA)	n/a	29	56	38	93	54
Covanta Stanislaus, Inc.	53	53	67	27	41	47
Keller Canyon Landfill	128	76	237	2,683	2,051	41
Billy Wright Disposal Site	3	19	42	37	11	27
Avenal Landfill	n/a	n/a	n/a	n/a	5	5
Redwood Sanitary Landfill	12	5	9	-	-	4
Foothill Sanitary Landfill	3	5	1	6	1	3
Highway 59 Disposal Site	n/a	4	-	-	n/a	1
Tri Cities Recycling - Landfill	-	-	-	-	-	-
Arvin Sanitary Landfill	137	48	n/a	n/a	n/a	-
Sacramento County Landfill (Kiefer)	3,171	842	4,330	n/a	n/a	
L-D Landfill Co	n/a	n/a	21	n/a	n/a	
North County Landfill	-	7	n/a	n/a	1	-
Total Municipal Solid Waste	664,498	692,686	670,982	711,975	753,749	697,123

* 2002 - 2006 data was obtained from the CIWMB website

** County Landfill Facility Quarterly Reporting & Fee Remittance Forms and Quarterly Facility Summary for Santa Clara County were only available for the 1st, 2nd & 3rd quarters of the year. Estimates were made by dividing available data by 3 and multiplying the result by 4.

R3

MRF / Transfer Stations

Many of the Material Recovery Facilities (MRFs) in the area are permitted as transfer stations as well. Transfer Stations are solid waste facilities that receive more than 10 percent garbage, but are not landfills. These fall into two groups in the City; those that primarily receive wastes that will be transferred to a landfill with little or no processing, and those that receive recyclables for processing that are contaminated to the level that a solid waste facility permit is required. Since some of the facilities have nearly identical names, we have included the unique CIWMB permit number as an identifier for each facility. The Mission Trail Station is in the city of Santa Clara; all of the other stations are in San José.

1. The California Waste Solutions (CWS) MRF [43-AN-0024-01] processes Single Stream Recyclables from the City's single-family residential recycling collection program in Service Districts A and C. Based on a residue rate above 10 percent, the facility has had to be permitted as a Solid Waste Facility. It is permitted to receive 530 tpd. By operating five days a week it has a maximum capacity of 137,800 tons per year. Reports to the City indicate that the CWS MRF received about 91,520 tons in 2007.
2. The GreenTeam MRF [43-AN-0020] at 575 Charles Street is owned by Waste Connections, and receives and processes Single Stream Recyclables from the City's Service District B single-family residential collection program and from the City's multi-family recycling program citywide; and single stream recyclables from the West Valley cities. A report to the City indicates that the GreenTeam MRF received about 65,000 tons in 2007.
3. GreenTeam operates a direct transfer operation at its MRF [43-AN-0020-01] at 575 Charles Street to transfer small loads of garbage from split body garbage and recycling trucks and consolidate those loads for the trip to Newby Island Landfill to reduce time spent in traffic with a light load of garbage. In direct transfer, the garbage is unloaded from the split body trucks directly into transfer trailers, without ever touching the ground. Prior to July 2008, this facility was also used to transfer some garbage collected from multi-family residences to Z-Best for processing and composting. This direct transfer operation is permitted at up to 149 tpd, or about 38,740 tons per year while operating five days a week. Reports to the City indicate that the GreenTeam direct transfer facility received and direct transferred a total of about 25,000 tons in 2007. In 2008, as a result of the City's expansion of its multifamily recycling program, with all multi-family garbage delivered directly to GreenWaste Recovery for processing, the GreenTeam direct transfer site is currently receiving less material than it did in 2007, and therefore currently has more available capacity than it did in 2007.
4. GreenTeam is also permitted to operate a direct transfer operation in its corporation yard at 1333 Oakland Road [43-AN-0022-01]. It

R3

Major Findings and Assessments

is permitted to receive small loads from split body garbage and recycling trucks which are consolidated for the trip to Newby Island Landfill to reduce time spent in traffic with a light load of garbage. This direct transfer operation is permitted at up to 149 tpd, or about 38,740 tons per year while operating five days a week. However, while it does have a permit, this facility has never been operated as a direct transfer site.

5. The GreenWaste Recovery MRF [43-AN-0019-01] has recently undergone a major redesign and expansion to increase the throughput and recovery rate, while reducing on-going operating costs. The permit now allows it to receive 1,400 tpd, or 436,800 tons per year while operating six days a week. It receives mixed wastes from some contract service areas (such as from Portola Valley, Woodside, and Los Altos Hills); the garbage from the City's multi-family dwellings; garbage from facilities operated by the City; yard trimmings; C&D materials; and scrap wood from various sources. The mixed wastes and yard trimmings are transferred to the Z-Best Compost Facility for composting; the inerts are shipped to the ZMPF or ZRL for processing; and separated recyclables are sold directly to market. Reports to the City indicate that the Green Waste Recovery MRF received and direct transferred about 269,000 tons in 2007. Due to an expansion of the City's multifamily recycling program in 2008, this facility is currently receiving more material than it did in 2007.

6. The Mission Trail Transfer Station [43-AO-0002-01] primarily receives materials from their own hauling operations in the City of Santa Clara, and also receives C&D loads from a few large contractors in the City of San Jose. This transfer station is permitted at 375 tpd, or 117,000 tons per year while operating six days a week.

In 2007, Mission Trail reported receiving 81,571 tons, of which 1,100 tons were C&D materials from the City.

7. Premier Recycling [43-AN-0023-01] receives materials from their own hauling operations. It has a permitted capacity of 300 tpd, or 93,600 tons per year, while operating six days a week. It received an average of 200 tpd in 2007. It is permitted to receive C&D materials, and also processes separated recyclables.

In 2007, Premier Recycling reported receiving 59,607 tons of C&D materials that included 38,311 tons of mixed C&D materials. The facility disposed of 13,983 tons (or 36.5 percent) from the mixed C&D loads.

8. The Recyclery [43-AN-0014-01], owned by Allied Waste, is permitted to receive up to 1,690 tpd, or 527,280 tons per year, while operating six days a week. The facility receives recyclables, tires, industrial wastes, and yard trimmings. In 2007 they received almost 280,000 tons of recyclables, down from over 350,000 tons in 2005.

R3

9. The Rogers Avenue Transfer Station [43-AN-0025-01] is owned by Norcal Waste Systems and is currently permitted to accept up to 99 tpd of mixed municipal wastes and C&D wastes, but it is not currently operational. Norcal Waste Systems plans to open it again within the next few years as a recycling-only facility.
10. The Valley Recycling Processing Facility [43-AN-0025-01] primarily receives materials from its own hauling operations. It is permitted for 175 tpd, or 54,600 tons per year, while operating six days a week. In 2007 they processed 1,544 tons.

Composting Facilities

There are four (4) active composting facilities in the region. Permitted capacity for each facility is based on operations running six days a week.

1. Newby Island Composting Facility Landfill [43-AN-0017-01] is owned by Allied Waste, and permitted to accept yard trimmings and food wastes. The facility is permitted to receive 680 tpd, or 212,160 tons per year. The facility received 64,240 tons in 2007, or an average of 200 tpd.
2. The Pacheco Pass Composting Facility [43-AA-0004] is owned by Norcal Waste Systems and permitted to receive 1,000 tpd, or 312,000 tons per year, of yard trimmings and food wastes. The facility received 30,125 tons in 2007. The facility primarily receives materials from Morgan Hill and Gilroy.
3. Zanker Composting Facility [43-AN-0001-01] is located at the Zanker Road Landfill and permitted to receive 200 tpd (five days a week), or 62,400 tons per year. The facility currently receives an average of 60 tpd, or 16,000 tons per year, of yard trimmings that are transferred to the Z-Best Composting Facility for processing. Zanker is not currently composting at their facility.
4. Z-Best Composting Facility [43-AA-0015-01] is owned by Zanker Road Resource Management, Limited. It is permitted to receive 1,500 tpd, or 468,000 tons per year, of agricultural wastes, food wastes, yard trimmings, manure, and mixed municipals. Within the 1,500 tpd permit limit, 700 tpd is the maximum allowable for food waste. In 2007, the facility received an average of almost 925 tpd (five days a week), or 240,252 tons for the year. Even though the facility currently operates at a level below its permitted capacity, Z-Best reports they may have reached their maximum practical operating capacity due to current constraints of roads, equipment, types of materials accepted, and facility size.

C&D Processing Facilities

Eight (8) facilities in the City, and several others in the region, process mixed C&D materials. These facilities and many others also process separated C&D materials. This report already included separated C&D material processing capacity and facilities in the tonnages for the Landfills and MRF/Transfer Facilities, so the permitted capacity described

R3

Major Findings and Assessments

here is not additional capacity. Table 2.3 shows processing capacity for Mixed C&D material, but the capacity is not double counted in the totals.

The Mixed C&D materials being processed is based on the facility reports of the CDDD system:

1. The GreenWaste Recovery MRF reported receiving 84,784 tons of C&D materials and disposed of only 36,160 tons (or 42.6 percent) from all C&D materials in 2007; but disposed of 65 percent of the incoming mixed C&D materials.
2. The Guadalupe Mines Landfill received 257,907 tons of C&D materials, and disposed of only 17,880 tons (or 6.9 percent) from the C&D loads; but disposed of 12.9 percent of the incoming mixed C&D materials in 2007.
3. The Kirby Canyon Landfill received 315,166 tons of C&D materials and disposed of only 4,410 tons (or only 1.4 percent) from the C&D loads; and only disposed of 2.1 percent of the incoming mixed C&D materials in 2007.
4. The Newby Island Landfill received 232,082 tons of C&D materials, and disposed of only 3,600 tons (or 1.55 percent) from the C&D loads; but disposed of 10.8 percent of the incoming mixed C&D materials, in 2007.
5. Premier Recycling receives materials from their own hauling operations. The facility disposed of 13,983 tons (or 23.5 percent) from the C&D loads; but 36.5 percent of the incoming mixed C&D loads, in 2007.
6. Valley Recycling is owned by Environmental Resource Recovery, Inc. In 2007 Valley Recycling received 1,544 tons of C&D materials, and shipped all of it to commodity markets or other processing facilities.
7. The ZMPF receives materials from many sources. In 2007, they reported receiving 194,196 tons of C&D materials, and disposed of 63,058 tons (or 32.4 percent) from the C&D loads; but disposed of 37.5 percent of the incoming mixed C&D materials.
8. The ZRL also receives materials from many sources. In 2007, they reported receiving 296,600 tons of C&D materials, and disposed of only 12,353 tons (or 4.1 percent) from the C&D loads; but disposed of 17.8 percent of the incoming mixed C&D materials.

R3

Major Findings and Assessments

TABLE 2.3 Available Capacity – 2007 Tonnages			
A. LANDFILLS	Permitted Capacity ¹	2007 Tons Received	Unused Capacity
1. Guadalupe Mines	1,138,800	481,052	657,748
2. Kirby Canyon	811,200	519,233	291,967
3. Newby Island	1,248,000	1,001,718	246,282
4. ZMPF	390,000	194,196	195,804
5. ZRL	686,400	296,600	389,800
SubTotal	4,274,400	2,492,799	1,781,601
B. MRF/TRANSFER			
1. CA Waste Solutions ¹	137,800	91,520	46,280
2. GreenTeam MRF ¹	78,000	65,000	13,000
3. GreenTeam Transfer ¹	38,740	25,000	13,740
4. GreenTeam Transfer ¹	38,740	0	38,740
5. GreenWaste MRF	436,800	268,514	168,286
6. Mission Trail	117,000	81,571	35,429
7. Premier	93,600	59,607	33,993
8. Recyclery	527,280	279,668	247,612
9. Rogers Avenue	30,888	0	30,888
10. Valley Recycling	54,600	39,009	15,591
SubTotal	1,475,448	763,318	643,559
C. COMPOSTING			
1. Newby Island	212,160	64,240	147,920
2. Pacheco	312,000	30,125	281,875
3. ZRL	62,400	16,000	46,400
4. Z-Best	468,000	240,252	0 ²
SubTotal	1,054,560	350,617	476,195
TOTAL³	6,804,408	3,606,734	2,901,355
D. C&D			
1. GreenWaste MRF	436,800	84,784	352,016
2. Guadalupe	1,138,800	257,907	880,893
3. Kirby	811,200	315,166	496,034
4. Newby	1,248,000	232,082	1,015,918
5. Premier	93,600	59,607	33,993
6. Valley Recycling	54,600	1,544	53,056
7. ZMPF	390,000	194,196	195,804
8. ZRL	686,400	296,600	389,800
SubTotal	4,859,400	1,441,886	3,417,514

1. 'Permitted Capacity' = permitted tpd for four MRF/Transfer facilities operational 260 days per year; all other facilities are operational 312 days per year

For many facilities, the permitted capacity is the amount the facility could receive if it operated six days per week. However, many collection operations, such as residential collection, only deliver materials to facilities five days per week, so facilities often can not operate at their full capacity.

2. Permitted capacity at Z-Best is 1,500 tons per day, but the facility is currently operating at the practical limit of its physical capacity, so the "unused capacity" is zero.

3. Total does not include C&D because total facility capacity is already listed for each site in the other sections of this table.

R3

Major Findings and Assessments

Summary of Facility Needs Through 2040

This Assessment of Infrastructure report compares the potential needs for facilities to process materials with the availability of permitted facilities, as shown in Tables 2.1 through 2.3. Tables 2.1 through 2.3 show that, even after processing enough materials to give the City a 60% diversion rate, many facilities still have available capacity to process more materials, as shown in the “Unused Capacity” column.

Calculation of Amount of New Materials That Will Need Processing

To reach its Zero Waste goals, more materials will need to be recycled and composted. The goal of this report is to estimate whether enough facility capacity exists to handle all of the City’s additional recyclables and compostables if the City was to capture all of those materials through expanding existing programs and developing new collection programs. In addition, we have prepared these figures for the existing situation in 2007/08, as well as for 2040, to prepare for growth.

This report assumes that all of the existing materials will exist in the same proportions in future years. In reality, some materials will change, as new products are developed and older products decrease in market share. In addition, some materials will disappear from the waste stream through new source reduction efforts, such as reduction of plastic bag use as more residents use canvas bags, or reduction of yard trimmings as more residents start backyard composting or xeriscaping. This report attempts to estimate the maximum amount of materials that will need to be processed by assuming that no source reduction will occur. This is done in order to ensure that the City has sufficient processing capacity.

In the development of the Needs Assessment for the City’s IWM Zero Waste Plan Development Report, R3 used waste composition data for each waste sector to create a profile of recoverable and non-recoverable waste types, using the following groupings of materials:

- **Compostable material categories**, including yard trimmings, food wastes and compostable paper;
- **Recyclable materials**, using the categories of materials that are currently recycled in the City’s existing programs;
- **Potentially recyclable materials**, if new markets are developed; and,
- **Non-recyclable materials.**

The City of San Jose’s processing capacity needs are summarized in the following tables. The recyclable, potentially recyclable, and compostable materials totals that are summarized in Tables 2.4, 2.5 and 2.6 are new, ADDITIONAL materials that have the potential to be recycled or composted, rather than being disposed of. These tables do not include materials that are currently being recycled or composted. Each of the

R3

Assessment of Infrastructure

following tables refers to a different type of processing capacity, as follows:

- Table 2.4 summarizes materials that would need to go to a mixed recyclables processing facility;
- Table 2.5 summarizes materials that would need to be processed at a C&D processing facility;
- Table 2.6 summarizes materials that would need to be composted; and,
- Table 2.7 summarizes materials that can not be processed by mixed recyclables processing, composting, and C&D processing.

Major Findings and Assessments

R3

Major Findings and Assessments

TABLE 2.4 Mixed Recyclables Processing Capacity Needs (Source: Residential and Franchised Haulers)						
Waste Sector	Recyclable Materials, 2007/08	Potentially Recyclable Materials, 2007/08	Total of Recyclable and Potentially Recyclable Materials, 2007/08	Recyclable Materials, 2040	Potentially Recyclable Materials, 2040 *	Total of Recyclable and Potentially Recyclable Materials, 2040
Single-family Dwellings	26,621	1,772	28,393	93,348	2,629	95,977
Multi Family Dwellings	19,960	4,959	24,919	37,417	7,359	44,776
Commercial Businesses	111,534	29,799	141,333	174,699	44,223	218,922
City Facilities	2,864	765	3,629	5,021	1,135	6,156
TOTAL	160,979	37,295	198,274	310,485	55,346	365,831

* "Recyclable Materials, 2040" includes the tonnage growth of materials that are currently being recycled (due to population growth) as well as the NEW materials that can be recycled through greater participation in the recycling programs.

TABLE 2.5 C&D Processing Capacity Needs (Source: Franchised and Non-Franchised Haulers)						
Waste Sector	Recyclable Materials, 2007/08	Potentially Recyclable Materials, 2007/08	Total of Recyclable and Potentially Recyclable Materials, 2007/08	Recyclable Materials, 2040	Potentially Recyclable Materials, 2040 *	Total of Recyclable and Potentially Recyclable Materials, 2040
Franchised Haulers	1,933	1,004	2,937	51,762	1,490	53,252
Non-Franchised Hauler	115,938	57,932	173,870	172,057	85,974	258,031
TOTAL	117,871	58,936	176,807	223,819	87,464	311,283

* "Recyclable Materials, 2040" includes the tonnage growth of materials that are currently being recycled (due to population growth) as well as the NEW materials that can be recycled through greater participation in the recycling programs.

R3

TABLE 2.6 Compost Processing Capacity Needs (Source: Residential/Franchised/Non-Franchised)		
Waste Sector	Compostable Materials, 2007/08	Compostable Materials, 2040 *
Single-family Dwellings	80,038	186,368
Multi-family Dwellings **	20,120	39,002
Commercial Businesses	79,375	128,348
City Facilities	2,038	3,025
Construction and Demolition	46	69
Non-Franchised Hauler Waste	15,176	22,523
TOTAL	196,793	379,335

* "Recyclable Materials, 2040" includes the tonnage growth of materials that are currently being recycled (due to population growth) as well as the NEW materials that can be recycled through greater participation in the recycling programs.

** Beginning July 1, 2008 all multifamily compostable materials are sent to Z-Best for composting.

TABLE 2.7 Non-Recyclable/Landfill Capacity Needs (Source: Residential/Franchised/Non-Franchised)		
Waste Sector	Non-Recyclable Materials, 2007/08	Non-Recyclable Materials, 2040
Single-family Dwellings	46,194	68,553
Multi-family Dwellings	14,897	22,108
Commercial Businesses	22,696	33,683
City Facilities	566	840
Construction and Demolition	1,292	1,918
Non-Franchised Hauler Waste	67,711	100,486
TOTAL	153,356	227,588

R3

Major Findings and Assessments

Future Capacity and Land Use Issues

The facilities identified are all privately owned. They may contract for tonnages from other jurisdictions and not maintain any capacity for materials from the City; or alternately, the City could contract with the facilities to reserve the capacity for City needs.

Facility operators have responded well to the City implementing new programs by providing the necessary facility capacity. Eight permitted mixed C&D processing facilities have been certified in and around the City since the implementation of the CDDD program. Provided sufficient lead time, it is likely that the facility operators would also install additional processing capacity for programs that the City wants to implement.

For this study, facility operators were requested to project future available capacity and to project changes in the movement of classes of materials by facility. Unless these changes were already in the active planning stages, facility operators were not willing or able to project capacity that was not already on line.

The following potential changes were identified:

1. Newby Island Compost Facility

Allied Waste is planning to expand the Newby Island Compost Facility from the currently permitted capacity of 680 tpd to 980 tpd in 2009 or 2010. The expansion will enable Allied Waste to accept more food wastes and yard trimmings.

2. Newby Island Dirty MRF

Allied Waste is planning to open a dirty (i.e. mixed waste) MRF at the landfill sometime in the future, after 2011. The MRF will have a permitted capacity of 150 tpd. Allied Waste is considering several other options for expanding recycling at the Newby Island Landfill in the future, but was not prepared to comment on them at this time.

3. Recyclery Dirty MRF

Allied Waste is planning to convert part of the operations of the Recyclery to a dirty MRF in the next two years. The dirty MRF will have a permitted capacity of 150 tpd.

4. Rogers Avenue Transfer Station

Norcal Waste Systems indicated that the Rogers Avenue Transfer Station will be re-opened in 2010 as a recycling only facility (not accepting MSW) after it is outfitted to process up to 300 tpd, or 78,000 tons per year while operating five days a week, of single stream recyclables from residential and commercial collection programs.

5. San José-Santa Clara Water Pollution Control Plant

The buffer lands around the San Jose-Santa Clara Water Pollution Control Plant (WPCP) could become the home to numerous facilities that would process portions of the City's wastes. The primary benefit to the

R3

City in siting these facilities on treatment plant lands is that they would be under public control, and would continue to be available for City and potentially regional use beyond the term of any one processing agreement. The City could then contract for operation of each facility as Sunnyvale does for the SMaRT Station, or operate some of them with City staff as it does with the WPCP. The WPCP and its treatment lands are owned by the Tributary Agencies: San Jose, Santa Clara, Milpitas, Cupertino Sanitary District, West Valley Sanitation District (including Campbell, Los Gatos, Monte Sereno, Saratoga), County Sanitation Districts 2-3, Sunol and Burbank Sanitary Districts. Any siting of waste processing facilities on Treatment Plant lands would be evaluated as part of the Treatment Plant Master Planning Process currently underway and the facilities may be planned to serve jurisdictions within the tributary boundaries or a larger geographic region.

- *Sludge composting:* Most directly, the City could use some of this land for a composting facility that would produce high quality compost from the treatment plant sludge, commercial food wastes, soiled paper and yard trimmings. This could reduce the area needed for sludge settling and drying ponds, and actually increase the amount of land available for beneficial purposes in the buffer zone.
- *Organics pre-processing:* The City could develop a compostable materials pre-treatment plant that would prepare separately collected organic materials to be processed so that they can be directly fed into a digester at the plant. Pretreatment would include the removal of inorganic materials and the size reduction (grinding) of the organics to ensure that they can be digested quickly.
- *Organics digester:* The pre-processed organics would be fed directly into an existing digester at the treatment plant, where the digesting compostables would generate methane that would be recovered to generate electricity. Alternatively, since the digesters may not work efficiently with these loadings, the City could develop a dedicated digester for this organic material.
- *City-owned MRF:* The City could use some of the buffer lands to site a MRF and transfer station. The MRF would be used to process residential recyclables collected under the City's franchise agreements, thus avoiding the need for each successive contractor to find a location at which to process these materials. This facility could be sized to process the recyclables collected under a franchised commercial waste system. The facility could be designed to include the loading of transfer trailers that would allow the City to transfer residue from this and other processing facilities to a distant landfill.
- *Energy generation:* Finally, the City could develop a facility that uses mixed plastic wastes and other non-compostable material types, which are a residue from the recyclables processing

Major Findings and Assessments

R3

Major Findings and Assessments

facilities in the City, to generate electricity. These materials would be heated in the absence of oxygen to produce a liquid (oil) or gaseous fuel.

None of these elements is exclusive, and the City could implement all of them to manage selected elements of the City's waste stream.

Preservation of Industrial Land Use Designations

The San José General Plan 2020 designates buffer lands around the Water Pollution Control Plant as Light Industrial. The City will need to ensure that these buffer lands and other industrial lands throughout the City maintain an industrial designation so that the City can meet its future waste management infrastructure needs. The City often experiences pressure to convert industrial lands to residential uses in order to support the City's growing population. However, residential uses and waste management infrastructure uses are often considered incompatible. Thus the City must balance its land use so future waste management operations can support the needs of future populations. The General Plan Update 2040 process is underway and industrial land use as it relates to zero waste goals will need to be addressed in that process

6. ZMPF Mega-MRF and In-Vessel Composting Plans

The planned new ZMPF will include a 70-foot tall, 200,000 square foot footprint MRF. The facility has received local land use permits to accept 5,000 tpd, seven days a week; or up to 1,825,000 tons per year. At only 4,000 tpd and six days a week, it would still receive 1,248,000 tons per year. Additional permits from the City are pending, and the CIWMB will have to concur with the Solid Waste Facility Permit that will be issued by the Local Enforcement Agency (City of San José). The new MRF building is projected to open no sooner than 2012.

The Mega-MRF will have multiple processing areas, and will be capable of processing up to:

- 1,200 tpd of mixed commercial wastes and single stream recyclables;
- 1,400 tpd of mixed municipal wastes and multi-family dwelling wastes;
- 800 tpd of organic rich loads; and,
- 1,600 tpd of C&D loads.

They intend to transfer the collected yard trimmings and green waste materials to either the ZRL or Z-Best for processing, and transfer all other compostable materials (including food waste) separated from all the incoming materials to Z-Best for in-vessel composting.

Materials streams leaving the MRF would include:

- Processed recyclables ready to be marketed;
- Clean yard trimmings and green waste to be hauled to ZRL or Z-Best for composting; and,

R3

- Mixed organics that will be conveyed to Z-Best for in-vessel composting.

Summary of Planned Facility Changes

The following list is a summary of the proposed facility expansions that were identified in this study, and which were described in detail on the previous pages. Table 2.8 shows projected overall capacity that will exist if proposed expansions are added to the total existing capacity. Note that the additional PLANNED capacities exceed the additional NEEDED capacities that were summarized in tables 2.4, 2.5 and 2.6. The available EXISTING capacity that was summarized in table 2.3 appears to be sufficient to meet future needs of the City of San Jose that were summarized in tables 2.4, 2.5 and 2.6. However, these privately owned facilities may choose to sell capacity to other jurisdictions, thus limiting San Jose's available capacity. Also, for many facilities, the maximum permit throughputs can not be achieved, due to practical operational constraints.

- 300 tpd of food waste and yard trimmings processing at Newby Island;
- 150 tpd of MSW at the dirty MRF at Newby Island (date uncertain);
- 150 tpd of MSW at the dirty MRF at the Recyclery;
- 300 tpd of Single Stream Recyclables processing at Rogers Street; and,
- 5,000 tpd of residential, commercial and C&D processing at the ZMPF.

Major Findings and Assessments

R3

Major Findings and Assessments

TABLE 2.8 Current Capacity and Projected Future Capacity By 2013			
Proposed Facilities	Projected Capacity	Used Capacity	Unused Capacity
TOTALS from Table 2.3	6,804,408	3,606,734	2,901,355
1. Newby Island Compost	93,600	0	93,600
2. Newby Island Dirty MRF (date of opening is unknown, but after 2013)	0	0	0
3. Recyclery Dirty MRF	46,800	0	46,800
3. Rogers Avenue MRF ¹	78,000	0	78,000
4. SJ WPCP	TBD	0	TBD
5. ZMPF	1,560,000	0	1,560,000
Total	8,582,808	3,606,734	4,679,755

1. 'Projected Capacity' = permitted tpd for facilities are calculated as operational 260 days per year; all other facilities are operational 312 days per year.

Changes in Movement of Materials

The City has contracted with GreenWaste Recovery to process the mixed wastes collected from multi-family dwellings at the Z-Best compost facility. This will add an estimated 60,000 to 80,000 tons of mixed waste to the facility. However, since the facility is currently operating at capacity for mixed waste (even though there is technically capacity for clean yard trimmings), in order to receive these tonnages, the Z-Best facility must displace some other tons of mixed wastes.

Many other communities in Santa Clara, Alameda and San Mateo Counties are planning to implement mixed organics or food waste collection and composting programs. Unless additional facilities come on line, there will not be sufficient permitted capacity to provide this service to everyone who desires it. Other cities, such as Palo Alto, may currently be using facilities in San Jose to process their recyclables or organics. To insure that composting capacity is available at competitive prices for organics from the City, the City could permit City-owned land, and hire a private contractor to operate the compost facility.

Changes in Collection Programs

The City's residential collection contracts are generally for relatively short periods. This means that at the end of each contract term, there may be

R3

changes to the collection and materials processing systems. The current Recycle Plus contract may terminate in as little as five years, and there will be a new collection agreement. The collection system that will be used in the next agreement is still unknown, as are the space requirements for processing the collected materials, but the new contractor will have to identify a site from which to operate.

The City is considering making changes in their current non-exclusive commercial franchises up to and including turning them into exclusive franchises. This will likely change the flow of materials from the current processing facilities and disposal sites to other facilities and landfills.

Changes to the Commercial Waste Management System

The City is evaluating potential changes to the commercial waste management system. These changes may shift the flow of recyclables from one facility to another and the flow of wastes from one landfill to another.

Changes to the CDDD Program

The City is evaluating changes to the CDDD Program. These changes are likely to create a need to bring additional processing capacity on-line, and may cause the movement of C&D wastes from one facility to another.

Extended Producer Responsibility

Expanding Extended Producer Responsibility requirements will change the waste stream; reducing or eliminating some or all of the hard to manage material types.

Future Changes to Regional Landfill Capacity

Landfill capacity in the nine-county Bay Area region is limited. A landfill's closure date is a projection that is based on the estimated total capacity of the facility and may be adjusted, based on increased or decreased volumes of material received at the landfill. The landfills in Santa Clara County all have current closure dates in the 2020's; some may remain open until the 2030's. Some landfills in San Mateo, San Joaquin, Santa Cruz and Solano Counties have landfills with estimated closure dates within the next 12 years.

Currently, there are no proposed NEW landfills scheduled to be built in the Bay Area at this time, but some existing landfills will be permitted for additional capacity to extend the operating life. As each landfill closes, the waste that was formerly sent to the closed landfill must be sent to the remaining open landfills, which in turn, may force the remaining landfills to close earlier than expected. Even while still open, the remaining landfills may begin to reach their daily permit capacities, resulting in longer hauls for open market disposal.

It is projected that the City's IWM Zero Waste Strategic Plan will result in decreased waste flows to landfills in Santa Clara County. However, landfill closures in surrounding counties may represent opportunities for

R3

Major Findings and Assessments

Santa Clara County landfills to attract additional waste. The three most likely opportunities are:

1. The City of San Francisco contract with the Altamont landfill will expire in the next five to seven years, and San Francisco may seek landfill capacity in Santa Clara County landfills;
2. Jurisdictions in San Mateo County that are part of the South Bayside Waste Management Authority may seek landfill capacity in Santa Clara County after the year 2018, when the Ox Mountain landfill is scheduled to close; and,
3. Unincorporated Santa Cruz County and Watsonville may seek landfill capacity in Santa Clara County after 2019, when the Buena Vista landfill in Santa Cruz County closes.
4. The Crazy Horse landfill in Monterey County (north of Salinas), which currently receives wastes from Morgan Hill and Gilroy, will be closing in the next two years.

R3